



2013

Missing "Links": Investigating the Age and Gender Dimensions of Development, Conservation, and Environmental Change in a Southern Zambian Frontier

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MISSING "LINKS":
INVESTIGATING THE AGE AND GENDER DIMENSIONS OF DEVELOPMENT,
CONSERVATION, AND ENVIRONMENTAL CHANGE
IN A SOUTHERN ZAMBIAN FRONTIER

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Arts and Sciences
at the University of Kentucky

By
Allison Harnish

Lexington, Kentucky

Director: Dr. Lisa Cliggett, Professor of Anthropology

Lexington, Kentucky

2013

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ABSTRACT OF DISSERTATION

MISSING “LINKS”: INVESTIGATING THE AGE AND GENDER DIMENSIONS OF DEVELOPMENT, CONSERVATION, AND ENVIRONMENTAL CHANGE IN A SOUTHERN ZAMBIAN FRONTIER

This dissertation focuses on the lived, material realities of rural women, men, girls, and boys struggling to make a living in the context of changing national development priorities and changing environmental conditions in Southern Province, Zambia.

Over the last 20 years, Gwembe Tonga migrants living in the frontier farming area of Kulaale have witnessed significant declines in non-cultivated “bush” resources due to the conversion of forest and grassland to agricultural uses. This dissertation seeks to understand how women, men, boys, and girls differently experience these declines according to local gender- and age-based divisions of subsistence labor. Drawing on a variety of theoretical lenses—including Feminist Geography, Feminist Political Ecology, African Feminisms, the Anthropology of Childhood, and the Anthropology of the State—and utilizing a unique blend of qualitative/ethnographic and quantitative/geospatial research methods, this study finds that the “extractive workloads” (the average annual distance traveled for the collection of key bush resources) associated with women, men, girls, and boys are both unequal and contrary to recent speculations about the distinctive vulnerability of adult women to environmental change.

The unequal labor burdens associated with the extraction of bush resources in this changing frontier landscape are but one of several missing “links” that this dissertation identifies within current theorizing about the gendered dimensions of environmental change. Other “links” include the social organization and religious life of Gwembe Tonga migrants, the demographic structure of Kulaale homesteads (their organization on the landscape and their demographic composition), the interplay between agency and vulnerability in children’s daily lives, and the role of the state in shaping Kulaale residents’ perceptions of and interactions with the surrounding environment.

This story of Gwembe Tonga migrants’ gendered and aged experiences of environmental change unfolds in the context of competing national economic strategies—frontier development wildlife conservation. This dissertation concludes that women, men, girls, and boys are *all* physically and economically vulnerable to the changes associated

with frontier development, conservation policy, and environmental change, with social, political, and economic factors prompting them to experience vulnerability in aged and gendered ways.

KEYWORDS: Gender, Labor, International Development, Wildlife Conservation, Land-Use/Land-Cover Change

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ACKNOWLEDGEMENTS

I am especially grateful for the skilled and unwearied guidance of Professor Lisa Cliggett. Were it not for Dr. Cliggett's generous invitation into the overarching research project, her emotional and tactical support, or her comments and constructive criticism, neither this dissertation nor the research from which it emerges could have been possible. I am also indebted to Dr. Deborah Crooks and Dr. Mary Anglin for the tremendous support they have shown throughout the many stages of my graduate career. From courses, to research assistantships, to job applications, Dr. Cliggett, Dr. Crooks, and Dr. Anglin have all nurtured my growth as a student, a scholar, and a teacher; I am lucky to have them as mentors and committee members.

Dr. Morgan Robertson and Dr. Srimati Basu challenged me to consider the ways in which political ecology and feminist theory inform my research and the discipline of anthropology. I am thankful to have Dr. Robertson as a committee member and Dr. Basu as an external reader.

I would like to express my immense gratitude to the people who so willingly participated in and gave direction to my research, who housed me, hung out with me, and became my friends for the duration: Twalumba Kapati Admite, Alli, Angela, Beforetime, Brandina, Bridgette, Bruce, Christabell, Chriswell, Circle, Classic, Collins, Dalton, Debbie, Deze, Double, Ethel, Favorite, Formula, Future, Gift, Harriet, Idah, Irene, Jill, Judah, Junior, Kisten, Kisteria, Linette, Lisa, Luckwell, Luckson, Method, Nurse, Oscar, Oswell, Passwell, Phinias, Purity, Redith, Rybert, Sampson, Sheila, Staincorn, Stanford,

Starncorn, Starnwell, Stanley, Stella, Valerie, Victor, Vienna, Wheaton, Wesley, the Kizito Pastoral Center, the Presentation Sisters of Monze, and the University of Zambia.

I would like to acknowledge Alex Brooks and Tula Bonana for their patient support. Thanks, also, to Shannon Bell, Phil Berger, Tim Brock, Jordan Caddick, Costa Cheepa, Chilufya Chilangwa, Boni Chipembere, Immaculate Choongo, Elizabeth Colson, Drew Combs, Marybeth Chrostowsky, Matt Davidson, Alison Davidian, Vicki Dekle, Mike Ferris, Anastazyia Hanyinda, Ana Hasemann, Juli Hazelwood, Sarah Head, Andrew Hedrick, Travis Hedwig, Mark Hemsworth, Marja Hinfelaar, Hsain Ilahiane, Cindy Isenhour, Dick Jefferies, Jordan Kaddick, Diane King, Arthur Kong, Thankian Kusanthan, Rich Marsden, Ring Mulongo, Dustin McBride, Juliana McDonald, Patti Meyer, Phil Mink, Kristen Monroe, Maria Moreno, Florence Moyo, Kyle Mullen, Lastone Simweemba, Mr. Moyo, Mr. Munsaka, Obert Mwandu, Ilse Mwanza, Yvonne Ndaba, Lizz New, Chris Pappas, Rachel Peletz, Megan Poulette, Thea Savory, Heather Sawyer, Aeleka Schortman, Erin Sears, Tyler Smith, Nick Sitko, Vaughan Spethman, Monica Stephens, Karen Rignall, Ashley Rondini, Rick Wagner, Michelle Wallon, Colin West, and Dominique Zephyr.

Most of all, thanks to Juanita, Bruce, Linda, and Miranda. Alex, Stacy, and Gus. Marya and Christie. Debbie and Joe and Ruby. Kelly and Trevor, Jamie and Jake. Jason, Shannon, Hannah, and Eva. Dennis, Elaine, Erica, and Theresa. Deb and Tom. Glen and Linda. Anita. And the rest of the Harnish and Jonas families.

This project was supported by the Fulbright Program, The National Science Foundation, and by the Graduate School, the President's Office, and the Department of Gender and Women's Studies at the University of Kentucky.

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LIST of ACRONYMS

ADMADE	Administrative Management Design for Game Management Areas
CBNRM	Community-Based Natural Resource Management
CRB	Community Resource Board
CONASA	Community Based Natural Resource Management and Sustainable Agriculture
FRA	Food Reserve Agency
FSP	Fertilizer Subsidy Program
GIS	Geographic Information System
GMA	Game Management Area
GPS	Global Positioning System
GTDP	Gwembe Tonga Development Project
GTRP	Gwembe Tonga Research Project
LULC	Land-Use/Land-Cover
NAMBOARD	National Agricultural Marketing Board
NPWS	National Parks and Wildlife Service
WCRF	Wildlife Conservation Revolving Fund
WPO	Wildlife Police Officer
ZAWA	Zambian Wildlife Authority

CHAPTER ONE: INTRODUCTION

“Uh huh,” I shouted, my voice choking through the sandstorm that had come bursting through the office door. “And how many students are in grade three!?” Mr. Mulalu, the head teacher of Inzoka Middle Basic School in Kulaale,¹ Zambia (see Map 1.1) turned to his roster, followed his finger across the page, and—wincing as the wind carried sheets of dirt, sand, and grit across his face—answered, “forty one.” I dusted my notebook and penciled in his response.

IMAGE 1.1: The original schoolhouse at Inzoka Middle Basic School



With its gleaming iron sheets, windowless exterior, and crumbling administrative offices, Inzoka Middle Basic exemplifies the historical cycles of “access and alienation,” the “liminal state of uncertainty and instability” that has come to characterize this region

¹ Kulaale and the names of its four *katengos* (Inzoka, Cikolo, Musamu, and Banyama) are pseudonyms. So, too, are the names of all Kulaale residents who are referenced in this dissertation.

of Southern Province, Zambia for over fifty years (Cliggett n.d.). The original schoolhouse (see Image 1.1), a haggard brick row containing two classrooms and an office, could hardly service the schools' growing body of first through seventh graders. The new cinderblock building (see Image 1.2) where Mr. Mulalu and I carried out our interview made a considerable improvement to this remote facility. Yet, it had no glass in the windows, only empty rectangular spaces in the wall, no furniture—no desks or chairs for the students—and no chalkboards. As with many rural development schemes across the country, the government coffer ran dry before construction on this new building was completed. While I was conducting my doctoral dissertation research in Kulaale, students at Inzoka Middle Basic School carried out their lessons seated on the floor and teachers scrawled vocabulary words, math problems, and homework assignments directly onto concrete walls (See Image 1.3).

IMAGE 1.2: A teacher and the new (incomplete) schoolhouse at Inzoka Middle Basic



IMAGE 1.3: Inside the new schoolhouse at Inzoka Middle Basic



It was July 2010, the month bearing the CiTonga name *kkunkumunamasamu*, which plainly means, “to shake the tree.” This is the time of year when wind tears across the southern Zambian landscape, stripping leaves from their branches forcing granules of sand through every zipper, seam, and buttonhole (see Appendix A).

The wind also lifts the topsoil—the highest concentration of nutrients, minerals, organic matter, and microorganisms necessary for plant growth—in swirling red and brown gusts. At night, the gusts crash through trees, grass, and maize stalks. They rattle the tents of visiting researchers and reverberate in bursts like waves breaking upon the shore. During the day, the gusts dance between the remains of harvested crop rows and along the footpaths connecting villages. As the wind sweeps the landscape, dusting the faces of teachers and visiting researchers with soil particles, it seems to be sighing a disappointed goodbye to some departing entity—the promise of prosperity as it literally blows away.

The wind erosion and accompanying loss of soil fertility in Kulaale represent but a portion of the suite of interrelated socio-environmental changes unfolding in this frontier landscape. Other changes include water erosion and the conversion of forest and grassland to agricultural uses. Associated with the expansion of commercial agriculture in Kulaale are declines in the availability of non-cultivated “bush” resources—things like firewood, building materials, wild foods, and pasturage for livestock.

MAP 1.1: Location of Zambia within the African Continent



Zambian forests cover about sixty percent of the country’s total land area and provide key resources for industries, urban households, and rural households. Forest

resources are especially important for low-income communities (Keddy 2003). Ethnographic data associated with the longitudinal Gwembe Tonga Research Project (GTRP) show that the extraction bush resources constitutes a fundamental aspect of livelihood for the Gwembe Tonga People living in Kulaale. Among this rural community, household structures, garden fences, and cattle kraals are built from timber, twigs, mud, fiber, and thatching grass. Meals are prepared and bodies are warmed by fires constructed from wood and kindling. Livestock graze on wild grasses. Families supplement the staple meal of cornmeal porridge (*nsima*) and garden relish (*cisu*) with vegetables and fungi extracted from the bush. What is more, each of these bush resources is extracted according to gender- and age-based divisions of labor. For instance, men and boys are typically in charge of herding livestock while women and girls are responsible for collecting firewood.

Because bush resources are often collected in accordance with local gender- and age-based divisions of labor, fluctuations in their availability have the potential to unevenly affect women and men, adults and children. In Kulaale, for example, declines in bush resources reduce income directly for women who sell bushels of thatching grass. And, as Agarwal (1994) notes in her investigation of environmental labor systems in India, the longer treks and additional time required to gather diminishing bush resources may subtract from the time that would otherwise be spent tending crops. This, in turn, can have adverse effects on crop yields, familial nutrition, and children's school performance (Kumar and Hotchkiss 1988; Nankhuni and Findeis 2003).

In addition to providing grasses for grazing, materials for building, and fuels for heating and cooking, bush resources also act as a "buffer" against household shocks (e.g., the death of an economically productive household member) and failed or insufficient harvests, as they can provide alternative means of generating income and meeting dietary needs (Hunter 2006). Since bush resources constitute a fundamental element of livelihood, not just for those living in Kulaale, but for rural peoples across the globe, it is imperative that research seek to investigate the socially-differentiated effects of environmental change.

This dissertation investigates the ways in which Gwembe Tonga migrants living in Kulaale, Zambia are physically and economically vulnerable to the political and ecological changes unfolding in this frontier landscape. Rather than suggesting that any one segment of the population is exponentially worse off or more tied to the fate of the environment than another, I argue that Gwembe Tonga women, men, girls, and boys are *all* vulnerable to a declining natural resource base, with social, political, and economic factors prompting them to experience vulnerability in aged and gendered ways.

This argument helps to counter stereotypical portrayals of impoverished people, and third-world women in particular, by directing attention to the heterogeneity of human livelihoods in contexts of resource depletion (Cliggett 2005). Becoming familiar with the strategies of rural peoples—and acknowledging the fact that “rural,” indeed even “household” and “homestead” are not homogenous categories—is a vital stride in the march to implementing policy to better serve the needs of the people (Koenig 1986:107).

Research Population: Gwembe Tonga Migrants Living in Kulaale, Zambia

This dissertation stems from and builds upon the GTRP, which was initiated by Elizabeth Colson and Thayer Scudder in 1956—two years before the construction of Kariba Dam forcibly displaced 57,000 Gwembe Tonga from their homes along the Zambezi River (Colson 1971; Scudder 1993). The GTRP began as a “before and after” study of the social order—the kinship, marital relations, economic systems, political systems, and religion—of the displaced Gwembe Tonga communities. Colson and Scudder “followed the same communities and people...to understand how and why they adjusted” to the “radical change” of resettlement in Zambia’s Gwembe Valley (Colson 1971:8,12).

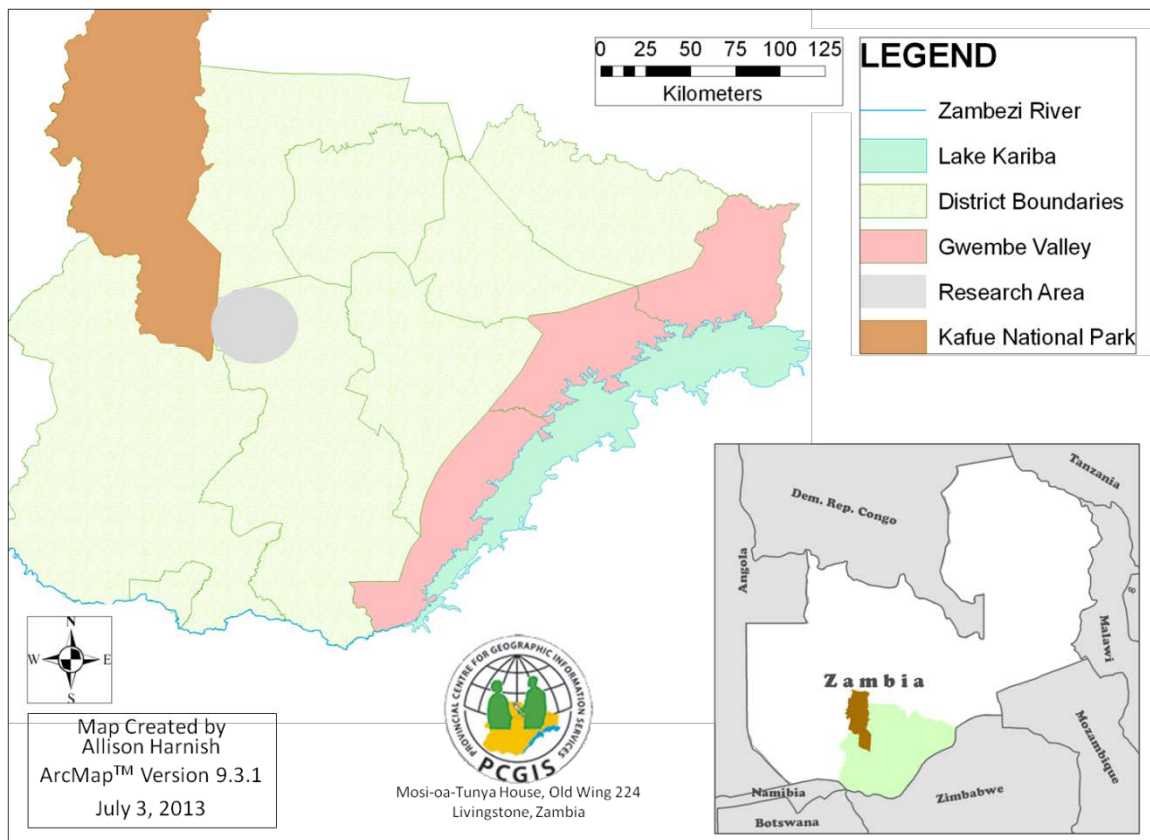
Over the years, the changes to which the Gwembe Tonga were required to cope grew to include, not only the shift to a wholly different ecological niche, but also the rise of African nationalism and the emergence of an independent Zambia. For nearly sixty years, GTRP researchers have advanced our understanding of cultural change and continuity in Sub-Saharan Africa through critical explorations of large-scale development projects (Colson 1971; Colson and Scudder 1972; Scudder 1993), migration/gift-remitting (Cliggett 2000, 2005b), kinship (Colson 1960, 1980; Cliggett 2005a), religion (Colson

1969, 1970, 2006), education (Scudder and Colson 1980), child growth (Gillette-Netting and Tobias 2002; Gillette Netting and Perry 2005), demographic patterns (Clark, Colson, and Scudder 1995), agricultural strategies, natural resource use, and ecological change (Scudder 1960, 1962, 1971; Petit et al. 2001) among the Tonga people of Zambia's Gwembe Valley.

Kariba Dam remains one of the largest dams in the world and Lake Kariba is the world's largest reservoir by volume. A monument to the globalized nature of economic development—it was financed by the World Bank and built by an Italian firm with plans from a French engineering company and labor from Italy, Tanzania, and Malawi—Kariba Dam made the Gwembe Valley “into a producer of wealth, enriching everyone but the people directly affected by [it], the Gwembe Tonga” (Leslie 2005:114). For years, the relocated Gwembe Tonga struggled to eke a living in the Gwembe Valley, which Cliggett (2005a:4) asserts is “particularly prone to environmental crises such as droughts, flooding, and invasions of pests.” Only meagerly remunerated for the loss of their ancestral lands and agricultural livelihoods, a wave of Gwembe Tonga migrants voluntarily relocated, beginning in the 1980s, from the harsh Gwembe Valley to Kulaale, an agricultural frontier abutting Kafue National Park (see Map 1.2).

Since 2004, GTRP researchers have pursued an auxiliary research program in Kulaale, investigating livelihood diversification, land tenure, land-use/land-cover change, HIV/AIDS, medicinal plant use, and nutrition and food security (Abdul-Karim 2012; Adjemian 2008; Cliggett 2005; Crooks, Cliggett, and Cole 2007; Frank and Unruh 2008; Sitko 2010; Unruh, Cliggett, and Hay 2005) among other topics. This dissertation builds upon the larger GTRP by investigating the effects of environmental change in Kulaale on the Gwembe Tonga migrants now living there.

MAP 1.2: Map of Zambia's Southern Province showing the Zambezi River, Lake Kariba, the Gwembe Valley, the Southern Portion of Kafue National Park, and the General Vicinity of Kulaale (Research Area)



As I will describe later in this Introduction and in Chapter Three, the Kulaale frontier had been cordoned off and closed to human settlement for nearly thirty years before it was re-opened in 1979. During that time, the mixed forest-savannah landscape, which had previously been home to semi-nomadic bands of hunter-gatherers, transitioned into a “relatively mature secondary forest” (Cliggett n.d.). This unique history makes Kulaale an ideal site for studying human-environment relations and longitudinal processes of land-use/land-cover (LULC) change.

Prior to my dissertation work, researchers affiliated with the GTRP showed, using analyses of aerial photographs and satellite imagery and extensive ground-truthing, that the landscape of Kulaale has experienced marked declines in forest cover since the GMA

was 'opened' for human settlement in 1979 (Cliggett 2000). This finding is substantiated in my interviews with Kulaale residents:

It was a bush!!... There were a lot of trees when we moved here, a lot of wild animals. Elephants and monkeys were coming to our fields and eating our crops. These days, there are no animals. Some of the trees have been cut down to open up fields. The land has lost fertility because the nutrients were removed by rainwater... (Kafubu and Edena, Inzoka katengo, 2010)

In 1995, this place was a bush. There were a lot of wild animals. It was a long distance to where others were living. All these people you see in the area are new migrants. Before, you could not travel one kilometer without an escort for fear you would be harassed by wild animals...[Now], the forest is reduced so we can move more freely...In the first years, poles and relishes like lusala were at our doorsteps and within our fields. You could go to prepare the field for farming and bring back a lot of lusala. Now, it is finished. Building poles are rarely found near. You have to go a long distance. They are gone because people cleared them for fields...Because the number of people has increased and people have expanded their fields, and a lot of people have settled, there are no poles around. We have to walk a long distance to find them. (Chisamba, Musamu katengo, 2010)

[The environment] is not the same as before. The population of bush resources has decreased because more land has been cleared for the fields than before... That has affected me very much. Because the poles [for building structures] now are found at distant places. It needs someone who has an animal and oxcart to collect those poles. (Sarah, Cikolo katengo, 2008)

...in the earlier years when we came here, there was a lot of plants which we used to brew cibwantu, this sweet beer. It was called munkoyo. It was found in abundance. Nowadays, it is nowhere to be seen. There were a lot of fruits, like intumbula, imbula, mbubu, muchinge. There were plenty of those fruits. But now since the bush has been reduced because of cutting, clearing of bush, building of homesteads, then all those fruits are not found in abundance as before. (Mukaintu, Cikolo katengo, 2008)

Reasons for the decline in forest cover are described in Chapter Three and include (1) the burgeoning population of Kulaale, (2) the commercial farming of maize and cotton currently encouraged by national agricultural policies, and (3) the history of land insecurity among the Gwembe Tonga that prompts migrants to clear more land than they intend to cultivate as a strategy for demonstrating ownership and securing farmland for future generations (Cliggett et al. 2007).

With the declining forest cover calculated and confirmed via remote sensing and informants' narratives, and with the causes of land cover change identified, what remains is to investigate how the depletion of forest resources affects the Kulaale residents who depend on them for subsistence.

Background to the Study

Zambia declared independence from Great Britain on October 24, 1964. Prior to English colonialism (1923-1964),² Kulaale and surrounding areas had been home to semi-permanent settlements of hunter-gatherers and small-scale horticulturalists dating back to the Iron Age (100 B.C. to 1500 A.D.). As a strategy for maintaining the private hunting grounds of the colonial elite and to eradicate Tsetse fly (a vector for human sleeping sickness) the Zambian Office of Game and Tsetse Control evicted all persons from what would become Kafue National Park, its adjacent GMAs, and nearby forest reserves during the 1940s and 50s. In pursuing this “fortress” model of wildlife conservation—whereby all humans (save for European and American hunters) are forced to live away from wildlife populations—the state ensured that Kulaale, which sits on the border of Kafue National Park, sat devoid of human settlement for the next several decades.

1979, the Zambian Government announced the de-restriction of six protected areas in a public radio announcement which re-opened Kulaale to human settlement (Cliggett et al. 2007). The “opening” of Kulaale during the 1980s and 90s corresponded with a national move away from the “fortress” model of conservation toward community-based natural resource management (CBNRM). “The premise of CBNRM,” according to the United States Agency for International Development, “is that communities will manage local resources in a sustainable manner if they (1) are assured of their ownership of the natural resources; (2) they are allowed to use the resources and/or benefit directly from others' use of them; and (3) given a reasonable level of control over management of the resources” (USAID 2009:2). Central to Zambia's community-based wildlife management

² Before it was officially declared a colony of the United Kingdom, Zambia, then Northern Rhodesia, was administered by Cecil Rhodes' British South Africa Company from 1891-1923.

program³ is the sale of “concession contracts to safari hunting operators in game management areas” (USAID 2009:12).

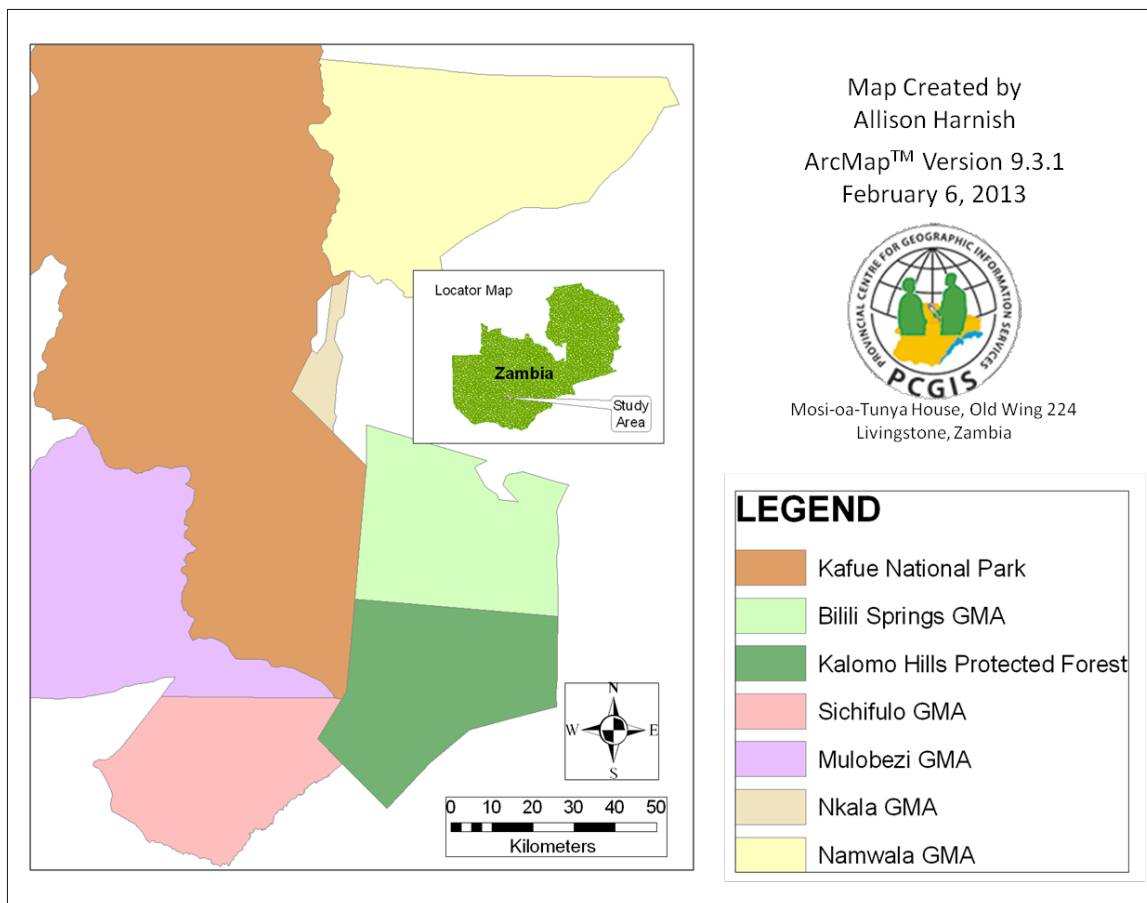
Provisioned under the Game Management Declaration Order of 1971, Zambian game management areas (GMAs)—of which there are more than thirty—act as “buffer zone[s] around protected wildlife areas” (Namugala 2009:1). Human settlements, agricultural cultivation, livestock rearing, hunting, and photographic safaris within the GMAs “have to be conducted in a planned manner” and in accordance with GMA zoning which “identifies areas suitable for human settlement, agricultural activities and prime hunting areas. Human settlement is not permitted in areas designated as prime hunting areas” (Namugala 2009:2). Geographically, Kulaale is nestled among several GMAs flanking the southern portion of Kafue National Park, five of which⁴ are depicted in Map 1.3.⁵

³ The name of this program is the Administrative Management Design Program, or ADMMADE. I describe the history of ADMMADE in Chapter Seven.

⁴ Mumbwa, Kasongo-Busanga, and Lunga-Luswishi GMAs are not pictured. Also not pictured are two proposed GMAs: Kaindu and Mafunta.

⁵ I created Maps 1.2 and 1.3 using shapefiles that were generously provided by the Provincial Center for Geographic Information Services (PCGIS) in Livingstone, Zambia. See Appendix B for an alternative map from the Zambian Wildlife Authority (ZAWA) website, which depicts slightly different boundaries for the GMAs surrounding Kafue National Park.

MAP 1.3: Kafue National Park and Surrounding Protected Areas



The “opening” of Kulaale and the re-peopling of the frontier coincided with Zambia’s first President, Kenneth Kaunda’s economic strategy of development through self-reliance, social justice, and humanism. Kaunda’s vision sparked a mass movement of urban and rural Zambians alike into some of the remotest corners the country—places where land was plentiful and the potential for success in commercial agriculture was vast. Included among those who opted to pioneer the frontier landscape in Kulaale were those Gwembe Tonga (and their kin) who were displaced by Kariba Dam and struggled for twenty years to eke a living in the marginal resettlement sites in Zambia’s Gwembe Valley. Today, the majority (40 percent) of Kulaale’s residents is Gwembe Tonga—persons who were themselves evicted or persons who are descended from those displaced by the hydroelectric dam constructed in the Kariba Gorge of the Zambezi River, some

320 kilometers away (see Appendix C for a diagram of the ethnic composition of the Kulaale fieldsite).

Pioneers' Stories: Kariba, Kulaale, and Places In-Between

Many Kulaale residents (men, in particular) spent a portion of their lives working in cities. Zambia's economic decline during the 1970s and 80s brought a wave of retrenched urban employees into the country's rural spaces. Key among the migrant population in Southern Province were the Gwembe Tonga who had been displaced by Kariba dam in the late-1950s. Some of the settlers to Kulaale came to escape the growing unemployment in urban and peri-urban sectors of Southern Province. Some came to leave behind the poor farming conditions of the resettlement villages in the Gwembe Valley. Some families fled both at once. The story of one elderly Gwembe Tonga man and his two wives is common among Kulaale residents:

Paul: I left [the resettlement village] and went to Lusaka for work. I heard people were moving from the Valley to [Kulaale]. I found land [in Kulaale] and [asked my younger brother] to keep the land for me while I was in Lusaka. [The brother] settled in Kulaale and built homes on the land so my wives could farm during the rainy season...while I was in Lusaka working for PreSecure [a security company].

Tessa and Naomi: The farming [in Kulaale] was good. We, the wives, could grow maize and the husband would bring fertilizer from town. We had good harvests at that time (1983-1987). Back when Peter was working in Lusaka and his wives were farming in [Kulaale], he could not afford to feed his big family.

Paul: [My wives] were growing cotton and maize. After harvesting, they would take the check [from the sale of cotton and maize] to Lusaka. When I compared my security guard salary to what my family was making by farming, I realized it would be better to farm full time. There has never been an occasion when I changed my mind" (Paul, Tessa, and Naomi Sekute, Inzoka katengo, 8/9/10).

Many of the Gwembe Tonga families I spoke with compared their experiences pioneering the Kulaale frontier with their arrival in the resettlement villages following the construction of Kariba Dam. In both locations, the migrants dramatically altered what was previously a "bush" landscape, clearing their fields and building their homesteads by hand. But, at least in the Valley, one informant explained, "there was a provision of

machinery to clear the homesteads...the authorities cleared the lands in Sinafala and told us to build our homesteads where the clearing had been done” (Bina Mongu, 8/10/10).

Amid the suffering of the forced exodus of 57,000 people from the shores of the Zambezi River, the government—what was then the Federation of Rhodesia and Nyasaland, or the Central African Federation (CAF)—commissioned “big lorries...to carry [the Gwembe Tonga] upland with [their] families, belongings, and livestock” (Thomson et al 2005:8). “Even then,” an elder man named Makoma described, “it was possible to bring our things with us because of those big vehicles. We were told to take all our belongings, to take whatever we wanted.”

This contrasts somewhat with migrants’ experiences coming to Kulaale. This time, the migrants had to organize their own transport. Makoma went on to state, “...coming to [Kulaale]...we hired someone to transport our goods. The cattle, we brought on foot. The trip took four days; we arrived on the fifth” (Makoma and Elon Nkumbah, 7/9/10).

Of course, the move to Kulaale was voluntary⁶ where the move to the resettlement villages was not. As one elder man explained, “...the government just dumped us there.” (Paul, Tessa, and Naomi Sekute, 8/9/10).

Even after they had established their homesteads in the resettlement villages, and later in Kulaale, the new landscapes presented settlers with problems. Recalling the challenges they faced when they arrived in the resettlement villages in the Gwembe Valley, informants expressed the greatest problem stemmed from the quantity, and fertility, of the land:

[The resettlement village] was a bush, as Kulaale was when we first arrived...We grew sorghum and it didn’t sustain us (Bina Mongu, Inzoka katengo, 8/10/10).

The land there [in the Valley] was very small. It lost fertility and there was no room for crop rotation (Matthal, Melita, and Salah Mutelo, Inzoka katengo, 8/8/10).

[Before we were displaced], our village by the riverside was very fertile. You could get enough to feed your family. After we were depressed by Kariba, the [resettlement

⁶ Rather, it was voluntary for most. There were several women in my sample who explained they would not have moved to Kulaale if they had the choice. They came “to preserve [their] marriage” (Berith Magoye, Inzoka katengo, 8/14/10)

village] was established on slopy land, where good harvests never happened. Those who were already settled in the [resettlement area] had [good] land along the streams. That land was a bit fertile. The visitors, we who were displaced, were given lands in the hills that were less fertile (Makoma and Elon Nkumbah, Inzoka katengo, 7/9/10).

Twenty years later, the biggest problem migrants faced when they arrived in Kulaale was a lack of infrastructure—namely water—in the first years of settlement. Also, informants recalled times—before the first harvest in Kulaale, and during the droughts of the 1990s—when they had to rely on wild foods as a primary source of sustenance. In their desperation, a number of families harvested muzabu⁷ a wild tuber that, if it is not prepared properly,⁸ can be poisonous. Two homesteads recalled instances where migrants to Kulaale died, having accidentally poisoned themselves with this plant during the droughts of 1992 and 1995. In spite of the challenges of pioneering the frontier landscape, every family I interviewed maintained that life in Kulaale was preferable to life in the Valley:

There were very few people [when we arrived in Inzoka]. It was too much work clearing land, cutting poles for building. People from all areas came over the years, not only Valley people, but people from Choma and Monze, too. Anyone without farmland came here. It took us one month to clear our land and build our homestead... We suffered. We had no food, no maize. We could purchase maize [pumpkin and delele] from those who had settled here before us... We have overused this land for twenty years. Still, it cannot compare to [the Valley]. Here, if you have fertilizer, you can harvest. In [the Valley], there was no fertilizer and no harvest. In making comparisons, this place is extremely good. In a bad year, you can still have a bit of harvest even if you can't buy fertilizer. In the Valley, the land was not good. It

⁷ Muzabu is probably the local name for the poisonous wild cluster yam (*Dioscorea dumetorum*), a “famine food” which must be sliced and steeped in running water, then boiled before eating. This detoxification process rids the tuber of the toxic alkaloids dioscorine and dihydrocortisone. Both are nerve poisons which cause convulsions and death by asphyxiation.

⁸ An elder woman explained the procedure for preparing muzabu: *We would dig the muzabu from the bush, then hide it near the homestead (so the children wouldn't find it—if they were to eat it before it was fully prepared they might poison themselves). We'd bring the roots to the river and soak them under a waterfall for three days. Then, we'd bring them back to the homestead, cook them in a pot—you have to bring the pot to a boil three times, discarding the water and adding new water each time. After that, the muzabu is ready to eat, mixed with milk (Joseph and Ethyl Chikanda, Inzoka katengo, 10/13/10)*

was not good even when using fertilizer. Here there is a lot of food. Nearly every homestead has food because of good land (Makoma and Elon Nkumbah, Inzoka katengo, 7/9/10).

Here is better compared to [the Valley], especially in terms of food. Food is plenty here. You can see there is plenty of maize ready for sale. We have also set aside some for consumption. In [the Valley] we could just farm maize to eat; there was no surplus. For example [Paul nodded towards a young man approaching the homestead], this son came when he was young. Through farming, he has bought a truck which he uses to transport people from here to Kalomo. If someone in his family falls sick, he immediately takes them to the hospital in town. This is not something we could do in [the Valley] (Paul, Tessa, and Naomi Sekute, Inzoka katengo, 8/9/10).

This place has changed due to our use of fertilizer. We get better harvests here, such that people can buy bicycles, trucks, and cattle. People could not have these things in Sinafala through farming. There, they grew sorghum for consumption, not as a cash crop (Berith Magoye, Inzoka katengo, 8/14/10).

Still, others lamented that while the land in Kulaale is good, the marginality of the frontier makes it difficult to sell surplus maize:

[Inzoka] is better than [the Valley] if you have money to invest in farming—to buy fertilizer. The biggest problem is how to market my crop, maize. The price is not good. The only way to get a better price is to sell to FRA, which often delays in making payments until December. By then, it is too late to buy inputs for next season...The alternative would only be to sell to private buyers who buy at low prices. We cannot shift to other crops. We are only used to farming maize. It's not that we don't know how to grow other crops. It's that there is no market for other crops... It's easier to stick to maize and/or cotton (Kutwa Kasangula, Inzoka katengo, 8/10/10).

The longing for business in Kulaale is echoed in a recorded dialogue between a middle-aged husband, Enoch and his two wives, Adna and Malila, in Musamu katengo:

Enoch: I came [to Kulaale] to follow my mother...After my father died, my mother decided to shift to [Musamu] to be with her relatives who had settled here...This place was different, because in [the Valley] there was a hammermill, schools, boreholes. Here, at times we would go a week without bathing...I thought my mother was crazy for wanting to live here. I was thinking of going back [to the Valley] only that all my relatives were here...We stayed because the land is good.

Malila: Water is a problem. I go for water at 04:00 hours and return at 12:00. There is not even a clinic here. If someone is sick, they have to go to Maacha hospital, a three-day walk from here.

Adna: *Here there is no garden. Even schools, there are no schools and no clinic.*

Malila: *Even though you can plant groundnuts here, there are no customers to buy them.*

Adna: *There is no business*

All three speaking at once: *Here the land is good. That's why we stayed. We can plant a lot of maize. We don't have to buy our food; we just buy relish from Cikolo market... (Enoch, Adna, and Malila Hamwala, 8/11/13).*

In Musamu, recent settlers like Enoch, Adna, and Malila are experiencing the frontier that greeted Inzoka residents several years earlier. Still, as the following quote from Chisamba Kabwata suggests, Zone 2 residents, like their counterparts in Zone 1 still have many reasons to prefer Kulaale over the Valley:

[The place where I was born] was a good place because there were a lot of people. It was not a bush as compared to this area when I came. Since I was born, I have been living in village groups with a lot of people. Here it was just this homestead where I was staying with my son. There was tall grass you would have to travel through to find a neighboring homestead. Originally, I saw being in groups as a good thing. Here I experienced living alone and I found more advantages than disadvantages. Chickens and goats move freely. They only disturb my own crops. In the old place, chickens could lay eggs in another's nest. Then neighbors would quarrel over the eggs. Cattle could destroy someone else's crops, causing disputes. That doesn't happen here, and it's good because there are no quarrels. (Interview with Chisamba Kabwata, Musamu katengo, 8/12/13).

Today, however, the challenges of prospering on the frontier are compounded by the many contradictions of frontier life—namely the inconsistent bouts of access to and alienation from the gains associated with development, conservation, and environmental change.

Access, Alienation, and the Clash of Development Priorities in Kulaale, Zambia

In the years following independence, Zambia enjoyed one of the highest economic growth rates in sub-Saharan Africa due to the favorable prices and high production of its major export, copper. Under the humanist government of Kenneth Kaunda (1964-1991), the subsidization of drought-resistant hybrid seeds and chemical fertilizers encouraged a transition among rural farmers from shifting cultivation to the intensive production of

maize and cotton. The commercialization and industrialization of agricultural production during this time promised to bring Zambia into the modern era—reducing farmers’ dependency on the unpredictable southern African climate and reducing the nation’s dependence on foreign imports. The promise of modernity faded when the state cut spending on agricultural services in compliance with the World Bank’s and IMF’s neoliberal structural adjustment programs.

The oil crisis of 1973, combined with a precipitous drop in copper prices, initiated an economic recession from which the country has yet to fully recover. Like so many other African nations and countries of the developing South, Zambia began borrowing from International Monetary Fund (IMF) and the World Bank. The imposed structural adjustment programs of the international lending institutions necessitated a dramatic reduction in federal support for agricultural facilities, beginning in 1991. But, as Ferguson (1999) conveys and this dissertation will echo, the mythical narrative of “progress” that accompanied these reforms and promised Zambia’s ascension into a modern, developed world order was highly problematic; neither the new agricultural support programs, nor the community-based natural resource management (CBNRM) schemes intended to “develop” Zambia’s frontiers have yet fulfilled Zambia’s *expectations of modernity*.

The history of Kulaale cannot be understood apart from this larger, national history of ascension and decline. Indeed, Gwembe Tonga migrants’ perceptions of and interactions with the Kulaale environment are shaped by the economic programs implemented by Zambia’s colonial and postcolonial leadership during the late Twentieth and early Twenty-First Centuries. Central among these economic strategies—and most important for the purposes of this dissertation—are the development of Zambia’s frontiers (through the commercial production of maize) and the conservation of Zambia’s wildlife.

Frontier Development versus Wildlife Conservation

In an effort to compensate Gwembe Tonga families for losses incurred over forty years following the displacement by Kariba Dam, Zambia’s Electric Supply Corporation

Limited (ZESCO) slated international monies—from such harbingers of development as the World Bank, the Development Bank of South Africa (DBSA), the International Development Association (IDA), and the European Investment Bank (EIA)—for infrastructural support⁹ in the Kulaale frontier, with much of that support going to residents of Cikolo, one of four village conglomerations (*katengos*) in Kulaale (Musonda 2008; World Bank 2006).

Since the early 2000s, Cikolo has benefited from a large government-funded school, though the school is lacking teachers, desks, and other bare necessities. Cikolo also has a marketplace, where secondhand clothes dealers sell shirts, shoes, pants, and accessories castoff by Western consumers (see Hansen 2000 for a discussion of the global secondhand clothing industry in Zambia), and cotton buyers seasonally station themselves as links in the long commodity chain that will lead back to Western hand-me-downs.

Though Cikolo now has a clinic, the clinic carries virtually no medicines. The nurse who was stationed there is long retired, and the resident environmental health officer—whose duties are to supervise sanitation for the area, including checking the expiration dates on goods sold at market, checking the health of slaughtered animals, issuing children’s vaccines, and monitoring toilets, garbage disposal, and other sources of human disease—can only refer patients to the larger, more equipped Kalomo or Choma hospitals (Fieldnotes 5/35/08). And, this act of referral, the environmental health officer laments, is simply “not [his] job” (Fieldnotes 1/21/11). It is against this backdrop that “the promise of modernity offers an array of contradictions and disenchantments” (Durham 2000:14) for Gwembe Tonga families living in Kulaale

Inspired by Zambia’s “development through self-reliance” economic initiative, to take up the commercial farming of maize and cotton in Kulaale during the 1980s, Gwembe Tonga migrants are finding their livelihoods threatened today by a change in development priorities and the pursuit of wildlife tourism as a primary revenue earner. Rumors abounded during the time I conducted my fieldwork that the Zambian Wildlife

⁹ Here, I am referring to the Gwembe Tonga Development Project (GTDP).

Authority (ZAWA) was going to evict farmers settled in and around Kulaale. This was especially the case in the Lubono Settlement Area—a planned rural development and resettlement program of Zambia’s Ministry of Lands—which falls partially inside the Bbilili Springs GMA border. In November, 2010, ZAWA told people who were watering their animals at a borehole in Lubono that they should get prepared because “we are chasing you.” Meanwhile, in the southwest of Kulaale, where the Kalomo Hills Protected Forest meets the southeasternmost border of Kafue National Park, ZAWA was rumored to have warned residents “not to grow cotton, only maize, because [you] will be evicted by 30 June, 2011.”

The rumors of eviction in Kulaale fall on the heels of ZAWA’s removal of settlers in nearby GMAs; this includes the eviction of settlers from Sichifulo GMA in August 2008 and the relocation of settlers from three chiefdoms in the Namwala GMA in October 2009. In the case of Sichifulo GMA,¹⁰ every single inhabitant of the GMA (8,500 settlers) was removed. Approximately 6,000 settlers relocated on their own following the issuance of eviction notices.¹¹ The twenty-five hundred settlers who, by August 20, 2008, had not yet vacated the GMA were forcibly and traumatically removed by ZAWA’s wildlife police officers,¹² an incident which I will revisit in Chapters Three and Seven.

¹⁰ Sichifulo GMA was established by the Game Management Area Declaration Ordinance of 1971. But residents of this area claim to have been given land by Chief Nyawa and Chief Siachitema in 1985. According to Zambia’s Minister of Tourism, “the need to remove illegal settlers was realized...as far back as 1988” (Namugala 2009:2). Her ministerial statement to parliament claimed all persons settled in the Sichifulo GMA were there “without the consent of the traditional leaders” and the leaders, themselves, had “approached the Government to assist in the removal of illegal settlers to alternative areas” (Namugala 2009:2-3). Of the 8,500 persons evicted from Sichifulo GMA, the majority had been living in 67 villages in Nyawa Chieftaincy; others were chased from three villages in Siachitema Chieftaincy and from two villages in a disputed territory between Chief Nyawa and Chief Moomba.

¹¹ The first eviction notice was issued in September, 2007. After farmers complained that the proposed eviction would disrupt their upcoming harvest, a second notice was sent out. This notice was sympathetic to farmers’ concerns and gave them until June 30, 2008 to vacate the area. The notice was signed by the director general of the Zambian Wildlife Authority (ZAWA), Chief Nyawa, Chief Siachitema, and patrons from the Nyawa and Siachitema Community Resource Boards (CRBs).

¹² Throughout Kulaale, wildlife police officers are colloquially referred to as “gamescouts”.

Caught in the clash of these two development models, Kulaale residents and Gwembe Tonga migrants in particular feel a renewed sense of insecurity—a sense that is reminiscent of that experienced during their forced removal from Kariba gorge. In both cases, the eviction of the Gwembe Tonga and the insecurity they experienced thereafter were conducted in the interest of “economic development.” This sense of insecurity is compounded by recent changes in the natural environment.

As Cliggett (n.d.) writes, Gwembe Tonga migrants living in Kulaale have experienced multiple cycles of “access and alienation” when it comes to state and private support for agricultural enterprise, infrastructural development, and the enforcement of conservation policy. Between the time settlers arrived in the early 1980s and the onset of liberalization in the early 1990s, Kulaale “went from being part of the Zambian state’s regulatory gaze, to being on its edge, far from government control and regulation” (Sitko 2010:79). With renewed interest in the “fortress” model of wildlife conservation and with the creation of the Lubono Settlement Area in northwest Kulaale, the scales are tilting back and the state has an increasingly visible and zealous presence in Kulaale.

What effect do these cycles of migration and state/development/agricultural “access and alienation” have on the Kulaale landscape? And what effect do the landscape changes have on rural livelihoods? Do men experience landscape changes in the same way as women? Do children interact with the natural environment and experience environmental change in the same way as adults? How does the state presence/absence in Kulaale shape residents’ perceptions of the local environment? These are the questions I set out to answer in the researching and writing of this dissertation (see Table 1.1).

TABLE 1.1: Research Questions and Themes Guiding this Dissertation		
Research Theme	Research Question	Find Discussion in
<p>Frontier Development</p> <p>Conservation Policy</p> <p>Environmental Change</p>	<p>1. What social forces in Kulaale inform Gwembe Tonga men’s and women’s interactions with the natural environment?</p> <p>In what ways do men and women differentially experience environmental change?</p> <p>How do these social forces and environmental experiences contribute to Gwembe Tonga men’s and women’s physical and economic vulnerability?</p>	Chapter 3
<p>Frontier Development</p> <p>Environmental Change</p>	<p>2. How do Gwembe Tonga children in Kulaale interact with the natural environment?</p> <p>How does the gendered division of labor shape boys’ and girls’ different relationship(s) with the environment and differential experiences of environmental change?</p> <p>Which theory is better suited to describe the lives of Kulaale’s children—theories of agency, or theories of vulnerability?</p>	Chapter 4
<p>Frontier Development</p> <p>Environmental Change</p>	<p>3. Are there other variables apart from gender and age that contribute to women’s, men’s, girls’, and boys’ socially-differentiated experiences of environmental change?</p> <p>What are some of the critiques that have been launched at Geographic Information Science (GISc)?</p> <p>What are the counter-critiques? And what does my investigation of environmental change in Kulaale add to these counter-critiques?</p>	Chapter 5
<p>Frontier Development</p> <p>Conservation Policy</p>	<p>4. How have conservation policies shaped human-environment interactions in Kulaale?</p> <p>How do these policies intersect with gendered and aged dimensions of human-environment interaction in Kulaale?</p> <p>How do we reconcile these interactions with current anthropological and political ecological theories of the state?</p>	Chapter 6

Deforestation rates in Zambia rank among the highest in the world (FAO 2006). This statistic alone compels a need for anthropological inquiry into local experiences of ecological change. As concerns with global environmental change take greater precedence in the planning and implementation of international conservation and development policies, it is also increasingly imperative that social scientists consider the differentiated effects of environmental change on human populations, especially in settings where environmental resources are a mainstay of human subsistence (Hunter 2006). The GTRP remains one of the longest continuous anthropological studies of a society anywhere in the world, and it is arguably the longest-running assessment of a dam's social impact. This dissertation adds to the canon of GTRP research and the growing collection of research from Kulaale, in particular, as it seeks to understand the age and gender dimensions of development, conservation, and environmental change.

Organization of this Dissertation

This dissertation is organized into eight chapters, including the introduction. Chapters One, Two, and Three introduce the topic, the theoretical framework and methodology, and the research setting, respectively. Chapters Four, Five, Six, and Seven take a deeper look at the relationship of gender, age, and the state to Kulaale's changing natural environment. Each chapter contains its own set of ethnographic data which I unravel using the theoretical frameworks outlined in Chapter Two.

I argue throughout this dissertation that there are certain *links*—between access and alienation; between gendered labor, social organization, religious life, and human-environment interactions; between agency and vulnerability; between household composition and environmental change; between the state and its margins—that are underrepresented in the literature and which this study from Kulaale helps to elucidate. Chapters Three through Nine adhere to this theme of “missing links” in addition to pursuing the general research themes of development, conservation, and environmental change.

In the next chapter, I provide an overview of the multiple overlapping theoretical frameworks which inform this dissertation emerges. I define several key terms and

introduce the innovative blend of qualitative and temporally and spatially explicit research methods I used to investigate the gender and age dimensions of development, conservation, and environmental change in Kulaale. In the process, I offer a glimpse into the types of data and ethnographic results this methodology is capable of producing.

In Chapter Three, I describe the research setting, including the two political ecological research zones, and review the themes of frontier development, conservation policy, and environmental change that condition Gwembe Tonga migrants' perceptions of and interactions with the Kulaale landscape.

The next three chapters (Chapters Four, Five, and Six) focus on the lived, material realities of Gwembe Tonga homesteads in Kulaale. I describe the subsistence labor of rural families, concentrating specifically on the extractive use of non-cultivated bush resources. Where Chapter Four concentrates on the extractive labor of men and women, Chapter Five examines the labor of boys and girls, and Chapter Six discusses men's, women's, boys', and girls' extractive labor as it is influenced by the domestic life-cycles of Kulaale homesteads.

In Chapter Four, I describe what I perceive to be the missing *links* in current theorizing about men's and women's gendered experiences of environmental change. Specifically, I focus on gendered labor, social organization, and religious life as they play into Gwembe Tonga men's and women's physical and economic vulnerability in Kulaale. I argue that integrating African feminisms into the framework of feminist political ecology helps combat essentialist depictions of rural life and make visible the ways in which men and women cooperate in daily life.

In Chapter Five, I focus exclusively on children. I disrupt the theoretical dichotomy between agency and vulnerability using snapshots of young peoples' experiences at school, at home, and in the bush. I focus especially on labor and investigate the ways in which gender- and age- based divisions of labor prompt boys and girls to differently interact with the natural environment and differentially experience ongoing declines in bush resources. I argue that, while recent literatures have come a long way in rebuking the dichotomous (agency versus vulnerability) theories of African children, they have not

sufficiently considered the ways in which agency and vulnerability are inextricably *linked* and mutually constructed in boys' and girls' everyday lives.

In Chapter Six, I review the history of space in cultural anthropology and note the critiques of temporally and spatially explicit methods within the social sciences. I explain the unique qualities of my dissertation, offering counter-critiques in the process. In rounding out my engagement with the research theme of environmental change, I propose other social variables—in addition to age and gender—which might prompt the different experiences of environmental change that I observed for women, men, girls, and boys in the previous two chapters. In so doing, I argue for the continued *linking* of ethnographic and geospatial methods in anthropological research.

In Chapter Seven, I shift my focus from changes in the natural environment to changes in Zambia's tourism and wildlife conservation initiatives. I bring narrative data chronicling local experiences of conservation policy into conversation with key literatures in political ecology in order to understand the role of the state in shaping men's, women's, adults' and children's gendered experiences of the Kulaale environment, its wildlife, and its wildlife police officers. I argue that no single political ecology of the state is perfectly suited to describe the experiences of Kulaale residents. A comparative approach—one which considers the many metaphors through which the state is imagined—is perhaps more useful for understanding the social practices through which state power is enacted, experienced, and made real for Kulaale residents. Key among these metaphors is the *linkage* between authority and civil society and between the state and its margins.

In Chapter Eight, I summarize my findings and situate this dissertation within the larger body of GTRP literature, which emphasizes the persistent vulnerability and long-term resilience of Zambia's Gwembe Tonga people.

CHAPTER TWO: OVERVIEW OF THEORY, METHODS, AND KEY TERMS

This chapter begins with a review of several key terms that feature prominently in this dissertation. Also in this chapter, I briefly outline the theories, methods, and analyses that shape my ethnographic approach and inform my interpretation of frontier development, conservation policy, and environmental change in Kulaale. I also offer a preview of the research findings to set the stage for the chapters that follow.

Key Terms

Frontier

Igor Kopytoff (1987:9) defines the frontier as “a geographical area with sociological characteristics.” It is “an area which, on the one hand, is beyond the control of regional metropolises and, on the other, is weakly enough controlled by its present occupants that outsiders from the metropolises can move into it with the realistic hope of achieving an autonomous political existence” (Kopytoff 1999:33). Frontiers are characterized by change. They are “transition zones” (Walsh et al. 2008:870), places of “not yet—not yet mapped [and] not yet regulated” (Tsing 2005:28). Transitions in human settlement patterns and the conversion of forests and grasslands to productive uses—defining features of frontier landscapes—represent “one of the more dramatic examples of the connection between population and the environment” (Entwisle et al. 2008:879). As an agricultural frontier, Kulaale embodies these characteristics, and is an ideal site for exploring the human dimensions of land-use/land-cover (LULC) change.

Household versus Homestead

Contemporary definitions of the household agree on its fluidity. There have been attempts to settle on a general definition of the household based on a conglomeration of domestic activities deemed to be cross-culturally applicable (production, distribution transmission, reproduction, and coresidence), but scholars like Wilk and Netting (1984) have thwarted these attempts, referencing households in cultures across the globe that do not, for instance, pool resources in any uniform way, conform to similar matrimonial norms that would produce analogous household forms, or even practice coresidence at

all. “The lack of systemic integrity,” according to Wilk (1997:38), “does not mean that households cannot be studied or compared as units, it requires only that they be treated as open systems, not isolated ones.” Treating the household as such, furthermore, keeps the researcher true to ethnographic reality. When we study households as open systems, we are led away from theorizing neat, orderly causal sequences and toward understanding the complex interrelationships that influence change in various dimensions of the household (Wilk 1997).

According to Chant (2002), much of the recent poverty and development work continues to privilege a male-headed nuclear model of familial organization in spite of the increasing recognition among social scientist of intra- and inter-household diversity. Chant urges policymakers not to uncritically link poverty with female-headed householdship. “When female-headed households are universally portrayed as poor,” she writes, “this tends to divert attention from the fact that women in male-headed households (who are in fact the majority) can also be poor (and in greater number)” (2002:21). Furthermore, it is inappropriate to assume that all households possess a similar cache of adaptive strategies and risk-management decisions (Doss 1996). Taking a household-level approach that also prioritizes individual actors shows how risks are shared differentially among household members who behave strategically toward one another, something development planners often overlook.

The recognition that different members of the household enjoy differential access to resources, power, and prestige—and the understanding that everywhere households are variable in their form and function—bears significant implications for development policy. Wherever interventions are predicted to increase the wealth of the household unit, individuals within that unit may remain impoverished; where entire communities are predicted to benefit from development, single households may be left worse off (Homewood 2005). A household livelihood approach is instrumental, not only for its attention to the diversity and inequalities that are often overlooked or simplified in economic language, but also for its focus on risk, insecurity, vulnerability, and individual agency in shaping and negotiating various patterns of access and entitlement (Cliggett 2005a). Focusing on the welfare of individuals within households, moreover, may act as a

corrective to ‘one-size-fits-all’ development policies by highlighting how incongruent lived realities result from incongruent social and ecological landscapes (Doss 1996; Crooks, Cliggett, and Cole 2007).

In this dissertation, I use the term *homestead* to refer to a single family compound. This differs from a household or “family,” which among the polygynous and matrilineal Gwembe Tonga, denotes the house and hearth of one woman living with her children in the larger homestead compound. A homestead, by contrast, typically consists of a senior man and his wives (usually between one and three) and their children. Married sons may also reside in the homestead compound, along with their wives and children and other matrilineal relatives of the senior man (his mother, nieces, nephews, grandchildren, and a divorced or widowed aunt). These homesteads may vary in size from those that house a single family in one or two small structures to those that contain “some twenty or more dwellings housing nine men with their wives and other dependents,” an organization that resembles a small village in itself (Colson 1960:94).

The homesteads I refer to in this dissertation typically encompass multiple autonomous households where each wife (assuming the husband is polygynous) is responsible for her own children, her own granary, and for independent cultivation of fields and gardens. Homesteads often include common structures like cattle kraals or pens for sheep and goats that represent a source of cooperation among the homestead members, especially men and boys. Spatially, homesteads may shift every five years or so as structures become dilapidated or as family dynamics or environmental conditions demand a new space (Colson 1960).

Like the household, the homestead is not a fixed corporate unit with boundaries and motivations that correspond to a single person, but a processual collective of many individuals—with varying goals, interests, and access to resources—embedded in a wider network of social, political, and economic relations (Hammel 1972; Netting et al. 1984a; Weismantel 1989; Wilk 1997). Its members constitute an arrangement of productive, reproductive, and consumptive roles and tasks that “respond sensitively to changes in the environment” (Netting et al. 1994b: xix-xx). The homestead—conceptualized not as a

thing per se, but as a series of activities and relationships (Wilk 1989)—represents a fruitful site for investigating the social dimensions of environmental change.

Katengo

The term *katengo* refers to a group of multiple villages, of which there are four in the Kulaale fieldsite. Each village comprises dispersed (or, in the case of Cikolo *katengo*, nucleated) settlements of between 10 and 40 extended family homesteads. Inzoka *katengo* contains 16 villages, Cikolo includes 19 villages, Musamu has 15 villages, and Banyama encompasses 13 villages.¹³ Each village has its own headman, who falls below the Senior Headman in each *katengo*'s administrative hierarchy. Literally translated, *katengo* means “court,” as in a Senior Headman's court. Each *katengo* has a single Senior Headman, who oversees the affairs and land distribution for the villages under his headmanship. Most commonly, the senior headmen are called upon to resolve disputes over land. On occasion, people become confused over land boundaries; as people clear land for fields, they sometimes cut down the trees which were carved with markings (*impaa*) to demarcate property lines. Also, as the Senior Headman of Inzoka explained, someone may intentionally or unintentionally clear sections of his neighbor's land when clearing his own [property]” (Interview notes, 8/6/12). In such cases, the Senior Headman will walk the boundaries-in-question with the *katengo* committee.

I witnessed one such dispute, and its resolution, in May, 2010. Two men were arguing over access to a riverside garden. The first man said the second should uproot the bananas he planted and go elsewhere so that the first could use the space to plant maize. A group of eleven men and four women—the majority of whom were members of the annually-elected *katengo* committee—gathered in the garden to hear a female relative of the second man, describe the process by which the land was handed down to her and her family.

¹³ As Frank and Unruh (2008:115) explain, Kulaale “has yet to be included in a formal census, and government intervention in the area is minimal. As such, there is little official recorded information on the area.”

When the woman finished giving her testimony, the group moved out of the garden to sit on a patch of grass a few meters away. There, Senior Headman Inzoka began to speak: “the law has been made by man to follow...” As he was speaking, I noticed many of those seated appeared to be less than engrossed by his address. One man, just as I was doing, plucked blades of grass out from the ground and toyed with them, peeling and folding them momentarily before tossing the scraps aside. Two other men whispered over the Headman’s edict, more interested to learn from me whether people in America carry maize on their head and whether Americans also collect their water from boreholes. In the end, the Senior Headman announced that the land under contention was for the whole Inzoka *katengo*. He pointed to a row of trees which marked a boundary running fifty meters from the stream. “The *katengo* had previously banned plowing within this zone to prevent further erosion,” he explained. “No one should be planting maize here in the rainy season. This land is reserved for gardens and grazing, and is not actually owned by anyone.” (Fieldnotes, May 13, 2010).

Childhood (and Youth)

Biologically, the term “child” refers to a pre-adolescent, a person between the life stages of birth and puberty. Culturally, a singular definition of child/childhood is much more difficult to pin down. Some anthropologists—especially those whose research interrogates biological and bio-cultural questions related to health and nutrition—have expressed a preference for the term “youth” when referring to adolescent and post-adolescent young people. Both the biological definition of childhood and the biocultural definition of youth differ markedly from the legal definition of child/childhood to which many social scientists—especially those working under the rubric of international development—adhere. According to Montgomery (2009:2), “[international] law defines childhood as the period between the ages of 0 and 18.” And this definition, she writes is “far too limiting” (ibid).

The popularity of the term “youth” appears to have grown among anthropologists in the wake of the “youth protests” associated with the Arab Spring. Still, the term “youth,” like the term “child,” remains blurred within social science and in the public imaginary.

As Deborah Durham (2011) eloquently commented in a virtual edition of Cultural Anthropology, “[n]umbers – that is, a fixed age range – simply naturalize assumptions about youth from the west, even as the ages at which people in America claim to be youth are shifting dramatically.” She goes on to ask:

How can we talk about the protests in Tahrir Square as a youth movement [when they simultaneously involve] the well-educated but underemployed and web-literate 35-year-old man unable to marry...the 23-year-old...struggling to support a young family as a policeman, and the 80-year-old women and others in [Tahrir] Square? We start...by examining the idea of youth and the sense of being youth, as something that is constituted out of relations to forms of power...

Durham and other contributors to the virtual edition on youth (Ewing 2006; Lukose 2005; Luvaas 2009; Shaw 2007; Weiss 2002) recognize youth as a category defined less by demographics and more by politics and social relations. Adding to scholars’ reluctance to assign an age range to definitions of youth is the fact that “‘youth’ has become an indefinitely extended category as the possibility of attaining adulthood recedes further and further away [in the contemporary economic climate]” (Shaw 2011). In *An Introduction to Childhood: Anthropological Perspectives on Children’s Lives*, Montgomery deliberately avoids any definition of childhood in order to emphasize the diversity and elasticity of the concept.

While I recognize that, as social categories, childhood and youth may extend into perpetuity (Montgomery 2009; Stafford 1995), I do use the terms in this dissertation to denote persons of a particular age. Wherever I use the term *child* in this dissertation in reference to a person from Kulaale, I am describing an unmarried person of dependent status—s/he lives under the guardianship of a parent, grandparent, or other adult custodian and has no children of her/his own. All of the children I refer to in this dissertation fall between the ages of 0 and 18 years.¹⁴ Wherever I use the term youth to describe an individual from Kulaale, I am referring to a person for whom the *legal* definition of childhood may no longer apply, but whose place in the kinship structure and

¹⁴ The youngest child referenced in this dissertation is the baby brought to the Moota family homestead the night I arrived in Cikolo; the oldest is one of five children, an eighteen year-old who participated in journaling activities.

whose relationship to power makes their status as an adult tenuous. There are some scholars (e.g., Montgomery 2009, Abebe 2008) whose use of the terms child and childhood appear to subsume the category of youth. Thus, wherever I use the terms childhood and youth in referencing the works of other scholars, there is some unavoidable overlap.

Temporally and Spatially Explicit Research Methods

A growing body of work exists which employs spatially and temporally explicit methods—including remote sensing, global positioning systems (GPS), and geographic information systems (GIS), as well as cellular automata and agent-based models—to investigate “the nature, magnitude and extent of the relationships” between populations and resource availability (Butt 2010:521). In this dissertation, I employ existing analyses of remotely sensed imagery as well as data that I collected from handheld GPS units, and part of my analysis involves GIS software. It is appropriate, then, that I should briefly define these terms before moving into a description of the theoretical framework.

Remote Sensing

Remote sensing is the gathering of data through high-resolution sensors mounted on aircrafts or satellites. The most common examples of remotely-sensed information include aerial photographs and satellite imagery. Aerial photographs, images taken from airborne cameras, can be subject to mathematical analyses (photogrammetry) that produce lateral as well as topographic measurements, allowing for the pinpointing of objects’ horizontal and vertical locations. A primary source of geographic data, “[aerial] photographs and photogrammetry are routinely used in urban planning and management, construction, engineering, agriculture, forestry, wildlife management, and other mapping applications” (Bolstead 2001: 152).

Standard digital cameras record only those elements (wavelengths) of the electromagnetic spectrum that are visible to the human eye: blue, green, and red brightness values. Scanners mounted to satellites, however, are able to “detect well beyond the visible and near-infrared portions of the spectrum to which aerial photographs

are limited” (Bolstead 2001: 177). For instance, the multispectral scanner systems (MSS) attached to the first five Landsat satellites recorded data (radiation reflected from Earth’s surface) in four spectral bands: green, red, and two infrared. The thematic mapper (TM) and enhanced thematic mapper (ETM+) scanners sent up with the last two Landsats detect reflected radiation in seven spectral bands, making remote sensing especially useful for identifying and assessing landcover types (the radiometric characteristics of the ETM+ and TM sensors are included in Appendix D).

Remote sensing is used by geologists, archaeologists, meteorologists, climatologists, civil engineers as well as geographers and anthropologists to study changes in land use and land cover (including urbanization, forest clearing, and agricultural expansion), as well as the availability of particular resources (e.g. water), and the composition of particular (e.g. coastal) ecosystems (Cracknell and Hayes 1991). Remote sensing is also valuable for monitoring the extent and intensity of natural disasters, including floods, fires, and hurricanes (Bolstead 2001).

Global Positioning System (GPS)

GPS is “a satellite based technology that gives precise positional information” (Bolstead 2001: 127). A constellation of satellites orbiting Earth continuously broadcast radio signals that are then received, recorded, and processed into three dimensional coordinates by GPS receivers. The receivers, which may appear as small handheld or vehicle-mounted devices, trilaterate their own position by communicating with four or more satellites at a time and calculating the distance to each. These small units “permit precise location of any point on the planet to within a few meters” (Moran 2010:103). GPS, as McCusker and Weiner write, is “ideal for identifying and mapping community spatial stories. Remote sensing, meanwhile “can provide vivid visualizations of socially produced landscapes” (2003:204) and offer “additional stories about changes in the landscape—stories not told by interviewees, or stories that supplement the account of interviewees” (Jiang 2003:215).

Geographic Information System (GIS)

A geographic information system (GIS) is a sophisticated database management tool, or “toolkit,” that aids in the collection, visualization, analysis, and presentation of spatially-referenced, or geospatial, data. Spatial variables, including aerial photographs, satellite images, and GPS waypoints may all be layered in a GIS using aggregated grids of cells (raster) or combinations of lines, points, and polygons (vectors). Each layer offers only a partial perspective. But, together, the layered localized perspectives offer a depiction of landscape that is fuller in the depth and breadth of information. Thus, GIS “offers ecological anthropologists the chance to expand the scope of investigation from one or two villages to entire regions” (Moran and Brondizio 2001:67). Also, it provides a valuable platform through which scientists may integrate social content, including informants’ narrative data, environmental histories, and land use practices, with spatial statistics (ibid). According to Duane Marble, GIS “is precisely the tool those with spatial data need to define new problems, open new research horizons, and integrate...an informed spatial perspective” (Alenderfer 1996:4). GIS is also a useful vehicle for expressing and sharing information between researchers of varying disciplines, decision-makers, and stakeholders.

Theoretical Overview

This dissertation straddles the frameworks of ecological anthropology, critical feminist theory, the new childhood studies, and the anthropology of the state. I treat these four bodies of literature separately here for analytical purposes. In reality, however, they overlap and inform each other. Though I review the foundations of these bodies of work, describing specific sub-foci in the paragraphs below, I will elaborate on the theories, challenge them, and attempt to reshape them in the chapters where they appear.

Ecological Anthropology

Livelihoods, Vulnerability, and Resilience

The study of livelihood, or how individuals make a living, is foundational to an understanding of human-environment relationships. Also foundational to this

understanding is recognition of the multi-scalar political and economic variables that facilitate or constrain individuals' ability to provide for themselves and their families. The domestic unit, be it a household or a homestead, is a primary site for the expression of age and sex roles and a host to various arrangements of productive, reproductive, and consumptive roles and tasks that "respond sensitively to changes in the environment" (Netting et al. 1984b). As such, it is a fruitful unit for analyzing the dynamic relationship between politics, economy, and ecology.

G RTP researchers investigating the articulations among social organization, rural subsistence, and economic change have posed pivotal questions and points of pause for would-be developers. For Cliggett (2005) and Crooks, Cliggett and Cole (2007), a livelihoods approach was instrumental, not only for its ability to uncover the diversity and inequalities that are often overlooked or simplified in economic language but also for its focus on risk, insecurity, vulnerability, and most especially individual agency in shaping and negotiating Gwembe Tonga patterns of access and entitlement.

In *Grains from Grass*, Cliggett (2005:49, 50) explores the concept of vulnerability as a strategy for countering the "broad-sweeping, generalized visions of poverty, the third world, and disaster-prone regions" to examine instead "the processes that make some groups suffer more than others." In referring to the increased vulnerability women experienced following the relocation, Cliggett (2005) mentions that, where women once enjoyed rights to the alluvial gardens along the riverside, the imbalance in women's and men's access to land increased following relocation, as "only men had rights to the large cleared fields (because they had done the work of clearing)..." (Cliggett 2005: 65). Yet, where much literature on African women often focuses on their needs and their victimhood, the livelihood and vulnerability framework employed by Cliggett allows the multidimensional nature of poverty and a focus on women's agency and capability—their active role in securing their own livelihood—to emerge via in-depth investigations of daily life and people's strategies for "getting by" (2005:158). For instance, Cliggett shows how elderly women actually take an active role in securing their own livelihood by "[investing] their income in 'mothering'" as a way to secure the support of their sons once they (the women) reach old age (2005:96).

Crooks, Cliggett and Cole (2007) take a similar approach, integrating a livelihoods framework with lenses of adaptability, political economy, and political ecology to explore how Tonga migrants engage their environments—which are shaped (like their behavior towards it) by political economic and political ecological forces—in order to meet a certain ends. In this case, Crooks, Cliggett and Cole investigate the successfulness of peoples’ strategic efforts to secure their livelihood as measured by child growth. Focusing in this manner on the different ways in which homesteads negotiate an environment characterized by change and uncertainty exposes intra-community diversity and the incongruent lived realities (specifically, lived biologies) that emerge as “a consequence of differential experiences vis-à-vis ecological and social landscapes” (Crooks, Cliggett, and Cole 2007:670).

The livelihoods approach, according to Kaag (2004:53), provides “a valuable counterweight against approaches to poverty...that tend to portray people as mere victims of structural constraints” in that it stresses the diversity of poverty situations, highlights the multidimensional nature of vulnerability, and concentrates on actors’ agency—their capability to negotiate the structural constraints and power relations that shape their access to social and material resources and inform their decision-making.¹⁵

Feminist economists and anthropologists have emphasized not only the differential allocation of wages, resources, and decision-making capabilities among family members but also the tendency for parochial formulations of economic systems to mask the diversity and the reality of human political-economic relations. The contribution of these scholars underscored the tendency for women’s economic activities to be marginalized or even invisibilized under economic discourses that privilege male labor or present capitalism as diametrically opposed to and subsuming of all other economic forms. While

¹⁵ There are several risks to bear in mind when employing a livelihoods/vulnerability approach. Key among them is (1) the risk that, in focusing on individuals negotiation strategies we deemphasize the structural conditions that constrain individuals’ livelihood decisions (2) the risk that, in focusing on individual agency without sufficiently attending to micro-level differences between groups or macro-level constraints, we present “an image of poverty—‘they are poor, but see how nicely they are doing’—that is both naïve and dangerous,” and (3) the risk that, in focusing on agency, we privilege the stories of those who have successfully navigated obstacles and render invisible the stories of those who have “died trying or had to relocate to other areas” (Kaag 2004:53).

the pivotal role of women in contributing to agricultural production, domestic reproduction, and familial economies has been well demonstrated by feminist social scientists (Beneria 1982; Dwyer and Bruce 1988; Guyer 1980, 1991), the role of women in provisioning environmental resources for homestead/household use is less understood.

Land-Use/Land-Cover (LULC) Change

The ways in which people use the environment and the ways in which environments change over time are central to analyses of livelihood and ecological anthropology, in general. Despite their common partnering in the acronym LULC, land-use and land-cover are two distinct phenomena that ought not to be conflated. Land-use refers, simply, to ways in which people *utilize* the land. Land-use denotes the functional aspect of land. Land-change, meanwhile, acknowledges the observed biophysical makeup of the earth's surface. It is helpful to think of land-use as a cause, and land-cover as an effect. While land-use can be determined through general ethnographic research methods—including interviews, surveys, and participant observation—land-cover can only be ascertained via remotely sensed images (aerial photographs and satellite imagery) or ground truthing (transect walks). Common land-use classes identified by the FAO include land under temporary crops, land under temporary meadows and pastures, land temporarily fallow, land under permanent crops, permanent meadows and pastures, forest and other wooded land, and land with aquaculture facilities. Common land-cover types include vegetation, bare rocks, bare soils, and water areas (Gong, Tsuji, and Marklund 2009).

Using temporally and spatially explicit methods to study LULC change in African environments ranging from Sahel to savannah and rangeland to woodland, numerous scholars have shown the received wisdoms of colonial administrators, conservation enthusiasts, and forest and park officials was incorrect in assuming large scale environmental degradation was occurring at the hands of native peoples (Anderson and Grove 1989; Bassett and Zueli 2000; Brockington and Homewood 1996; Collett 1989; Fairhead and Leach 1996, 2003; Homewood and Rogers 1994; Leach and Mearns 1996; Little 1994; Lindsay 1994; Moore and Vaughan 1994; Scoones 1996; West and Vasquez-Leon 2008). These authors explain that the dominant environmental viewpoint would

have world leaders and development planners believing that the continent of Africa is everywhere experiencing an ecological catastrophe of Biblical proportions. This viewpoint claims that, due to mismanagement on the part of African land users, the continent's landscape is experiencing widespread deforestation, desertification, and rapid loss of soil fertility. As an unfortunate cornerstone of much international environmental policy, these narratives portray a homogenous African landscape suffering at the hands of a homogenous and historically unchanging African people. As Grove (1987), Moore and Vaughan (1994) Scoones (1996), Fairhead and Leach (1996), Brockington and Homewood (1996) and a slew of others demonstrate, in many cases this prevailing environmental orthodoxy was inherited, or *received*, from colonial scientists and administrators who had little evidence to support their hypotheses about African environments (Leach and Mearns 1996). Nevertheless, the received wisdom that formed the basis of colonial wildlife, forestry, and agricultural interventions in Africa has remained a mainstay of many countries' post-colonial institutions (Leach and Mearns 1996; Gibson 1999).

The World Bank, for instance, as part of its mandated structural adjustment for countries receiving financial assistance, requires the development of National Environmental Action Plans (NEAPs) which, "in assembly-line fashion" adhere to a wholly inadequate single blueprint for promoting environmental sustainability (Bassett and Zueli 2000:67). Commenting on the conflicted relationship between conservation and pastoralism in East Africa, Homewood and Rogers (1994) lament that case studies of tropical grazing land ecosystems too often take destructive practices on the part of pastoral populations, as opposed to a cooperative existence with wildlife, as a given. Indeed, in a 655-page report composed by UNESCO, UNEP, and FAO on the functioning, evolution, and human use patterns in regional case studies of tropical grazing land ecosystems, there is neither a clear description of the process of overgrazing nor any evidence of its actual occurrence (*ibid*). Write the authors, "although overstocking, overgrazing and desertification may be occurring, too often these processes are simply invoked without evidence to back up their existence; they have become self-reinforcing

concepts, with counter examples not frequently suppressed for political reasons” (Homewood and Rogers 1994:111).

However, in Kulaale—where analyses of satellite imagery actually corroborate local narratives of environmental degradation—the project is “not to choose between degradation myths, but to discover measurable realities” (Sharpe 2005:158). If we are to address the consequences of environmental change, we must first understand the ways in which change bears different consequences according to such social axes as race, class, religion, nationality, age, and gender. Temporally and spatially explicit research methods are well suited for investigating the causes and effects of environmental change.

Within studies of human-environment interactions, researchers are increasingly utilizing temporally and spatially explicit methods to understand the environmental effects of human behaviors (Goodchild and Janelle 2004; Lambin et al. 2001; Moran and Ostrom 2005; Walsh et al. 2003). For instance, scholars have applied remote sensing, GPS, GIS, cellular automata and/or agent-based modeling to investigate the causes and effects of wildfires (Dennis et al. 2005; Case et al. 2000), to assess the causes of tropical deforestation (Sussman, Green, and Sussman 1996), to explore the effects of land distribution and crop allocation patterns on forest ecosystems (Stonich 1996), to understand the effect of household behaviors and demographic structure on landscapes (Boucek and Moran 2004; Rindfuss et al. 2003; Moran, Siqueira, and Brondizio 2003; West 2009, 2010) to study communities’ adaptation to climate change (Finan and Nelson 2009), to map disparities in income, quality of life, human development and gender equality (Câmara et al. 2004), and to shape development policies (Bradshaw and Muller 2004). However, little work has been carried out which investigates the converse side of the human-environment relationship: the impact of environmental change on humans.¹⁶

Studies that use spatially and temporally explicit methods to explore the social effects of environmental change focus on environmental cognitions, indigenous

¹⁶ My personal communication with prominent scholars in anthropology and geography who apply geospatial methods to the investigation of environmental issues—these scholars include Brent McCusker (email to author, November 15, 2011), Patrick Meyfroidt (November 19, 2011), Emilio Moran (email to author, November 15, 2011), and Catherine Tucker (email to author, November 20, 2011)—confirms this statement.

ecological knowledge, and efforts to document ownership, evaluate biodiversity, and combat the overexploitation of ecosystems (Meyfroidt 2012, 2013; Merz, et al. 2009; Lauer and Aswani 2010; Herrmann 2006; Fleskins and Jorritsma 2010; Nietchmann 1995). But for a very few exceptions,¹⁷ there is little published research which investigates the socially-variable (e.g. gendered, aged, classed, raced) nature of human-environment interactions in temporally and spatially explicit terms.

Feminist Theory

The Anthropology of Women

Women have always been present in ethnographic writing. But, it was not until scholars began critically evaluating their own positionality, and questioning the reliability, applicability, and accessibility of their work, that the ways in which women are represented in ethnographic work took a central place in anthropology (Moore 1988). Where anthropology was once primarily concerned with describing and comparing cultural groups, it was, rather interestingly, the wives of anthropologists working during the mid-20th century who helped inspire enhanced ethnographic attention to individuals, women in particular, and their families. In addition to emphasizing heterogeneity within cultural groups and focusing on the ways in which culture is lived and maintained, not homogenously and harmoniously, but through conflict, contradiction, and compromise, examples¹⁸ from this anthropological epoch are also less assertive of the author's

¹⁷ Two works in particular stand out as examples in which geospatial techniques helped to reveal instances where humans' experiences of and interactions with the surrounding environment are socially variable. Combining satellite with local level survey data, Galvin et al (2001) plot the differential experiences of regional draught and El Niño rains on Maasai families living at mid- versus high-elevation. Brown (2003) blends field based surveys with GIS in order to examine spatial differences in environmental workloads among men and women in a Nepalese watershed, noting how these workloads are affected by road access. Both examples are laudable for their integration of survey and spatial data. Indeed, these two works are the closest I could find to my own research methodology. But, where one focuses on environmental change with no reference to variations (gendered, or otherwise) occurring *within* rather than *between* populations, the other is missing the element of time/change that is crucial for understanding how existing differences in environmental workload might be exacerbated by environmental degradation.

¹⁸ Prominent examples include Elizabeth Fernea's *Guests of the Sheik* (1965), Margerie Wolf's *The House of Lim* (1968), and Marjorie Shostak's *Nisa* (1981)

scientific authority, and are more open about the author's positionality than other works of the time (Abu-Lughod 2006; Lewin 2006).

The Anthropology of Gender

Broadening their focus from women to include other axes of differentiation and the webs of power which shape gendered, raced, classed, queer, and other identities, scholars contributing to the anthropology of gender drew attention to localized gendered divisions of labor and women's expansive contribution to micro-scale economies, (Boserup 1970; Guyer 1980, 1991; Beneria 1982; Agarwal 1994)—a theoretical focus that balanced the scales of male-centric ethnography. The anthropology of gender advanced the study of structural violence (Anglin 1998) and the differentiated impacts of globalization, economic restructuring (Molyneux 1985; Beneria 2003; Nye 2005; Gunewardena and Kingsolver 2007) and ecological change (Carney 1993; Schroeder 1993; Rocheleau, Thomas-Slayter, and Wangari 1996; Meinzen-Dick and Zwartveen 2003; Paulson 2005). These works are innovative for their attention to the relationship between micro-level asymmetries in political and economic power and macro-level processes of economic development and neoliberalism. Also, these studies involve a critical evaluation of the concept of 'women.' Rather than focusing on women's cross-cultural experiences of patriarchy and domination, these studies concentrate instead on understanding the social construction of these categories and their maintenance in everyday practice. In other words, they do not take categories like women and men as the starting point.

Feminist Geography

Feminist geographers have recently shifted their attention from the masculinist undercurrents of cartography, colonization, and scientific practice, to develop alternative mapping practices. These practices, called by *feminist visualizations* by some (Kwan 2002), employ diverse research methods, awareness of power's multiple (e.g. gender, class, race, heterosexual) dimensions, and a critical reflexivity in order to destabilize conventional power hierarchies of masculinist GIS. In so doing, they "transform the

relationship between researched object and knowing subject” (Pavlovskaya and St. Martin 2007: 592) and carve a home for GIS within feminist social science.

Breaking down the false dichotomization of (qualitative) feminist social science and (quantitative) geospatial research, these scholars integrate into their research a critical marriage of GIS and feminist theory in order to explore such topics as gender disparities in access and control over land and resources (Edmonds, Thomas-Slayter, and Rocheleau 1995) the lived experiences of Muslim women in post-9/11 America (Kwan and Ding 2008), the racialization of urban spaces (Kwan 2002), and the effects of economic transition on class and gender relations (Pavlovskaya 2002). In another example, Bosak and Schroeder (2005) combine GIS with interviews and archival analysis in order to identify female poverty “hot spots” in Nepal, Bolivia, and Malawi. These case studies show that GIS is not inimical to qualitative research. On the contrary, “GIS can be re-envisioned and used in feminist geography in ways that are congenial to feminist epistemologies and politics” (Kwan 2002: 645).

Feminist Political Ecology

I emphasize the application of a political ecological framework for investigating the differential impacts of decreasing forest cover because this body of theory, more than any other, allows scholars to study the “rough and tumble” of environmental politics (Watts 1990:129). On a global scale, scholars have used the lens of political ecology—a “[combination of] the concerns of ecology and a broadly defined political economy” (Blaikie and Brookfield 1987:17)—to uncover the impacts of economic and demographic changes on the availability and management of environmental resources (Nietschmann 1979; Hunter 2006; Kirkland, Hunter, and Twine 2007), critically evaluate the role of common property theories and ideas of carrying capacity in shaping environmental policy (McCay and Acheson 1987; Cliggett 2001; Neves-Graca 2004), deconstruct expert discourses on biodiversity and scientific certainty (Escobar 1998; Latour 1999), understand the tensions between development, conservation, and the social impacts of protected areas (Ferguson 1990; Hill 1995; Wolmer 2003; West et al. 2006), explore the dynamics of indigenous knowledges, indigenous identities, and the politics of

environmental conservation (Nazarea 1999; Sundberg 2004; Dove 2006; Holt 2005), critique the premises behind community-based natural resource management (Scott 1998; Agrawal and Gibson 2001; Leach, Mearns, and Scones 1999), and investigate the relationships between nature, capitalism, and intellectual property over life itself (O'Connor 1994; Escobar 1996; Wilk 2001; Hayden 2003; McAfee 2003; Robertson 2006).

Within the interdisciplinary subfield of political ecology, there is a burgeoning body of work focused on the production of gendered environmental knowledge (Fortmann 1996; Rocheleau, Ross, and Morobel 1996), gendered environmental rights and responsibilities (Mackenzie 2003; Paulson 2005; Schroeder 1997; Shields et al. 1996; Wangari, Thomas-Slayter, and Rocheleau 1996), and gendered identities, environmental politics, and grassroots activism (Mutersbaugh 1999; Agarwal 2001; Sundberg 2004). Blending social studies of gender with political ecology, feminist political ecologists have shed light on the ways in which the conservation, commodification, enclosure, degradation, and dispossession of nature may be experienced disproportionately according to multidimensional subjectivities “where gender is constituted through...social differences and axes of power such as race, sexuality, class and place, and practices of ‘development’ themselves” (Elmhirst 2011:130). Through this body of work, scholars have come to appreciate that human-environment interactions are variable, dynamic, and innately gendered. Still, gender, itself, has been under-theorized and remains largely absent in environmental social science and development research (Banerjee and Bell 2007). Where it is discussed in both literature and policy, ‘gender’ remains overly synonymous with ‘women’ (Chant 2002; Nightengale 2006).

Existing literature suggests that rural women—because they are traditionally responsible for gathering resources like water and firewood—are more vulnerable than any other age-gender group to declines in natural resources brought about by climate change, changing property rights, and environmental degradation (Agarwal 1992; Dankelman 2002; Denton 2002; Grigsby 2004; Mumba 1992; Shiva 1989; Virtanen 2003). With the mainstreaming of gender into development planning, iconic depictions of rural women hauling firewood over a barren landscape have become a linchpin of

international development discourse (Cornwall, Harrison, and Whitehead 2007; Leach 2007). These oversimplified images, which persist¹⁹ despite an absence of empirical evidence to support the stereotype (Harrison and Watson 2012), not only consign women to dehistoricized, homogenous positions, they also marginalize the experiences of other gendered subjects like men and children (Cornwall, Harrison, and Whitehead 2007).

The Anthropology of Childhood

Anthropological interest in aspects of childhood may be traced to the works of Margaret Mead (1928) and Ruth Benedict (1935). But—similar to transformations in the social category *woman*—childhood was rarely engaged with as a socially constructed category, its members not investigated in terms of their everyday experiences, their subjectivity and authenticity not called into question until the 1980s and 90s. Accordingly, and but for few exceptions, youth were discussed in earlier anthropological literatures as “partially cultural” beings awaiting their transition into adulthood and into full personhood (Caputo 1995:29). Regarded always as in the process of becoming adults, and defined often by what they are not (married, with children, with independent resources), youth appear either as vestiges of the past or sources of unrealized potential and future financial support (Caputo 1995; Burke 2000). It is fitting that anthropologists should be the ones to study youth cultures and the “present” of childhood. After all, as James (2007) writes, children are more or less ‘Others’ to adults, and anthropology’s history of researching, theorizing, and writing about ‘Others’ “offers invaluable lessons for the study of children.”

Children in contemporary anthropology, according to Scheper-Hughes and Sargent (1998:14) “appear rather like the cattle in Evans-Pritchard’s classic, *The Nuer*—as forming an essential backdrop to everyday life, but mute and unable to teach us anything significant about society and culture.” Recently, anthropologists have attempted to move away from conceptualizations of children as passive receptacles of grownup’s

¹⁹ Such imagery was iterated as recently as November, 2012 during the eighteenth Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP18) in Doha, Qatar (WEDO 2012).

socialization, education, and acculturation (Stephens 1995b; Caputo 1995; Hardman 1973; James 2007; Lancy 2008). The recognition that young people, like adults, may be agents of political-cultural interpretation and change has led scholars away from *universal* definitions of children and toward situational, historically contextualized studies of how young people around the world produce and negotiate various cultural forms (Bluebond-Langner and Korbin 2007; Bucholtz 2002). More and more, anthropologists are closely re-examining the socially constructed nature of childhood (James 2007), dismantling fixed categories where they find them.

Investigations into children's experiences as "street kids" (Bourgois 1998; Scheper-Hughes and Hoffman 1998), prostitutes (Montgomery 2001), refugees (Hinton 2000), and soldiers (West 2000; Rosen 2007) have exposed the structural conditions that confound children's survival as well as the creative ways in which youth, themselves construct, complicate, and capitalize on the social worlds of which they are a part (Field 1998; Katz 2004; Scheper-Hughes and Hoffman 1998). Nonetheless, a "conspicuous absence" of children's voices lingers in most ethnographic writing (Scheper-Hughes and Sargent 1998:13). Where children's voices are represented, they speak largely to discourses of abandonment (Panter-Brick and Smith 2000), violence (Burke 2000; Cheney 2005), security (Katz 2005), malnutrition (Scheper-Hughes 1992), subordination (Perry 2009; Waranov 2004; Willis 1977), alternative subcultures (Cohen and Short 1958; Hebdige 1979; Scheld 2007), uncertain futures (Jacquemin 2004), and the disappearing childhoods of late capitalist society (Chua 2011; Field 1998; Stephens 1995a). Such works are valuable for their depiction of youth as people with distinct social worlds worthy of investigation in their own right. Still, more attention must be paid to youth as agents involved in the maintenance of household economies and the construction and transmission of cultural and environmental knowledge (Bluebond-Langner and Korbin 2007).

Anthropological and Political Ecological Theories of the State

Anthropologies of the State

There is an ongoing debate among social scientists regarding the impacts of globalization²⁰ on the boundaries and authority of nation-states. Appadurai (1996) and Escobar (2001) suggest the shifting of power from national to global forms of governance under the North American Free Trade Agreement (NAFTA), the European Union (EU), and the World Trade Organization (WTO) blurs the boundaries between nation-states, diminishes the political power and visibility of nations and nationalism, and prompts a reorganization of place-based struggles over value, identity, and territory. As Brodtkin (2000:238) writes, “Capitalism now has a power perhaps greater than ever in its history to cross, even dissolve national boundaries” and, considering the transnational economic entities listed above, “it seems reasonable to argue that capitalism may well erode the nation-state.” But, according to Arextega (2003:393), the state “shows remarkable tenacity and adaptability.” Even when its organizing functions appear to be taken over by private enterprises, aid organizations, international NGOs, guerilla groups, or narcotraffickers, the state retains its power because the state, itself—as it is envisioned by Arextega (2003), Mitchell (1991) and Trouillot (2001)—has multiple effects, multiple boundaries, “and no institutional or geographical fixity” (Arextega 2003:398).

Ferguson describes the ways in which structural adjustment policies²¹ have dramatically shaped the bleak conditions facing African peoples. Moreover, Ferguson points out that democratization has been co-opted by international policy circles as a way to place the blame on African governments and, by implication, on African voters

²⁰ Inda and Rosaldo (2002:2,13) define globalization as “the intensification of global interconnectedness,” triggered by cultural imperialism, or “the imposition of Western (predominantly American) culture over the remainder of the globe.” I adhere to this definition, adding that broad-scale changes and transformations that reshape local conditions result, more specifically, from the impact of industrialization, the emergence of an interconnected global economy, and the spread of capital, labor (migration), and technology across national borders (Spradley and McCurdy 2011).

²¹ Structural Adjustment Programs were imposed on African states by international leaders during the 1980s and 1990s with the idea that devaluing currency, deregulating markets, reducing state bureaucracies, and privatizing state and parastatal industries would create the conditions for economic growth and promote a flood of new private capital investment.

themselves for the continent's structural problems. According to Ferguson, state verticality and encompassment are socially established and contested through a host of mundane [social and symbolic] processes" (2006:110). This processual understanding of state power transcends the binary between state and civil society showing how, for example, even those operations that are run out of government offices—when approached empirically through ethnographic research—"look suspiciously like civil society" (2006:99).

Accordingly, Ferguson suggests that states might be better viewed and understood as made up of bundles of social practices that are both materially and situationally 'local.' Describing Africa's participation in "the neoliberal world order," Ferguson states that the continent has not simply joined a world economy; it has engaged in "selectively and spatially encapsulated forms of global connection combined with widespread disconnection and exclusion" (2006:14). On the one hand, the central effect of the transnational governance manifested under globalization is not so much to increase or decrease the power of states as to reconfigure states' ability to spatialize their authority (which is increasingly vested in international corporations) and legitimize their claims to resources and extractive labor. Ferguson (1994) highlights the importance of understanding the *culture of development*, which often *misunderstands* the historically contingent and changing culture of the people it seeks to "develop." As a result, development programs often fall short of their general mission but succeed in expanding the reach of the neoliberal state across marginal areas.

Political Ecologies of the State

Political ecologists have provided a valuable lens from which to assess the role of the modern state in planning, implementing, and enforcing conservation policy. This lens has been crafted in part from poststructural discourse analyses that illustrate the social construction of nature (e.g. Escobar 1996). The argument here, to cite Bryant (2001:162) is "not that the biophysical environment ('nature') does not exist. It is, rather, that ideas about ecology and political economy *actively shape* human perceptions and uses of nature; thus their contested definition is a matter of great importance" (Bryant 2001:162).

Thus, something like capitalism cannot be understood apart from the “expert, scientific discourses that condition it” (Bryant 2001: 163).

From this foundation, political ecologists have cultivated powerful theories for understanding the role that discourse and socially-constructed ideals about nature play in the creation of national parks and game reserves—entities that Neumann (2004) asserts are part and parcel of the practice of modern statecraft. Political ecological investigations of the state have also uncovered the ways in which ideals about modernity—exercised through “scientific forestry”—get transplanted in the state attempts to make citizens more legible (Scott 1998). Agrawal’s (2005) investigation of community-based forestry in India’s Kumaon region—where forest management was decentralized to incorporate local people (headmen, elected representatives, guards, and villagers) into forest governance—uses the lens of political ecology to counter existing theories that depict the state as black-boxed entity always opposing and always domineering another black box called the locality. In this instance, it becomes clear that the state permeates local and macro scales. It is equally present in, and constituted by, its core as it is in and by its margins (Das and Poole 2004). In the case of Zambia, for example, where wildlife tourism constitutes a major strategy for economic development encouraged under structural adjustment programs, the state may be understood as multi-scalar and/or multi-national and the conservation regimes it espouses as inseparable from dominant discourses regarding wilderness, environmental degradation, legitimacy of land ownership, and strategies for ‘conserving nature’ (Neumann 2004).

Political ecological investigations of development and protected areas have yielded similar contributions, emphasizing, for instance, the ecological effects of economic development (Nietschmann 1979; Stonich 1993; Kirkland, Hunter, and Twine 2007), the relationship of extractive industries and capitalist exploitation to local identities and community relations (Grossman 1998; Watts 2004), the militaristic coercion, removal, and dispossession involved in the formation and regulation of protected areas (Peluso 1992; Neumann 1998; Wolmer 2003; West, Igoe, and Brockington 2006), and the value of ethnography and environmental history in illuminating power-laden struggles over the meaning of land/resources/sustainability and its implication for politics of land use and

land tenure (Moore 1996; Fairhead and Leach 1996; Leach and Mearns 1996; Hill 1995). Critiques of common property theory (McCay and Acheson 1987) and community-based natural resource management, or CBNRM (Hughes 2006; Leach, Mearns, and Scones 1999) have been monumental in helping to build this body of literature.

Overview of Research Methods

The research described in this dissertation was carried out over sixteen months between 2007 and 2011 in four village conglomerations (*katengos*)—Inzoka, Cikolo, Musamu, and Banyama—in Kulaale, an agricultural frontier in Kalomo District, Southern Province, Zambia. The research from which this dissertation is distilled combines analyses of remotely sensed imagery with quantitative/geospatial and qualitative research methods. The Office of Research Integrity (IRB Number 09-0971-F4S) at the University of Kentucky and the Humanities and Social Sciences Research Ethics Committee at the University of Zambia approved this research protocol. As both institutions waived written documentation of informed consent, I obtained verbal consent from participating adults and verbal assent from participating children as required. I also sought approval from the regional Chief and village headmen before commencing the study.

Research Sample, Research Assistants, Positionality, and Power in the Field

This study involves a combination of purposive and opportunistic samples amounting to 190 homesteads, individual Kulaale residents, and other persons (wildlife police officers, traditional leaders, government officials, journalists, aid workers) positioned to speak about development, conservation, and environmental change in the region. The majority of participants were purposively selected from an existing survey of 646 homesteads and by word-of-mouth.²²

²² Though it limits generalizations, this purposive sampling strategy yields high variation in homestead demographics while ensuring homestead demographic variables—including the age, sex, marital status, occupation, economic standing, and number of dependents of the homestead head—are more or less matched (Bernard 2006) across the two political ecological research zones where I conducted my research.

Historically, scientific claims to objective knowledge have been rooted in authority and perceived to lie with the disembodied scientist, the detached observer.

Anthropologists have long done away with objectivity in this sense and moved, instead, toward investigations of *situated knowledge* (Haraway 1991; Nazarea 1999). While seeking out the historical, political, economic, and ecological elements that underpin particular aspects of culture, critical anthropologists now also recognize all knowledge as situated, partial, and subjective. However, the fact that objectivity is unachievable and research methods imperfect does not mean researchers should throw ethnographic rigor out the window. They should no more throw up their hands and be content to engage in subjective research with ‘dirty’ research methods than “airline pilots, invoking the limitations of human fallibility, should blind their eyes” (Rosaldo 1993:69).

Today, anthropologists are learning to embrace non-objectivity in their writing and deploy it as a tool for emphasizing the entrenched-ness of power and elucidating phenomena that would otherwise be difficult to understand. As Pavlovskaya and St. Miller (2007:588-589) write, “[the] partiality of knowledge does not mean that it has no purpose and is useless. Rather, situated knowledges diversify and enrich our understanding of the world by engaging into dialogue with each other. For such dialogue to have meaning, however, the location of the knowing subject should be made clear” (Pavlovskaya and St. Martin 2007: 588-9).

The critiques of Third World feminists and other scholars who question the objectivity, neutrality, applicability, and value of anthropological methodologies sit deeply with me as I am, myself, a white Western woman studying the effects of environmental degradation on a rural population that, however diverse, may be equally regarded as part of a research tradition that is not immune to the political and economic inequalities that shape our world. The sheer fact that I can enter a fieldsite and leave whenever I choose attests to the unequal power relations and economic disparities that pervade our anthropological relations (Katz 1996). I still ruminate on the ways in which these critiques have influenced my research, and take the writings of critical theorists as a guide. Anthropology, like any field of study, has never been and can never wholly be politically-neutral. Attending to the elements of privilege and inequality that bias research

in its pre-, peri-, and post- stages awakens the anthropologist and his or her audience, whomever that may be, to a multitude of power relations that influence our topics of study, our conclusions, and our recommendations, should we make any.

Throughout the research period, I benefited from the assistance of five Kulaale residents who scheduled interviews, served as interpreters, and helped carry out survey and mapping exercises. These assistants, all men—Ethan Mootu, Nathaniel Siyanda, Vincent Benzuma, Deacon Sibuku, and Luther Kulemba—facilitated my entry into the Kulaale community. It is important to note the power differential between the five assistants and the persons they helped me to interview. Though they differ in age, wealth, and social influence, all five assistants have an education, work experience, and proficiency with the English language that sets them apart from much of the rest of the community. While conversation between the interpreters and interviewees was often cordial and joking—a result of literal and fictive kin relations—there were instances, especially with younger informants, in which the power dynamic between interviewer, interpreter, and interviewee was very apparent. This was especially the case when the interviewees were female. The power dynamic between parent and child also dictated the tone of semi-structured interviews, a point I return to in Chapter Five.

Because of Kulaale residents' long history and familiarity with the Gwembe Tonga Research Project (GTRP),²³ it was easy for me to establish rapport within the community—this is practically unheard of in anthropological research. Indeed, many would-be informants approached me before I even had the chance to introduce myself or my research program. In one such instance, a woman with whom I crossed paths walking behind the Cikolo marketplace stopped me to ask, rather forcefully, “When are you going to come see me? I’m from the Valley!” (Fieldnotes, 8/7/10). In another instance, an interviewee settled excitedly into her seat in the moments before I started her homestead’s interview, explaining her anticipation was due to the fact that “[she had] not [yet] been written in the book of Lisa” (Fieldnotes, 8/15/10). Upon learning that I was a

²³ It was in part because of the efforts of GTRP researchers that Kulaale residents were able to persuade the government to oversee the construction of several area boreholes, along with the school and clinic erected under the GTDP.

student there to speak with Gwembe Tonga migrants, residents often eluded to previous encounters with GTRP researchers, explaining their history with the project and inquiring after its affiliates. One such interviewee, a fifty-two year-old widow from the Gwembe Valley told me proudly about her namesake: Elizabeth Colson visited the widow's parents on the day she was born, and the parents named their child after their anthropologist- visitor.

The privileges afforded to me as an affiliate of the longitudinal GTRP cannot be understated. Not only was my introduction to Kulaale and ready acceptance within the research community directly tied to residents' familiarity and positive experiences with GTRP researchers; the financial support I accrued to sponsor my dissertation research is no doubt due to the attractive nature of longitudinal research and the history of sponsorship within the larger GTRP.

In addition to the GTRP, another variable which influenced my ability to establish rapport within the community was my outwardly ambiguous gender. While most Kulaale residents could easily discern that I was biologically female, my status as an educated foreigner—and one who wore men's clothes (pants)—placed me in the realm of the masculine. Because of this ambiguous and flexible gender assignment, I was able to take my meals with men *or* women.²⁴ I could alternate between participating in male tasks like herding and female tasks like cooking and washing dishes.

Description of Quantitative/Geospatial Research Methods

Units of Analysis

Political Ecological Research Zones

The first step in investigating the socially-differentiated effects of environmental change is to isolate declines in bush resources. Here, draw a study of agricultural expansion conducted by Unruh, Cliggett, and Hay (2005). These researchers identified an east-to-

²⁴ While men and women cooperate in many aspects of the domestic economy, they rarely take their meals together. In my experience, a man will eat with his adolescent sons and any male visitors. His wives, meanwhile, will eat with their older daughters and pre-teen children of both sexes along with any female visitors.

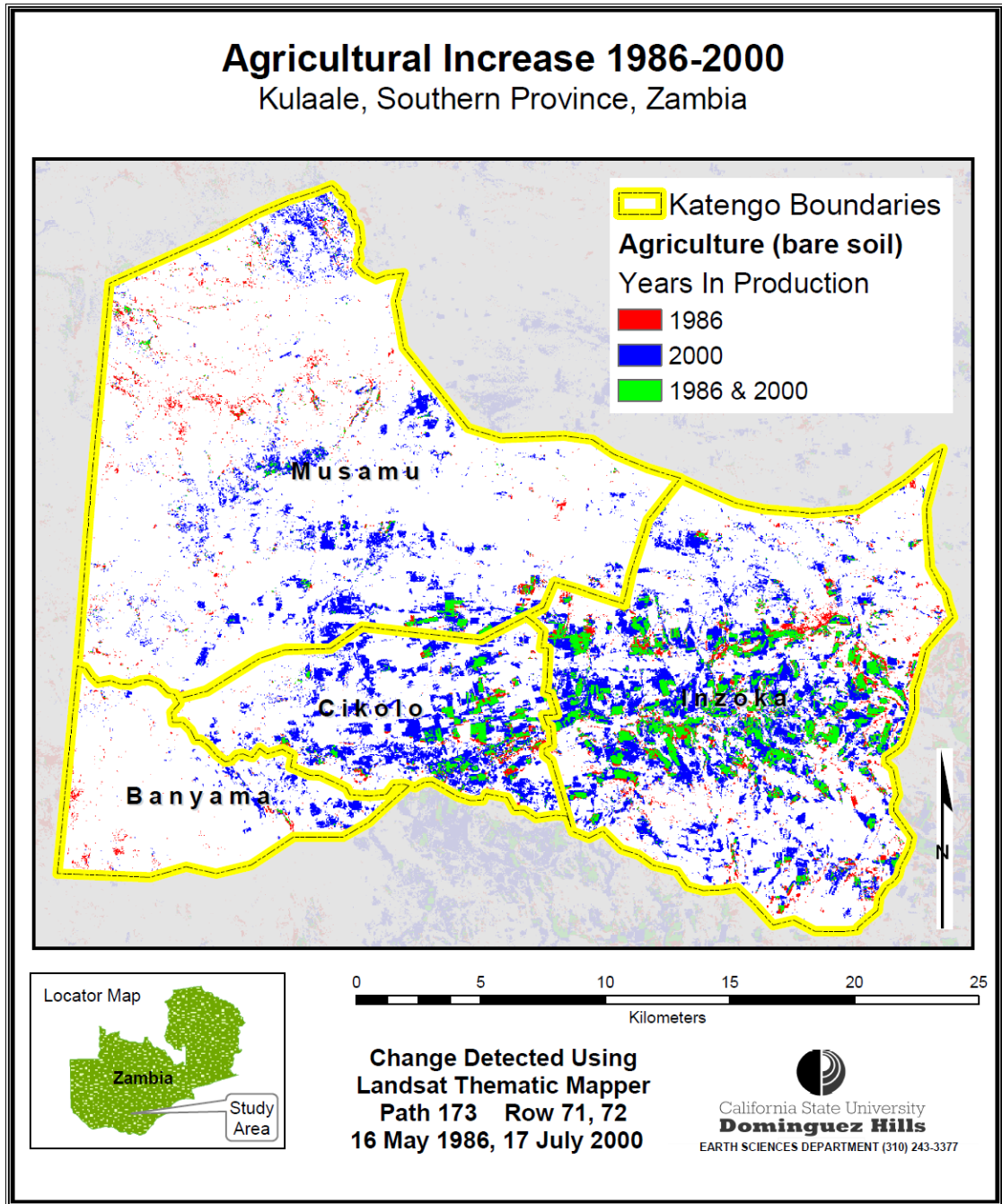
west pattern of agricultural expansion in Kulaale based on spectral signatures of bare soil visible in a time series of aerial photographs and Landsat enhanced Thematic Mapper (TM) satellite imagery (Path 173, Rows 71, 72). Panchromatic aerial photographs taken in 1970 indicate no visible agricultural fields existed in Kulaale prior to the “opening” of the GMA in 1979 and the subsequent peopling of the frontier (Cliggett et. al. 2007). In contrast, thematic layering of data from satellite images taken in May 1986 and July 2000 shows a wash of cleared fields, which appear as rectangular patches on the landscape. In 1986, the fields were concentrated primarily in the eastern portion of the research site. In 2000, these patches of cleared land had increased in density and expanded west toward the national park border (see Maps 3.1 and 3.2). These findings are verified with ground truthing (Frank and Unruh 2008), substantiated in the literature (Cliggett et al. 2007; Guyer et al 2007), and confirmed in nearly 100 interviews I conducted between 2007 and 2011.

The east-to-west pattern of agricultural expansion coincides neatly with boundaries demarcating the four village conglomerations (*katengos*) which comprise the research site, two in the east (Inzoka and Cikolo) and two in the west (Musamu and Banyama). The two easterly *katengos*, (Zone 1) cover a combined area of approximately 300 km², of which over 25 percent was cleared for agriculture between 1980 and 2000. The two westerly *katengos* (Zone 2) cover a total area of approximately 350 km², less than 10 percent of which was cleared for production between 1980 and 2000. For the purpose of this study, I consider Zone 1, which has seen more than a quarter of its landscape converted to agricultural fields, to be deforested. Zone 2, which has seen a substantially smaller proportion of its land cleared for production, I regard as non-deforested.

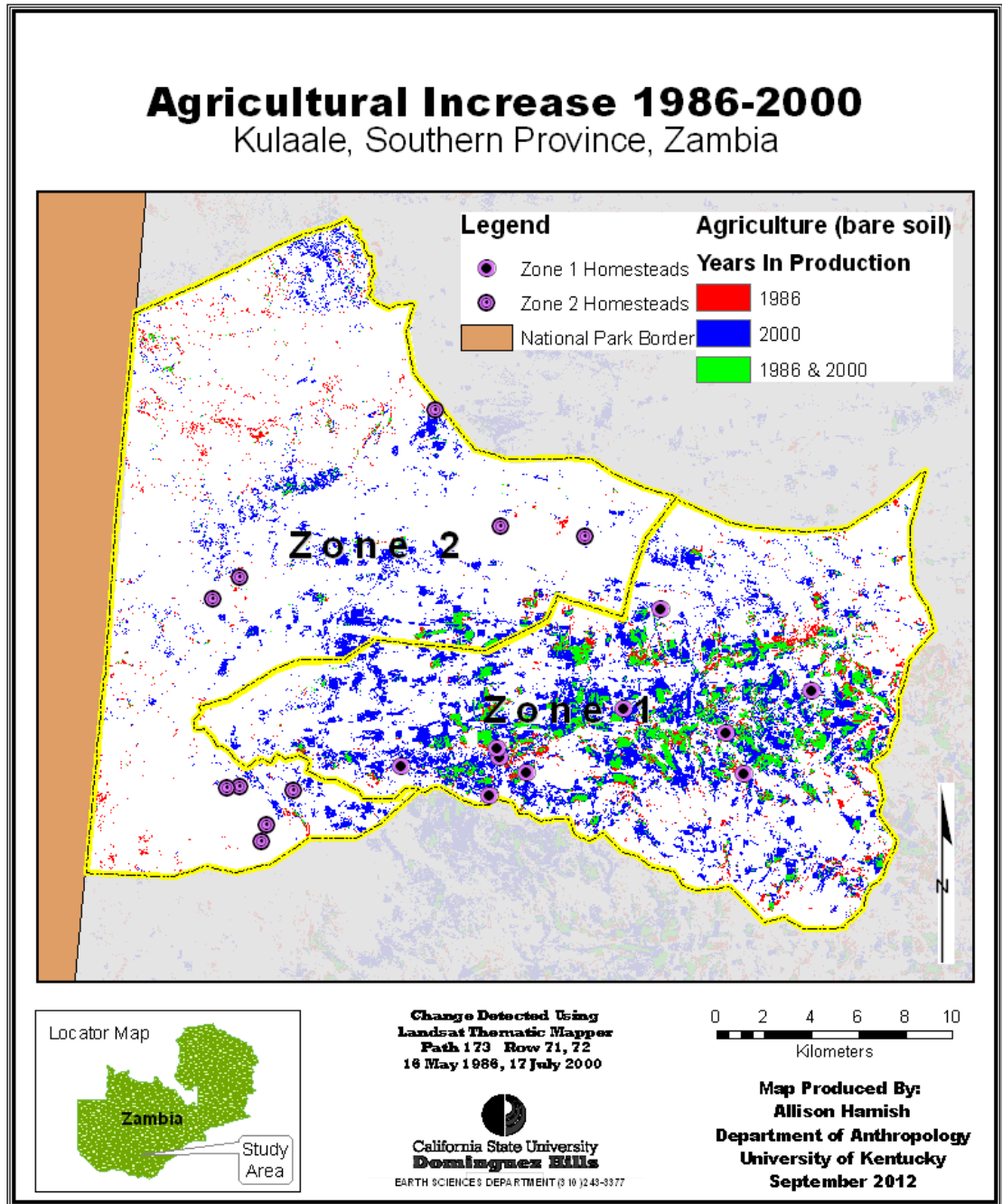
With the two research zones established, I purposefully selected ten homesteads from each zone to participate in a seasonal resource survey and mapping exercise. Participants were identified using an existing GTRP survey of 646 homesteads²⁵ and by word-of-mouth.

²⁵ This survey was designed and administered by Cliggett and Unruh in 2005.

MAP 2.1: Four *Katengos* and 20-Homestead Sub-Sample



MAP 2.2: Two Research Zones and 20-Homestead Sub-Sample



Maps 2.1 and 2.2 show the pattern of increasing agricultural expansion in Kulaale between 1986 and 2000. In the first map, the four katengo boundaries are displayed. In the second, the katengo boundaries are subsumed by the demarcation of research zones. Also, the second map shows the distribution of the 20 homestead sample with which I carried out the seasonal resource survey and mapping exercise described below.

Extractive Workloads

Having completed the first step of operationalizing deforestation, the second step in investigating how declines in forest cover differently affect Kulaale residents is devising a way to measure human-environment interactions. Building off works that make claims about women's disproportionate shouldering of environmental burdens on account of gendered labor, I developed a strategy for measuring the labor investment associated with particular resources, what I call *extractive workloads*. An *extractive workload* is the average annual distance traveled from a homestead to the sites where particular bush resources are physically extracted.

Extractive workload is a resource-centric unit of analysis. It notes the geospatial location(s) of resources identified during seasonal resource survey relative to the geospatial location(s) of informants' homes. It considers the age and gender of the person(s) responsible for extracting each resource and the frequency with which the resources are collected. This measurement does not include a time-allocation instrument²⁶; nor does it tabulate the distance traveled by every single homestead member for the extraction of any and all environmental resources. Rather, the extractive workload measure is a straight-forward way to assess differences in the labor required for 'bush' resources extracted by women, men, girls, and boys.

²⁶ Time-allocation is an inappropriate measurement because individuals rarely travel directly and without pause to resource extraction sites. Such trips are often coupled with visits to neighboring friends and relatives, lengthy communication with passers-by, or a trip to the market. Resources that are extracted by children are often found on the way to or from school. Resources may also be found en route to boreholes and shallow wells, on the way home from fields and gardens, or while herding livestock.

Seasonal Resource Survey and Mapping Exercise (n=40)

In order to calculate extractive workloads in Kulaale, I administered a three-question survey to each of the 20 homestead heads along with their wife or wives. Four of the twenty homestead heads (two in each zone) were divorced/widowed women living with children and/or grandchildren. In one instance, the male homestead head did not show for the appointment so the two co-wives responded to the survey without him. Due to the open nature of Kulaale homesteads, surveys often took on a “focus group” quality. Even when questions were directed at the senior homestead members, the husband and wife (or wives) would often consult with members of the homestead (children, grandchildren, nieces, nephews, and in-laws). Other family members who had gathered to observe the survey would eagerly chime in. To account for seasonal variability in resource extraction as well as sporadic extractive activities, like gathering materials for home construction that do not occur as regularly as herding cattle or collecting firewood, this survey was administered once during the rainy season (November-April) and once during the dry season (May-October) to all participating homesteads.

The first question asked respondents to free-list all the materials that they or other members of their homestead collected from the bush in the previous month, who in the homestead was responsible for collecting each resource, where that resource was collected, how frequently it was collected, and the mode of transport (foot, bicycle, oxcart) used to collect it. The second question asked participants to identify any other materials that they or other members of their homestead *typically* collect, or intend to collect, during the season in which the survey was administered. The third question asked respondents to free-list the places they regularly visit. This question encouraged interviewees to speak about other locations—fields, gardens, shops, and grazing areas—that made up the “space” of their livelihoods.

From the survey, I identified eight key bush resources extracted regularly by Kulaale residents. These resources are listed in Table 3.1. Because my study is focused primarily on deforestation, I selected resources whose availability could potentially be affected by agricultural expansion and declines in forest cover. These resources, which include firewood, grazing grass, wild foods, and building materials, are necessary for subsistence

and, so are seen in virtually every Kulaale homestead. Because traditional medicines were not consistently listed by research participants—indeed, medicines are often collected by healers with specialized knowledge—I elected not to include medicinal plants in my study (for a discussion of deforestation and its effect on medicinal plant use in the region, see Adjemian 2008).

TABLE 3.1: List of Key Bush Resources

RESOURCE	USE
Firewood	Domestic Fuel Resource
Grazing Area	Pastoral Resource
Wild Vegetables	Wild Food
Mushrooms	Wild Food
Building Poles	Building Material
Fiber	Building Material
Sticks	Building Material
Thatching Grass	Building Material

Although each of the 20 homesteads included water in their survey and I did calculate the mean annual distances they traveled to access it, I decided to exclude extractive workloads associated with water from this discussion. Water in Kulaale is *not* a bush resource, at least not for every homestead, as many families access water from community boreholes. Though there are many homesteads, especially in Zone 2, whose primary source of water includes rivers and hand-dug wells, the availability of this non-mechanized water source is not as clearly linked to agricultural expansion as the availability of grazing grass, firewood, wild foods, or building materials. Another resource I measured but am excluding from this discussion is wild fruit. Ethnographic data suggests that, unlike fish or wild vegetables, wild fruits are not extracted in masse and made into a communal meal. Though I did note a few instances in which baobab fruit was prepared in porridge and shared amongst homestead members, fruits are more ordinarily consumed as snacks. Moreover, it is rare that a homestead member will make a special trek into the bush for fruit; fruit is more commonly extracted and consumed on the way to other errands.

I declined, altogether, to measure extractive workloads associated with poached game meat (bushmeat). Like medicinal plants, bushmeat is often collected by individuals with specialized knowledge, i.e. it is not a resource that each of the 20 participating homesteads would have access to or admit having access to. By omitting bushmeat from the survey, I was able both to protect informants from self-incrimination and to avoid the potential personal hazard of clandestinely entering the national park in order to collect waypoints.

After administering the survey, I returned to each of the participating homesteads to carry out mapping exercises. On two occasions (once in the rainy season, and once in the dry season) I accompanied homestead members to the sites where the resources identified in their surveys were physically extracted. The person(s) leading the way to resource extraction sites included adult and juvenile homestead members. In some instances the homestead member(s) were able to point to a plant that was visible from the homestead, and so I would walk to the site unaccompanied. Often, I would assist the homestead by hauling water, firewood, or other resources as we walked to each extraction site. In some cases, I was able to expedite the mapping process by traveling to resource extraction sites on bicycle with a homestead member riding in front or with a child who was only too eager to climb onto the top tube or the bookrack shouting directions as I pedaled. Using handheld global positioning system (GPS) receivers, I recorded a waypoint for each homestead and each homestead's resource extraction sites. I then uploaded the waypoints into the software program ArcGIS and projected them onto existing maps of the Kulaale landscape.

Analysis of Quantitative/Geospatial Data

Using a python-based script for spider (AKA semantic) mapping in the software program ArcGIS, I established an arc-distance path for each resource waypoint. This path represents the distance (a straight line, as the bird flies, not the actual course of travel) from each homestead to the sites where the resources identified in that homestead's survey were physically extracted. I created a second, survey, database in Microsoft Excel that listed the frequency with which respondents collected the environmental resources

identified in their survey as well as the gender(s), age(s), and zone of residence for the individual(s) responsible for collecting each mapped resource and seasonal variation in the availability of those resources. I merged the two databases in Microsoft Excel, calculated the mean annual distance traveled for each resource group, and measured differences in extractive workloads associated with resources collected by women, men, girls, and boys. This procedure is chronicled in the following paragraphs.

The annual distance traveled for the collection of each resource was calculated by extrapolating the reported frequencies (see Table 3.2) over 365 days and adjusting for seasonal variation in resource availability/extraction. For example, the seasonal mapping exercise established the distance from Homestead 04 to the site where Homestead 04 extracts firewood is 359.71 meters. In their seasonal resource survey, Homestead 04 members reported collecting firewood “one time per day” during the dry season and “two times per week” during the rainy season. Because the dry season lasts roughly two thirds of the year, I adjusted the participants’ dry season response of 365 times per year by a factor of 0.666. The calculated dry season frequency ($359.71 \times 365 \times 0.666$) equals 87,441.16 meters. The rainy season response of “two times per week” (104 times per year) was adjusted by a factor of 0.333. The calculated rainy season frequency ($359.71 \times 104 \times .333$) equals 9,457.37 meters. The annual distance is the sum of the two seasonally adjusted values ($87,441.16 + 9,457$), or 99,898.53 meters.²⁷

When a resource from the same homestead was extracted from multiple locations, an average shape length was recorded for the distance between that homestead/resource. For example, girls from Homestead 03 extracted a certain wild food from two different locations. One was 245.41 meters away from the household, and the other was 317.51 meters away; the average of the two distances equals 296.46 meters.

In some instances, respondents did not give a specific numerical frequency, reporting that a resource is collected “daily,” “weekly,” “monthly,” or “yearly” rather than “two times per week.” This response was interpreted to be qualitatively different from an

²⁷ The same calculations for seasonal adjustments were made when averaging the distances for resources collected from multiple locations.

answer of “one time per day/week/month/year.” “Daily” implies that multiple trips might be made in a single day, though the number of those daily trips is variable. For this reason, the author assigned a multiplier of 1.5 to survey responses like “daily”, “weekly”, “monthly” and “yearly.” For example (though it is *not* included in Table 3.1, the example of fish is used in here to clarify the process of calculating extractive workloads), boys in Homestead 01 travel 131.47 meters from their homestead to the river to catch fish. They fish “daily,” but only in the rainy season (or one third of the year). Thus, the annual distance traveled by boys in Homestead 01 for the collection of fish is $(131.47 \times 547.5 \times .333)$ 23,969.28 meters.

TABLE 3.2: Calculating Annual Frequency

TIMES PER YEAR	INFORMANT(S) RESPONSE		TIMES PER YEAR	INFORMANT(S) RESPONSE
547.5	'daily'		18	'monthly'
365	1x/day		12	1x/month
730	2x/day		24	2x/month
1095	3x/day		36	3x/month
1460	4x/day		48	4x/month
1825	5x/day		60	5x/month
78	'weekly'		1.5	'yearly'
52	1x/week		1	1x/yr
104	2x/week		2	2x/yr
156	3x/week		3	3x/yr
208	4x/week		4	4x/yr
260	5x/week		5	5x/yr
312	6x/week		6	6x/yr
			0	Zero

After calculating the annual distance from participating homesteads to the bush resource extraction sites, I used the PivotChart feature in Microsoft Excel to establish an average annual distance (extractive workload) associated with the collection of key bush resources. I then used descriptive statistics to compare the average extractive workloads *within* and *between* the two research zones, across the four age-gender categories (see Figure 3.1 for a preview of the extractive workload data).

In addition to the resource/extractive workload data, I also collected demographic data for each of the twenty homesteads who participated in the seasonal resource survey

and mapping exercise. This demographic data includes the age of the homestead head, the number of wives for the male heads of homestead, and the stage in the domestic lifecycle—the gender and age composition of a homestead’s members. These data were subjected to independent samples t-tests in order to understand the relationships between homestead demographic composition and the observed age and gender differences in average extractive workload. The demographic data, and results of the independent samples t-tests, are discussed in Chapter Six.

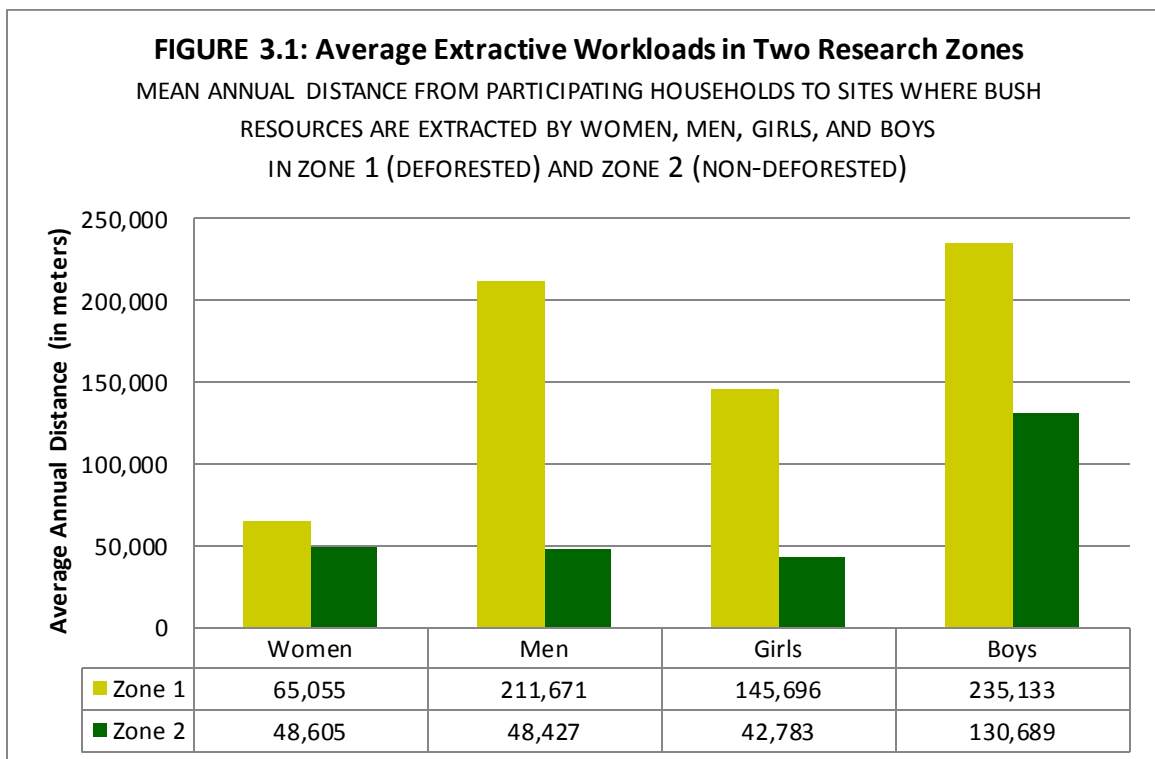


TABLE 3.3: Comparing Average Extractive Workloads within and between Two Research Zones

Resource Type	Zone 1	Zone 2	Kulaale Average (Z1 and Z2)	Difference (Z1>Z2)	Difference (Z1>Z2)
Women	65,055 m	48,605 m	55,399 m	1.34 x greater	34% greater
Men	211,671 m	48,427 m	94,339 m	4.37 x greater	337% greater
Girls	145,696 m	42,783 m	67,286 m	3.41 x greater	241% greater
Boys	235,133 m	130,689 m	165,504 m	1.80 x greater	80% greater
Grand Total	150,752 m	70,745 m	97,354 m	2.13 x greater	113% greater

While the sample from which these data are drawn is admittedly small and a future (larger) dataset will speak better to statistical significance, I contend that the methodology utilized here—the practice of measuring extractive workloads—is both innovative and valuable for understanding human environment interactions in gendered and aged terms. As I will describe in Chapter Seven, the qualitative/ethnographic and quantitative/geospatial methods employed in this project guided and informed each other. Were it not for the participant observation, semi-structured interviews, and familial labor survey I conducted during preliminary visits to Kulaale, I would not have decided to employ geospatial and statistical research methods in my exploration of men’s, women’s, boy’s, and girl’s extractive labor. Moreover, the results of the geospatial and statistical analysis could only be interpreted and understood through a consideration of qualitative data.

Description of Qualitative/Ethnographic Research Methods

Participant Observation

As a primary method of ethnographic data collection, participant observation and extensive fieldnotes offer insight into the day-to-day processes and interactions transpiring in Kulaale. Over the course of my research, I lived in both research zones. Because I had no vehicle, apart from a bicycle to transport myself from place to place, I would camp with families, using their homesteads as a base from which to carry out my work in each of the research zones.

In 2007 and 2008, I stayed with the Makeni family in Cikolo (Zone 1), just a few hundred meters from Cikolo market. I also stayed with the Siyanda family in Banyama (Zone 2). In 2010-2011, I stayed with the Moota family in Cikolo and, again, with the Siyanda family in Banyama. These “homestays” conducted on either side of the Kulaale fieldsite were, themselves, a very informative research strategy. Camping with homesteads in both research zones allowed me to focus my efforts on those elements of daily life that are not so vividly expressed during a sit down interview.

Homestays carried out during the rainy and the dry season with families from each zone enabled me to intimately follow and interact with homestead members during

extraction activities and daily tasks, taking particular notice of how homestead dynamics influence extractive labor (e.g. how techniques of home construction are taught to male children, how women mobilize their daughters' labor, how homestead morphology influences resource collection strategies, and how changes in land cover affect individuals' extractive workloads). When combined with the narrative data elicited from semi-structured interviews (from phases one and two), and the workload data elicited during the phase three, this method reveals how individuals work within and outside gendered, generational, and economic constraints to provide for themselves and their families in contexts of changing land cover. Extensive fieldnotes recorded during participant observation also speak to the complex and diverse relationships individuals and families share with the surrounding environment.

Semi-Structured Interviews

I conducted 101 semi-structured interviews with Kulaale residents, traditional leaders, government officials, wildlife police officers, journalists, and aid workers. As a research tool, semi-structured interviews are valuable for evoking stories and images that “check-a-box” surveys and structured interviews cannot. This more flexible interview strategy allowed for dynamic discussions of homestead livelihoods, income generation strategies, familial labor roles, support systems for widows and widowers, regional farming patterns, bush resource consumption, park legislation, human-wildlife conflict, migration and displacement, agricultural and environmental change, and comparisons between the Gwembe Valley and the Kulaale frontier. In the paragraphs below, I describe three classes of semi-structured interviews carried out between 2007 and 2011.

Livelihood, Labor, Law, and Familial Support Interviews (n=51)

I conducted 49 interviews in 2007 and 2008. The first 23 interviews focused on homestead livelihoods, farming practices, income generation strategies, and bush resources. These interviews also fleshed out gendered roles within the homestead as well as social and ecological differences between the two political ecological research zones in Kulaale. The next 26 interviews, focused more keenly on familial labor roles, support

systems for widows and widowers, and the influence of conservation policy on Kulaale residents' lives. These interviews were conducted with a purposive sample of research participants. Interviewees included Gwembe Tonga migrants and their descendents as well as migrants from the plateau and other parts of Zambia. Participants were selected for their ability to offer diverse viewpoints. For instance, I made a point to conduct interviews in male- and female-headed homesteads. Of the roughly forty interviews that concentrated on the intra-homestead allocation of subsistence tasks and gendered interactions with the natural environment, nearly 30 percent were conducted in female-headed homesteads. Also, the interviews were split nearly in half with 53% of the homesteads located in Zone 1 and 47% in Zone 2. Additional interviews were carried out with persons in both research zones who were selected for their ability to speak to specific themes beyond the intra-homestead division of labor—including agricultural extension, development initiatives, women's clubs, medicinal plants, and conservation policy.

In 2010, I conducted two focus group interviews with Kulaale children—siblings whom I asked to describe their work at home and at school. These interviews were carried out with the help of interpreters and with the consent of the children and their parents—at least one of which was present during the interview. I describe these interviews, and my reasons for only conducting two, in Chapter Five.

Migration and Environmental History Interviews (n=30)

I conducted thirty interviews in 2010-2011 with a purposive sample of thirty Gwembe Tonga homesteads, fifteen from each research zone. Research participants were selected using an existing GTRP survey of 646 migrant homesteads, and by word-of-mouth. From this 30 homestead sample, 20 (ten in each zone) were selected to participate in the seasonal resource survey and mapping exercise described above. These interviews elicited personal migration and displacement histories, with a comparative focus (Gwembe versus Frontier migration stories) as well as stories of agricultural and environmental changes witnessed in Kulaale since 1979. These interviews illuminate local perceptions of environmental change, the effects of environmental change on age-

and gender-based extractive labor systems, the relationships between homestead composition, extractive workloads, and individual responses to environmental scarcity.

Development, Conservation, and Security Interviews (n=20)

Between February 2010 and February 2011, I carried out semi-structured interviews with an opportunistic sample of evictees, traditional leaders, government officials, and conservation experts. Eight of the interviews in this class were carried out among Kulaale residents who were recently evicted from neighboring Zambian GMAs. The remaining twelve interviews were carried out with the senior headmen from all four *katengos*, Chief Mapopwe, Kulaale's member of parliament (Elijah Mpongo), a chairperson from the Lubono Settlement Area (Friday Penda), the Provincial Officer with the Principal Land Resettlement Office in Choma (Jeremy Simbule), the Manager of Zambia's Game Management Areas (Mallory Zuesse), a journalist investigating rumors of eviction in Kulaale (Nelson Ngwenya), the senior wildlife police officer posted at Kafue National Park's Mulilo outpost (Monroe Muvwimi), and two researchers with USAID/Zambia.

Familial Labor Survey (n=38)

In 2008, I conducted a "pilot survey" in preparation for the seasonal resource survey and mapping exercise I would carry out during my year of dissertation research. This survey asked Kulaale families to recall or estimate for several bush resources²⁸ (1) the time of year when the resource is collected (2) the frequency with which the resource is collected, (3) the distance traveled to extract the resource (4) the time required to extract the resource, and (5) the person responsible for the collection of the resource. The survey also asked respondents to define the "bush" and estimate "who in the family spends the most time in the bush?"

²⁸ The resources this survey asked families to describe included bricks, building poles, fiber, firewood, fish, medicinal plants, sticks, thatching grass, wild fruits, water, wild meat, and other bush resources.

Journaling Activities (n=5)

For one month (December 2010 to January 2011), five area youth kept journals chronicling their daily activities. Together, these journals bring in to sharper focus the everyday, mundane actions of farming, herding, and harvesting environmental resources and compliment the information gleaned from interviews and participant observation.

Analysis of Qualitative/Ethnographic Data

All data were transcribed on my laptop and retrieved using topical Windows searches. Interviews were coded in Atlas.Ti (see Appendix E for a list of codes). Survey responses were entered into Microsoft Excel, coded, and analyzed using the pivot table and pivot chart feature.

Conclusion

Deforestation and land cover change are pressing issues for researchers and policymakers with profound implications for people and ecosystems worldwide. In Africa especially, human geographers and ecological anthropologists have generated productive dialogue regarding the role of humans in contributing to environmental degradation.

Reinterpreting previously ‘misread’ landscapes using archival research, interview data, and geographic information science (GISc), social scientists have overturned false environmental histories that previously demonized rural livelihoods and have built alternative histories in their place—histories in which local peoples play key roles in ecological stewardship (Fairhead and Leach 1996; West and Vasquez-Leon 2008). The scholarship critiquing received wisdom suggests the identification of environmental problems bases its claims on biased, a priori, and incomplete understandings of patterns and processes of environmental change. But what do researchers do when all data, including local narratives, attest to the depletion of a region’s environmental resources?

Numerous studies have examined the impact of humans on the natural environment, yet few have explored the impact of environmental change on humans. With a deforestation rate that ranks among the highest in the world (FAO 2006), Zambia provides a unique context from which to explore the reverse side of this relationship.

By investigating the socially-differentiated effects of land cover change, and presenting the findings through media (graphs and images) that are both understandable and accessible, this project aims to contribute to regional and global dialogues on gender, development, and environment that span professional and disciplinary boundaries. This research is especially pertinent considering the recent surge in environmentally focused global resolutions (e.g. those associated with the U.N. Millennium Development Goals) and the continued mainstreaming of gender within development discourse.

CHAPTER THREE: FULL MOON, HALF LONDON: DESCRIPTION OF THE FIELDSITE AND RESEARCH THEMES

Introduction

I arrived at the Cikolo²⁹ market sometime after 10 p.m. dazed and dreary from a day's worth of traveling. Amid the rush of disembarking passengers and the clamor of villagers enjoying libations in the region's largest marketplace, I was able to find Yosef, the oldest son of my friend, host, and interpreter Ethan Moota. Yosef was closing his shop, a small cement room from which he vends clothes, candies, batteries, soaps and kitchenware. He waved goodnight to the crowd of men drinking on the porch next to his store, climbed into the passenger seat of the white maize lorry in which I had been riding for the last eight hours, and directed its driver to the Moota homestead—a task I could never have accomplished in the dark and without having been to Ethan's place in nearly two years. The vehicle bounced and scratched over a wall of elephant grasses and through a maze of thorny acacia trees. We went in circles, trying to find safe passage around a deep ravine carved into the landscape by seasonal rains and successive bouts of erosion. After about ten minutes, the lorry's headlights illuminated the Moota homestead, and its empty courtyard quickly began to fill up with happy sleepy faces. I heaved my belongings out of the truck bed, graciously thanked Yosef and the lorry driver, and turned to greet the Moota family.

It was March 2011, the start of a year-long research stay in Zambia. Once I said my hellos and, then, goodnights to Ethan, his two wives, and the fifteen children in his homestead, I clumsily assembled my tent in the dark. Feeling a bit stunned, I lazily devoured a granola bar to silence my rumbling stomach before settling into my sleeping bag. I would awake moments later to the tambour of voices murmuring outside my tent. I was too tired and too disoriented to see who was there and what was going on. Exhausted

²⁹ To preserve the confidentiality of research participants, I have substituted pseudonyms for all people, except for Tourism and Arts Minister Sylvia Masebo, Tourism Minister Catherine Namugala, Chief Nyawa, Chief Siachitema, and several senior ZAWA officials, all of whom are referenced in recent news articles.

from the day's travels, I drifted back to sleep, uncertain whether it was the wind, my imagination, or the faint sound of someone crying in the Moota family courtyard that was lulling me back into slumber.

I learned the next morning that a young couple had brought their baby daughter to see Ethan's senior wife Bernice, who is a traditional healer, in the hopes that she could provide emergency treatment. The child fell terribly ill in the night, but there was nothing Bernice could do and the little girl died right there in the homestead, just a few meters away from me as I laid sleepy and bewildered in my orange sleeping bag.

Death came to another Kulaale family within the first day of my arrival. And a somber tone permeated the Moota homestead as wailing from a funeral in a neighboring homestead³⁰ trilled over treetops and over the riverbed, a dirge to accompany family meals. This abrupt and poignant start to my research is perhaps the most appropriate way to begin a dissertation on frontier life. My memories of Kulaale, and any theoretical nuggets that can be distilled therefrom, are sonorously punctuated with tragic reminders of life's frailty—a frailty which is exacerbated for those carving a livelihood on the periphery of state or private infrastructure, eight hours and 1 million kwacha³¹ away from the nearest hospital.

*

In this chapter, I present a brief history of the research setting and outline three research themes, overlapping historical moments that shape Gwembe Tonga migrants' relationship with the Kulaale landscape. Through a series of vignettes and references to semi-structured interviews, I paint for the reader a picture of Kulaale as I experienced it between 2007 and 2011. I describe the two political ecological research zones that feature

³⁰ Because homesteads in Cikolo are situated relatively close to one another, the happenings of other families are often overheard between neighbors near and far. At the Moota homestead one was as likely hear laughter from Cikolo market and cheers from the football field at Cikolo Upper Basic School as to overhear an argument between brothers a quarter mile away.

³¹ Those who are desperate to get their sick to a hospital may be charged up to 1,000,000 kwacha [188 USD] by private transporters seeking to economize on their neighbors' lack of alternatives.

prominently in this dissertation and, in so doing, I establish the frontier as a symbol of the persistent vulnerability and long-term resilience of Zambia's Gwembe Tonga people.

Description of the Kulaale Landscape

The Kulaale fieldsite is approximately 15 x 35 kilometers, with an area of over 600 square kilometers. The landscape is a combination of Zambezian and Mopane woodland, Central Zambezian Miombo woodland, and Southern Miombo woodland (WWF, Hogan, and McGinley 2007; WWF, Hogan, and McGinley 2008; WWF and McGinley 2007). It is characterized by a dominance of semi-evergreen Miombo trees (*Brachystegia spiciformis*), Mopane trees (*Colophospermum mopane*), and species of *Julbernardia* and *Isoberlinia*—all legumes—interspersed with wooded grassland, dambos, and scrub. It receives higher than average rainfall for Southern Province and is known for its ideal farming conditions. Frequent outbreaks of cattle-borne diseases, however, make farming with the aid of ox-drawn plows as well as extracting and transporting resources using ox-drawn carts a challenge for residents. In recent years, floods have also created difficulties for Kulaale farmers, washing away both crops and the roads that would bring in food assistance (Cliggett 2005).

Subsistence in Kulaale involves creative combinations of commercial agriculture and horticulture and small-scale economic enterprises—including the sale of baked goods, garden vegetables, used clothing, and other wares. In times of hardship, Kulaale residents will take on “piecework” laboring in the fields of their neighbors, or collecting bundles of thatching grass in exchange for buckets of maize or for the use of oxen and plows. Another important subsistence strategy includes the “rhetorical performance of ‘need,’ frailty, and hunger” (Cliggett 2010:104). This strategy—which involves the skillful manipulation of social relationships to “mobilize assistance in the form of residential arrangements, food gifts, and other material needs”—is primarily employed by elderly Gwembe Tonga women (ibid:101). However, recent fieldwork in Kulaale shows that men, too, are becoming adept at performing “need” as a way to leverage gifts of food and monetary assistance from relatives and neighbors (Crooks 2012).

Perhaps the most striking feature of the Kulaale landscape is the land itself, and the soil, in particular. As the opening story of Chapter One suggests, Kulaale's soil—especially during the month of *kkunkumunamasamu*—(when it batters the faces of head teachers and crashes through the tents of visiting researchers)—is quite literally, striking. An FAO map depicting Zambia's different soil classes (included in Appendix F) shows that the earth in this region of the country is composed, in part, of lithosol—a soil unit defined by Merriam-Webster as containing “imperfectly weathered rock fragments.”

Another key component of the soil in Kulaale is luvisol, a silty loam topsoil with clay-enriched subsoil. The loamy make up of luvisol makes it ideal for gardening and agricultural uses because it retains moisture and nutrients, while allowing excess water to drain away. Luvisol is also ideal for the building of adobe (non-fired mud) brick houses, which pepper the Kulaale landscape. Luvisol is porous and well-aerated yet, it is also sensitive to erosion on account of its high silt concentration.

Every year, from November to April, rains pour through Kulaale, nurturing crops and filling the Njoka River and its tributaries. But, as the waters rise and recede, they pull the support out from under root systems, and the trees, grass, and scrub slowly succumb to gravity's pull. Each year, from May to October, winds whip through the desiccated riverbeds, causing another layer to crumble into the channels. In places where trees and other foliage are absent, the winds are torrential and the runoff is ruinous.

Erosion by wind or water can devastate crop yields through changes in chemical and structural soil characteristics. For instance, the loss of a buffer layer of organic material exposes soils to acidification and aluminum toxicity.³² Reductions in clay and organic matter can also decrease soils' capacity to provide phosphate to crops. Structurally, erosion can increase the density of soil, making it difficult for water to penetrate and for plant shoots to emerge (Lipper 2001).

³²Aluminum is naturally abundant in the earth's crust. While aluminum is insoluble at mildly acidic or neutral pH values, it becomes soluble—releasing phytotoxins that inhibit root growth—as soils become more acidic. Aluminum toxicity “is the primary factor limiting crop productivity on acid soils, which comprise large areas of the world's lands, particularly in the tropics and subtropics” (Kochian 1995:238).

The simultaneously nurturing and sensitive qualities of the soil component *luvisol* echo the bountiful and precarious character of Kulaale, itself, and the historical cycles of access and alienation that continue to affect its residents. Large swathes of cultivable land continue to invite waves of settlers to the frontier. And these settlers agree, Kulaale is a place of bounty—the size of the land, the fertility of the soil, and the potential to reap large, profitable harvests are greater in Kulaale than they are in the Gwembe Valley. Yet, the distance to the nearest town, the poor condition of the roads, the lack of medical infrastructure, and the uneven access to agricultural inputs leaves many Kulaale residents in a persistent state of vulnerability. Though Kulaale sits inside of the most agriculturally productive regions of the country, nearly one quarter of its children appear to be malnourished (Sitko 2010). The contradictory interplay between access and alienation, between abundance and insufficiency, is definitive of the frontier landscape and, so, pervades the three research themes to which I now turn.

Research Themes

Frontier Development

During the Kaunda years (1964-1991), Zambia pursued an economic strategy of development through self-reliance, social justice, and humanism. In accordance with the national effort to develop Zambia by way of export earnings and reduced reliance on food imports, maize marketing facilities—including state-led credit and subsidy programs for seed, fertilizer, and agricultural equipment, along with improvements in the infrastructure for transporting crops to markets—rapidly made their way into Zambia’s remote agricultural frontiers. During this time, Zambia’s National Agricultural Marketing Board (NAMBOARD) set pan-territorial/pan-seasonal producer prices for maize, and State-led purchases of maize harvested in Southern Province helped feed the industrial workers in the Zambian Copperbelt, maintain low urban food costs, and alleviate hunger through the subsidized redistribution of Zambia’s staple grain.

When settlers first arrived in Kulaale, they had little reservations that they could bring state infrastructure with them into their new home (Sitko 2010). And, for a while, this was the case. The first NAMBOARD depot in Kulaale opened in 1984, providing

entrepreneurial farmers a local outlet for the sale of surplus maize. This maize marketing venture was short-lived, however. Under the imposed market liberalization of structural adjustment, the Zambian state was forced to pull out of the rural economy. “Roads deteriorated and in some cases vanished. Agricultural inputs were delivered late if at all, and many areas found buyers unwilling to collect crops because [the bad roads made the journey] uneconomical” (Cliggett et al. 2007:23). Zambia’s previous policy of maintaining pan-territorial and pan-seasonal prices for maize gave way to variable and fluctuating food prices and “[g]overnment schemes for credit along with organization of crop marketing disappeared” (ibid). Today, Kulaale’s maize depots—enormous mounds where 100kg bags of maize are piled until such time as they are picked up by the state agency responsible for redistribution (see Image 3.1)—echo the frustrated plight of Inzoka Middle Basic School referenced at the beginning of this dissertation.

IMAGE 3.1: Cikolo’s Maize Depot in November 2010³³



³³ Over 132,000 100kg bags of maize (harvested by 200-300 different farmers) are piled in this depot. Notice Ethan Mooto, who led the effort to establish this depot in 2010, is dwarfed standing to the right of the maize stacks.

Following liberalization, NAMBOARD was abolished and replaced with the Food Reserve Agency (FRA). Initially, the FRA's mandate was to "establish and administer a national food reserve" (Mason and Myers 2011:3). But, over time, its mission transformed to incorporate crop marketing and price setting. Today, the FRA sets "pan-territorial indicative price[s] at which it buys maize from individual farmers and cooperatives" (Mason and Myers 2011:1). The FRA then exports the maize or sells it on the domestic market, primarily to millers and traders at negotiated prices. Unlike during the Kaunda years, private traders today are permitted to purchase maize at prices that are greater or less than the FRA price.

In its efforts to stabilize market prices, the FRA actually raised the average price of maize. The increase in price has had deleterious consequences for the many Zambians who buy more maize than they sell (Mason and Myers 2011). Moreover, the FRA is notoriously inept when it comes to purchasing surplus maize (which farmers harvest between April and July) and disbursing funds to farmers in a timely manner. This can be devastating to farmers who rely on the money for the maize they sold to FRA to acquire inputs for the next season. It is also harmful for those who stand to benefit from the redistribution of the maize, as it is prone to rot (if the FRA does not collect it before November) in poorly-sheltered maize depots during the rainy season.³⁴

According to a recent study by the Food Security Research Project (FSRP)—a collaborative program of Zambia's Agricultural Consultative Forum and Ministry of Agriculture and Cooperatives with Michigan State University's Department of Agricultural, Food, and Resource Economics—the crop marketing and price setting activities of the FRA "are estimated to have increased mean maize market prices between July 2003 and December 2008 by 17% in Lusaka and 19% in Choma" (Mason and Myers 2011:10). These high prices benefit net sellers of maize (large-scale farmers only 28% of smallholder farm households) while harming net buyers of maize (urban consumers and

³⁴ In February 2012, the FRA in Kalomo owed farmers a staggering K30 billion [5,774,790 USD], having already paid K118 billion [22,714,174 USD], for maize harvested in 2011 (Mashekwa 2012a). By July of 2012, many farmers still had not been paid and staged a protest outside the FRA headquarters in Kalomo (Mashekwa 2012b).

nearly 50% of smallholder farm households). According to Mason and Myers (2011:14) ‘both the mean maize price raising and the price stabilizing effects of FRA policies are regressive: they disproportionately benefit relatively better off households and have negative net effects on relatively poor households.’

In spite of the negative effects of liberalization, Kulaale remains one of the most agriculturally productive sectors of the country. Families fleeing urban unemployment and agriculturally degraded lands elsewhere in Zambia regularly flock there in search of large, fertile farmland on which to eke a living. The price each family pays for admission to Kulaale is reduced access to infrastructure—including electricity, cellular service, paved roads, transportation, schools, clinics, veterinary services, marketplaces, and potable water. The physical demands placed on rural farmers coupled with the limited infrastructural support in Kulaale have demonstrable health effects, namely in terms of children’s growth (Crooks, Cliggett, and Cole 2007). Ironically—even though they live squarely within the agriculturally productive “maize basket” of Zambia’s Southern Province, an estimated 22.5 percent of children in Kulaale exhibit “signs of growth stunting resulting from malnutrition” (Sitko 2010:4).

This startling statistic comes even after the World Bank oversaw the Zambia “Power Rehabilitation Project,” which included a targeted plan “to amend past mistakes made during the [Kariba Dam] resettlement (including a failure to provide potable water, electricity, schools, clinics, etc., for relocated populations)” (Cliggett n.d.). This target plan was titled the Gwembe Tonga Development Project (GTDP). The GTDP benefitted Kulaale residents through the construction of a school, a clinic, a veterinary extension office, an agricultural extension office, an environmental health extension office, and several boreholes—though those benefits were not equally spread throughout the region.

The school, the clinic, and the extension officers’ residences were all built in a single *katengo*, or village conglomeration (of which there are four in Kulaale). These projects were constructed in Cikolo *katengo*, adjacent to the largest market in the region. Boreholes were monopolized by local elites and educated residents who had previously been employed in towns and were skilled at communicating with ‘outsiders.’ Additionally, the decisions about who to employ (as construction workers, security

guards, janitors, and assistants in the GTDP activities), who to provide with “training in technical maintenance or veterinary or human health,” and “which families [should] house the one ‘stud’ bull that the GTDP gave the community to help it improve its cattle stock” were not politically-neutral (ibid). As Cliggett (n.d.) writes, “when the GTDP departed in 2006, it left ‘tide pools’ of material, monetary, and social resources in the hands of only some community members” (ibid).

With another rural development project in the works, the uneven access to development in Kulaale is more likely to grow than it is to diminish. In 2008, the Ministry of Lands in cooperation with the local chief implemented a new settlement scheme in Kulaale’s northwestern corner—an area I call Lubono. As Jeremy Simbule, Provincial Officer with the Principal Land Resettlement Office in Choma, informed me in October 2010, the Movement for Multiparty Democracy (MMD) leadership of Zambia enacted a number of settlement schemes, beginning in 1991. There are twelve schemes nationwide (Lubono is number ten), the goals of which are:

- to address population growth,
- to curb rural-urban migration,
- to provide an opportunity for lingering urbanites to be productive (Increased productivity is hypothesized to lead to increased food security),
- to lessen the density of street people, thereby lessening crime, abuse, and overcrowding,
- to help rural planning, and
- to stem the growth of shantytowns

Though Mr. Simbule began issuing plots in 2007, the Lubono Settlement Area is still in the preparatory stages. Planned for the 13,000 hectare Settlement Area are 400 plots (394 farms and 6 service centers to include a school, market, clinic, church, agricultural extension office, and storage shed), multiple boreholes, and a network of roads to connect settlers to the service centers. Nearly half of the 394 plots are already settled. Applications for land are very competitive. Mr. Simbule iterated that the office wants to

make sure those who apply are serious about farming, that their presence will be permanent, and they will use the plot “responsibly,” and not try to sell the land.

Mr. Simbule emphasized that the resettlement program aims to help widows and orphans, in particular, by giving them title deeds to plots of land. According to him, about thirty percent of the deeds go to women. But, for the Lubono Settlement Area to exist, several Kulaale farmers had their land partitioned into thirds; they then had to apply for permission to remain on one third of their original landholding.

“Some farmers had to leave after the demarcations were made,” Friday Penda explained. One of eight section chairpersons in the Lubono Settlement Area, Penda recalled, “When Mr. Simbule came he told some people that they did not have the proper papers to allow them to stay [on their original landholding]. For example, my nephew’s land now belongs to a pastor from town.” Several people left voluntarily after seeing their land reduced into smaller plots. One such farmer moved to Itezhi-Tezhi District, where he was later evicted for encroaching in the Namwala GMA.

Meanwhile, many townspeople who were given plots in Lubono have either abandoned them or not come at all. Penda speculated that townspeople with little agricultural experience are unlikely to settle in Lubono until such time as the proposed infrastructural improvements and service centers are completed, making their move into Kulaale more worthwhile. Clearly, the reality of the Lubono Settlement Area has not lived up to the goals of the Principal Land Resettlement Office. Despite its stated intention of reducing poverty, improving food security, and providing title deeds to “retrenched, retired, and landless persons,” it seems the limited number of large plots (of 100 and 50 hectares)³⁵ “have already gone to local elites (including headmen and members of the chief’s cabinet) and political elites from outside the region (including district and provincial officers)” (Cliggett n.d.). The failure of the state (and, later, the private sector) to regulate consistently and transparently the conditions under which the

³⁵ When I asked one of the eight section chairs in Lubono Settlement Area to comment on the different plot sizes, he suggested people living on loam soil were allocated just 25 hectares because loam is more fertile. People living on mixed sand soil, meanwhile, were issued up to 50 hectares because that type of soil loses its fertility after a few years.

frontier is permitted to “develop” its agricultural and service infrastructure is reiterated in historical efforts to “develop” Zambia through revenues gained from tourism.

Conservation Policy

In addition to the transformation of national agricultural policies, the structural adjustment programs of the 1990s and 2000s encouraged a new approach to economic development—one which takes advantage of another of Zambia’s natural resources: wildlife. Since liberalization, Zambia has pursued a community-based approach to natural resource management, encouraging GMA residents to play a part in the stewardship of Zambian wildlife.

In spite of trenchant critiques from social scientists, the turn to CBNRM is hailed by the international community as a way forward and a means of achieving “empowerment” and “sustainability”—two of the eight Millennium Development Goals. Critical development scholars like Igoe (2003), Neumann (1998), and Hughes (2006) have compellingly illustrated the ways in which CBNRM hardly deviates from the “fortress” model of conservation which the U.S. coined during the creation of Yellowstone National Park and exported throughout the colonial era to other parts of the world.

A recent wave of violent evictions from the GMAs surrounding Kafue National Park suggest Zambia is again pursuing a “fortress” model of conservation over a more community-based model in which local people are permitted to live and work in wildlife corridors. The story of one displaced Sichifulo settler who, like many others, eventually came to settle in Kulaale after being chased from a nearby GMA, is wrenching in its description of the August 2008 eviction from Sichifulo GMA:

My village had 27 households. We moved there in September, 2006 but the village was established long ago....We made no payment in exchange for the land they were given, except that a chicken was slaughtered to seal the deal. We had been donating maize to Chief Nyawa and the community school—we paid a 100 kg bag of maize in 2006, 2007, and 2008.

The people [in Sichifulo GMA] were given notice but they didn’t heed it. They did not believe they would be chased... [They] would consult with the headmen but the headmen would tell them not to leave, thinking the men who had been issuing the notices would not follow up on their word. This was because they had been issuing

such notices since 1985. For over twenty years, people had been told they would be evicted. They had no reason to start believing.

There were two land rovers that came full of rangers. They told the household heads to get all their things out of their houses. Then, they burned the houses. People who hesitated watched their belongings burned inside their homes... [Our] small [bin] of maize was burned. Four 100 kg bags of maize were burned. It was a very bad day.

We waited there from 20 to 29 August. We were sleeping outside. It was only me and my children [aged 9, 6, 3, and 1]; my husband had gone to the Valley to visit his family. For nine days, we ate nothing. Our will to eat was gone—we were so depressed and disappointed with what was happening. It was very bad; we never had a thought of eating, we were so devastated. Even our gardens were burned. Whatever [ZAWA] thought was made by humans—houses, kraals, [maize bins]—they burned to ashes. We had nothing to do but wait for transport. Those who evicted us never provided transport. We people had to find our own means, even if it meant footing.

After nine days, [my family found a truck to take us elsewhere]. We came with all our cows. But, we lost some chickens and all six of our goats were eaten by hyenas in the nine days we waited for transport. [The chicken and goats died] because there was no one to watch them—the boys had gone to find a transporter, and I had to watch after the younger children. I feared going to herd our animals because the game scouts might find me and beat me. All of our structures, including the animal enclosures were burned... The gamescouts were burning houses, even the schools—four community schools were burned.

People wouldn't have managed to leave that area even if they believed the eviction notices because of the transport expense. But on 20 August, the people had no choice. They surrendered their maize and oxen to transporters; they had no other option... The headmen were in more trouble than we were because they were the ones who had been allowing people to settle. Relatives were hiding the headmen because the gamescouts would beat them. When moving out, people put the headmen in the beds of their pickup trucks and covered them with blankets.

It was so bad. In one instance, the scouts entered a homestead where a funeral was in process. Some of the relatives had gone to town to organize a coffin. The remaining family was grieving over a corpse. They were told to remove the corpse from the house. The scouts then burned the house, leaving the corpse and the grieving family outside.

[After being evicted], we came straight to my father in [Kulaale]. We were not given any land. We were just given a small piece to stay on until we could find another home. We asked for land from Senior Headman [Inzoka], who said he had none to give. So, my father gave us a portion of his. We are in the process of looking for land

elsewhere, but I don't know if we will find any. We are looking in Namwala. There, in Chief Chiliabusu there have also been eviction notices issued. In Mavwula, there is no land. It was very bad on that day. Only god knows. (Felista Mundase, August 2010).

Four years after ZAWA chased settlers from Sichifulo GMA, the options for resuming a livelihood outside the GMA boundaries are muddied and tenuous. According to a recent news report, “the Government... allowed [displaced settlers] to go back and resettle in the prime areas of Sichifulo GMA in Kafue National Park” (Times of Zambia 2012). This is because Chief Nyawa is still refusing to allow evictees to set up residence in other villages within his Chiefdom, because “[he] thinks these people are poachers” (ibid).³⁶

I met Elijah Mpongo, the Member of Parliament (MP) representing Kulaale Constituency in December, 2010. Though the Sichifulo GMA is not under Mr. Mpongo's jurisdiction, he takes an interest in the evictions there because they bear grave implications for people in Kulaale. “The evictions in Sichifulo were just 40 kilometers away from Cikolo Upper Basic School,” Mpongo lamented. “There were 200-500 pupils [in Sichifulo] who were supposed to sit for examinations prior to the emptying of the GMA.” Mpongo met with people from the eviction sites and took their requests to those higher on the legislative hierarchy. He even took a man to the statehouse whose leg had been broken during the August 20 eviction. But “the requests fell on deaf ears.” Speaking of the rumor that Kulaale area residents are in jeopardy of being evicted, Mpongo recalled that the first Chief Siachitema was buried in the area where the government says people are settled illegally. The current Chief was born in Bbilili Springs GMA. “It is an insult,” he exclaimed, “to say it's illegal for people to stay where their chief was born.”

³⁶ The current Chief Nyawa has been in office for 5-6 years. The previous chief died nine years ago. Chief Mapopwe told me during an interview in January 2011 that the people who were chased from Chief Nyawa's section of the Sichifulo GMA area were given land there by local headmen during the vacuum in the chief's office. The new chief saw the extent of the encroachment and asked ZAWA to assist in the eviction.

Also, how could the government justify tearing down such federally-financed projects as the schools, clinics, maize depots, and extension offices in Kulaale when there is a glaring shortage of rural infrastructure elsewhere in Southern Province?... People here are farmers. They have no other options for employment. Southern Province is the grain belt of the nation. The Food Reserve Agency gets most of its maize from small farmers in Southern Province...How could one branch of government [the Ministry of Lands] be charged with populating a rural area [via the Principal Land Resettlement Office] while another [the Ministry of Tourism, Environment and Natural Resources] is seeking to rid the same area of its human population? (Elijah Mpongo, December 2010).

It is his responsibility, Mr. Mpongo bellowed, to remind the government of the infrastructure that has already been established in Kulaale and to ask the government to think of the pupils who would be affected by any future evictions:

The current ratio of students to teachers [in Zambia] is too high. Why, then, would we seek to increase the ratio by sending students from places like [Inzoka] and [Cikolo] to other, already crowded, school systems? If 6,000 people were evicted, where would they settle? For whom do the animals generate revenue? ...My duty is to go to the Ministry [of Tourism, Environment and Natural Resources] to make a case for the families in [Kulaale]. If they don't listen, I should denounce them in parliament³⁷ (Elijah Mpongo, December 2010).

Friday Penda, the chairperson for Lubono Settlement Area, informed me that Chief Mapopwe and the Settlement Officer (Mr. Simbule) held a public meeting in Lubono on December 19, 2010 to quell the rumors that had been alarming area residents. The two men told the settlers and MP Elijah Mpongo, who also attended the meeting, that “the ZAWA men were lying. They were not sent by the government, they were just patrolling the park mistakenly telling farmers those rumors.” Chief Mapopwe would later tell me as much, reiterating that he “has not sanctioned any evictions within his area.”

³⁷ In a similar vein, three MPs walked out of the chambers of parliament on February 11, 2009 “following tourism minister Catherine Namugala’s sentiments that the Sichifulo GMA settlers had been evacuated to pave way for game safari hunting and photographic tourism” (Lusaka Times, February 20, 2009).

Chief Mapopwe suspects that these rumors of eviction have surfaced because someone in Ngoma³⁸ thinks they have a program that they can implement, but he has signed off on no such program.” He concluded our meeting with the announcement that he was scheduled to meet Zambia’s Vice President (because the Ministry of Lands falls under the jurisdiction of his office) to discuss the eviction rumors that are circulating in the Lubono Settlement Area. Chief Mapopwe has not gone to ZAWA to discuss this issue; he decided it is better to take it up with the Vice President first. Then, if they find there are dubious dealings going on, he and the Vice President can “hammer ZAWA” together. As Chief Mapopwe announced during the meeting in Lubono, “it is not in his interest to evict any of his people.” However, MP Mpongo told me to take the Chief’s statement with a grain of salt: “This Chief (like any politician) has been known to double-speak and betray his word at a later date. I have no confidence in [him].”

The challenge to grow a livelihood amid the stress of regional evictions is compounded by farmers’ decreased and uneven access to agricultural support and by changes in the landscape—including declines in soil fertility and the dwindling availability of non-cultivated bush resources—resulting from the conversion of forest and grassland to agricultural uses.

Environmental Change

The recent history of Kulaale mirrors the “story” of settlement and LULC change in frontier settings described by Rindfuss et al. (2007). Recall from the introduction that Kulaale sat vacant for twenty years before the area was re-opened to human settlement in 1979. Following the initial influx of migrants to Kulaale, both the size and number of homesteads grew—a result of natural increase and continued in-migration. In three of Kulaale’s four *katengos*, settlers organized themselves into villages containing dispersed homesteads. In one, settlers established nucleated villages with fields marshaled in an agricultural enclave away from the domestic units. Over time, infrastructural

³⁸ Ngoma is home to the head warden for the south half of Kafue National Park, and to a cadre of wildlife police officers (employed by ZAWA) and their families.

developments in Kulaale—including the stationing of veterinary and agricultural extension officers, the construction of schools and clinics, and the erection of maize depots—facilitated additional in-migration. As rural transportation systems began to link Kulaale with regional markets, farmers increasingly adopted cash crops (including maize, cotton, and groundnuts). The consequence of marketized agriculture is loss and fragmentation of native vegetation, including bush resources which are used for fuel, food, medicine, and construction.

In addition to the growth of the Kulaale population and the clearing of forest and grassland for agricultural uses, uncertainty surrounding processes of land allocation has prompted Gwembe Tonga migrants in Kulaale to clear much larger areas of brush and woodland than would normally be cultivated, a strategy for demarcating boundaries, securing land for future generations, and establishing visible evidence of landownership. This practice of “clearing to claim” leads to high rates of deforestation and is ultimately an unsustainable pattern of resource use in Kulaale (Unruh, Cliggett, and Hay 2005).

Informant narratives, paired with transect walks and analyses of satellite imagery, indicate that the total area of forest and grassland in Kulaale that has been cleared for agricultural production “more than doubled between 1986 and 2000” (Unruh, Cliggett, and Hay 2005:194) and it is likely that remaining forests have already been mostly allocated (Frank and Unruh 2008). Other changes in the Kulaale environment include declines in soil fertility, declines in harvests due to mounting erosion and long-term field use, and declines in wild animal populations (Cliggett 2005).

Uneven Development and Shrinking Land

In his exploration of maize marketing and food security in Kulaale, Sitko (2010) wrote that “despite the radical transformation of the region from forests to fields...[Kulaale] is more of a frontier today than it was in the 1980s when it was...settled.” This statement adequately describes, not only the agricultural transformations—including the shift from state-led to market-led production strategies—but also the historical cycles of “access and alienation which, according Cliggett (n.d.), have encouraged economic disparity and uneven development in Kulaale.

According to Sitko (2010), private companies flocked to Zambia following market liberalization, but their operations are confined to the large-scale farming sector and to distribution depots in district capitals; In the rural frontier of Kulaale, “which lies at the heart of Zambia’s most productive agro-ecological zone, private sector input companies are conspicuously absent; there are no local distribution points for fertilizer and no local sales representatives to service [Kulaale’s small-scale] farmers” (Sitko 2010:76).

In an effort to encourage private sector participation in rural Zambia, the government has implemented a coupon system whereby private dealers dispense subsidized and unsubsidized inputs through the infrastructure of the FRA. The government has also overseen multiple credit schemes, financed by private donors with the goal of increasing smallholders’ access to seed and fertilizer. Most recently, the government has attempted to boost the private sector presence in rural areas through the Fertilizer Support Program (FSP). The FSP differs from previous government and donor agricultural programs in that it “requires a cash payment for inputs, rather than credit, membership in an officially recognized cooperative or women’s club, and the support and certification of the local agricultural extension officer” (Sitko 2010:77). Once they get their certifications in order, and front the necessary cash, the cooperatives and clubs may apply for subsidized fertilizer tendered by private companies.

But, as Sitko explains, the inputs garnered by the FSP are primarily enjoyed by local elites who are able to mobilize social connections and manipulate the system—for instance, by persuading the two area cooperative administrators and local agricultural extension officer to issue more FSP packets than should be allocated to a single person or family. Sitko tells the story of an area headman who, “in addition to obtaining packets under his own name, ...also enrolled his two wives in women’s clubs, using his control over money within the homestead to acquire fertilizer and seeds to be used on his own fields through programs designed to promote economic autonomy for women” (ibid:87). Sitko’s data from Cikolo suggest that “45.9 percent of the wealthiest small scale farmers access inputs through FSP compared to 5.1 percent of the poorest, suggesting that those with significant local power and wealth benefit disproportionately from the input subsidy system” (ibid:83).

While Kulaale's local elites monopolize the supply of subsidized fertilizer, the cost of accessing unsubsidized fertilizer is prohibitive for all other farmers. Unable to access fertilizer in the way they did during the Kaunda years, farmers with an abundance of land compensate for decreasing yields—a result of continuous cultivation, reduced fertility due to erosion, and reduced access to fertilizer—by opening new fields. But, as families grow and in-migrants continue to establish additional homesteads, “the land necessary to support the low yield extensive farming practiced by local residents is simply not available” (Sitko 2010:94). Or, rather, it is not available in Kulaale's eastern half, where residents of the Cikolo and Inzoka *katengos* have lived for a longer period of time, and in denser settlement patterns. In response to the “feeling of shrinking land” (ibid: 97), many Kulaale residents are shifting to the two westerly *katengos* of Musamu and Banyama, where—at least for the time being—there are still swathes of uncleared land.

Two Research Zones and Two Metaphors for Understanding Frontier Life

In order to understand the environmental history of Kulaale and the ecological issues effecting Kulaale residents, I would often ask interviewees to comment on the differences between the easterly *katengos* of Inzoka and Cikolo (Zone 1) and the westerly *katengos* of Musamu and Banyama (Zone 2). In their responses, informants emphasized the advantages and disadvantages to living in either of the two research zones. The economic/class profiles for the two zones are comparable; features interviewees used to differentiate Zone 1 from Zone 2 most often pertained to soil composition, population density, infrastructure, and wildlife.

In Zone 2, respondents said the loamy composition of the soil meant they did not need to apply fertilizers to their crops. Meanwhile the soil in Zone 1, which is sandy and captures less rainwater, requires regular applications of fertilizer—a fact Zone 1 residents associate with declining soil fertility and reduced agricultural productivity. Multiple interviewees added that life in Zone 2 is also advantageous because homesteads are “more scattered” than they are in Zone 1. Respondents in Zone 2 cited the comparatively high population density in Zone 1 as a cause of disease and conflict among their easterly neighbors. Finally, interviewees suggested that Zone 2 residents enjoy the potential for

extra protein harnessed from game meat, which is more abundant in villages that are closer to the National Park border. Of course, the prospect of eating “good *milile* [good food]” in Zone 2 comes with the disadvantage of seeing crops destroyed by kudu, bush pigs, warthogs, and monkeys or seeing livestock raided by hyenas, honey badgers, and wild cats.

Though the residents of Zone 1 acknowledge having less fertile soils, they do have the advantage of living closer to “half-London,” the largest marketplace in the region. While there are fewer trees in Zone 1, there are more roads, more vehicles, and more possibilities for traveling to urban and peri-urban parts of the country to sell, buy, or exchange goods and access healthcare. In their interviews, all respondents noted that life in both research zones was far “more advanced” and more productive than life in the Gwembe Valley. Though the two zones are economically comparable and the advantages and disadvantages to living in one over the other make them equally desirable, in this researcher’s opinion, the political ecological differences between Zone 1 and Zone 2 gave the two sides of Kulaale a palpably different “feel.” Together, these two “feels” embody the paradoxical relationship between access and alienation, abundance and insufficiency that characterize this frontier landscape—from its soil, to its residents, to its relationship with the Zambian state.

Half London

Though Kulaale is only 80 kilometers from the nearest town, the drive can take anywhere from three to thirteen hours, depending on the time of year, the state of the roads, and the condition of the vehicle. Stretching your creaky, cramped limbs after hours of transport, one may feel compelled to describe Kulaale as isolated and removed from the rest of society. An attentive traveler, however, will revise that position upon arriving in Cikolo (Zone 1), one of four *katengos* in Kulaale where I was researching the gender and age dimensions of development, conservation, and environmental change. Over the years, folk names for Cikolo have included “Half London” and “Manda Hill.” These two nicknames reference the dramatic shift in nighttime ambiance as one nears the smattering of solar-powered lights beaming over Cikolo Upper Basic School, Cikolo Clinic, and a

handful of shops at the Cikolo marketplace.³⁹ When one journeys through Kulaale at night, one does so in darkness. That is, until he or she approaches the Cikolo marketplace. Well into the evening hours, residents in this sector of Kulaale gather to watch WWF wrestling matches and championship football games at the veterinary extension officer's house, or to listen to BBC's Voice of America bellowing out of store windows. Outside the triangle of luminescence offered by Cikolo marketplace and the nearby clinic and basic school, the nighttime ambiance is quieter, darker, and characterized instead by shadowy woods and fields.

The nickname "Half London" acknowledges Kulaale's place among the modern, metropolitan quarters of globalized society as one of both belonging and externality. On the one hand, calling Cikolo Half London, is Kulaale residents' way of noting the medical, educational, and commercial infrastructure that is being developed there. On the other hand, calling Cikolo Half London is residents' tongue-in-cheek way of reeling in expectations and collectively recognizing that there is still much to be desired.

Those Kulaale residents who were evicted by Kariba Dam feel they are still owed the infrastructural developments that were promised as compensation. A product of Zambia's history of economic ascension and recession, many Kulaale residents spent portions of their lives living in Livingstone, Choma, or Lusaka, working for urban industries, like the railway or for the now defunct Zambian airlines. They have no illusions about urban life and the amenities that are unavailable on the frontier. It is interesting to note the second nickname for Kulaale, "Manda Hill." Manda Hill is the first multi-story, Western style shopping mall in Zambia. Through this changing folk name, we can see also that Kulaale residents' notions of development and/or modernity have shifted to include not only the urban hubs of Europe, but also the spaces of commercialism and fashion a bit closer to home.

In the other side of the Kulaale fieldsite (Zone 2) the *katengos* of Musamu and Banyama have a decidedly different feel.

³⁹ This explanation of the "Half-London" epithet comes directly from Kulaale's Member of Parliament, (MP) Elijah Mpongo.

Full Moon

I woke with a start, jolted out of slumber by an appreciable sound. I wiggled my head through the opening at the top of my sleeping bag and strained to identify the shrill whooping in the distance. Inside my tent, the night was silent again. I closed my eyes and waited. After a few minutes, I unzipped the tent's outer window to reveal the waxing crescent moon blinking over the Siyanda's homestead in Banyama (Zone 2). As a wisp of clouds drifted across the moon's visage, the whooping began again. I felt my heart leap inside my chest and nuzzled back inside my sleeping bag, a childish grin spreading across my face.

The next morning, Nathaniel Siyanda pointed out a large paw print in the sand as we walked to our first interview of the day (see Image 3.2). "This track" Nathaniel explained, "was made by a hyena." Rumor quickly spread throughout the village that hyenas had eaten at least one farmer's livestock. In an interview that afternoon, Eleazar the village secretary of Banyama rode a bicycle through the homestead where Nathaniel and I were seated. I cocked my head to the side as he pedaled towards us. There was something very odd about his bicycle. It took me a moment to realize he had creatively tied the head, neck, brisket, right shoulder, and foreleg of a goat to the bike's top tube, as if his cycle was wearing a chic goat scarf. We suspended the interview to discuss what happened the previous night.

"The headman's brother Tartan lost eight goats to the hyenas," Eleazar announced. He had ridden to Tartan's that morning to survey the damage and help compensate the family for its loss by purchasing some of the meat. "A big loss," Nathaniel sighed, and the rest of us agreed.

"Yes," Eleazar added, "but you should see, Tartan's children are very happy." Eleazar must have seen the look of confusion on my face. He continued, speaking directly to me, "because they will be eating meat for the next week."

"Hyenas are wasteful," Nathaniel declared. "They will come in, kill several animals, and leave their carcasses." As Eleazar continued home and Nathaniel and I turned to complete our interview, the husband and wife we were speaking with affirmed, "We

heard the hyenas last night and knew that someone would be crying today, weeping while they ate a very good meal.”

IMAGE 3.2: Hyena’s paw print (left) next to the author’s shoeprint (right)



Over the next couple days, villagers from near and far visited Tartan’s homestead to purchase a share of meat that had been left by the predators. For 10,000 kwacha (approximately \$2.50), I bought a hind quarter, enough meat to fill Nathaniel’s large family to satiety. As I lay in bed, my stomach full from the goat dinner I shared with the Siyanda family, I could not suppress the contradictory imagery that was flooding into my brain. When I camped in Zone 1, I would be roused from sleep by the raucous laughter of men and women gathered to drink and socialize in Half London, or by the weeping of friends and family gathered for a funeral (as described in the opening chapter of this dissertation). During the nights spent in Zone 2, I would wake to the laughter of hyenas beckoned to hunt by the light of the moon.

Spotted hyenas are the most abundant of Africa’s large carnivores. Research suggests that these nocturnal predators are most active during the full moon (Mukherjee, Zelcer, and Kotler 2009), though I recall many instances from my fieldwork in which

their distinctive cackle was audible during darker phases of the lunar cycle. The IUCN has designated hyenas as “keystone predators,” whose presence is an indicator of ecosystem health. Because hyenas are a hardy species, capable of thriving in conditions that are inhospitable to other carnivores, “their disappearance... indicates that the habitat has become very severely degraded, perhaps irreversibly” (IUCN 2012).

Conclusion

The presence of hyenas in Kulaale marks the region as a bush (*isokwe*), a wilderness “out of human control” (Colson 2006:92). Their presence poses a legitimate threat to subsistence livelihoods, as hyenas have a reputation for killing and scavenging domestic stock. Retaliatory acts against marauding hyenas also jeopardize farmers who may be subject to fines, beatings, imprisonment, or eviction for infringing upon conservation efforts and, therefore, threatening the country’s emergent tourist industry.

Yet, the rural health clinic, upper basic school, and thriving marketplace in “Half London” show Kulaale is not isolated from the rest of the country, or from the rest of the world. The state presence in Kulaale—felt throughout the 1980s in the ready availability of agricultural inputs—came to a halt in the 1990s, as Zambia was forced to comply with the process of market liberalization. The state returned in the early 2000s in the form of the Gwembe Tonga Development Project, only to recede again, leaving the newly built clinic with a shortage of staff and supplies. Ten years later, the state presence is perhaps most acutely felt in the threats of eviction and intimidating behavior of ZAWA officials—a topic I return to in Chapter Seven.

These competing images—whooping hyenas and raucous marketplaces, full moon and half-London are both emblematic of frontier life and symbolic of the “access and alienation,” the persistent vulnerability and long-term resilience of Gwembe Tonga families who, since 1979, have pioneered the Kulaale landscape.

CHAPTER FOUR: MISSING “LINKS”: MEN’S AND WOMEN’S GENDERED LABOR, SOCIAL ORGANIZATION, AND RELIGIOUS LIFE IN KULAALE

“...the concentration of feminist scholars on the status of women—an emphasis that presupposes the existence of ‘woman’ as a social category always understood to be powerless, disadvantaged, and controlled and defined by men—can lead to serious misconceptions when applied to societies”

- Oyewùmí, Oyèrónké (1997:xiii)

IMAGE 4.1: An example of a structure—a gathering shelter— under construction



Introduction

The years between 1975 and 1997 witnessed an exponential growth in international women’s organizations. The United Nations Decade for Women (1975-1985) unleashed an “explosion of women’s organizational activity and political agenda” onto the international scene (Staudt, in Subrahmanian 2007:112). Thousands of women participated in the three UN women’s conferences held in Mexico City (1975), Copenhagen (1980), and Nairobi (1985), delineating a new era in women’s transnational activism (True 2003:377). Emphasizing the tendency for national and international statistics to yield no gender-disaggregated data, the Mexico City Conference called for an increase in the collection of information, facts, and figures, that would speak to women’s lives, problems, and conditions (Jain and Sen 2005).

Of the 133 member states present at the Mexico City Conference, 127 established “national machinery” for dealing with policy, research, and programs aimed at reducing women’s invisibility and increasing their participation in development programs. With 141 accredited international NGOs and 1,761 local and international women’s organizations in attendance, the Fourth United Nations Conference in Beijing (1995) is, to date, the largest United Nations world conference ever held. The organizations represented are products of transnational networking among governmental and nongovernmental actors and advocates. The goal of their networking is to pressure the and state-like entities to focus their efforts on institutionalizing changes that directly benefit women through targeted actions and programs, a practice called gender “mainstreaming” (Subrahmanian 2007).

Mainstreaming is a concept specific to development policy and planning. Overall, it is regarded as a “fuzzy” phenomenon in that there is no single tactic or pattern for realizing mainstreaming principles that is used across the board (Booth and Bennett 2002). Though it has been hailed by the United Nations—e.g. the Economic and Social Commission for Asia and the Pacific (2003)—as an essential mechanism for integrating women’s concerns into the design, implementation, and evaluation of development policies and programs, there are critical feminist scholars who challenge the ability of gender mainstreaming to foster gender equity, let alone the *advancement* of women.⁴⁰

Existing literature suggests that rural women—because they are traditionally responsible for gathering resources like water and firewood, and would presumably have to travel longer distances as these resources become depleted over time—are vulnerable to declines in natural resources brought about by climate change, changing property rights, and environmental degradation, more so than any other social group (Agarwal

⁴⁰ The greatest criticism of gender mainstreaming is that, in spite of proliferating policies and development activities aimed at diminishing the disparity between men’s and women’s empowerment (e.g. those associated with the UN Millennium Development Goals) numerous facets of women’s lives have worsened, not improved since the 1995 Beijing conference; unequal power relations remain little changed (Cornwall, Harrison, and Whitehead 2007). In fact, the Beijing Plus Ten (B+10) events held in 2005 were intentionally carried out under the radar for fear of compromising the gains perceived in 1995 and re-affirmed in 2000 during the Plus 5 negotiations (Molyneux and Razavi 2005).

1992; Dankelman 2002; Denton 2002; Virtanen 2003). With the mainstreaming of gender into development planning, iconic depictions of rural women hauling firewood over a barren landscape have become the staple in development discourse (Schroeder 1997; Cornwall, Harrison, and Whitehead 2007). For, in the minds of many, gender *equals* women—or rather, *woman*, singular, poor, homogenous. Given the dual emphases on gender mainstreaming and environmental sustainability in development planning, women are often framed in grey literature as the “links” between their families and the natural environment and, thus, the most appropriate targets for humanitarian or environmental interventions (Mumba 1992:22).

The “central role of women in sustainable development” and the ways in which “unsustainable production patterns... due to traditional roles and gender stereotypes, [affect] women differently and disproportionately to men” were highlighted as recently as June 2012, during a day-long discussion between UN heads of agencies, civil society, government and public sector agencies at the United Nations Conference on Sustainable Development (UNCSD)—also known as Rio 2012, Rio+20, or Earth Summit 2012—in Rio de Janeiro, Brazil (UN Women 2012). But, as commonplace as such assertions have become, there has been little effort on the part of researchers to empirically confirm these ideological statements. In other words: the lived, material realities of rural men and women struggling to cope with changing environmental conditions have been over-theorized and under-studied.

This chapter incorporates qualitative, quantitative, and geospatial research methodologies to investigate the ways in which gendered labor, social organization, and religious life prompt Gwembe Tonga men and women to inhabit different *spaces of* physical and socioeconomic *vulnerability* (Leatherman 2005) in Kulaale, Zambia. Also, I investigate the ways in which men’s and women’s experiences of vulnerability are differently affected by ongoing declines in natural resources. To test three hypotheses concerning extractive labor in Kulaale (see Table 4.1), I conducted a series of survey and mapping exercises between September 2010 and February 2011. This quantitative data is contextualized and interpreted with qualitative data from semi-structured interviews and participant observation carried out between February and August, 2010 and in the

summers of 2007 and 2008 as well as references to sixty years of anthropological research among the Tonga of southern Zambia carried out by Elizabeth Colson, Thayer Scudder, Lisa Cliggett, Deborah Crooks, and colleagues.

In presenting the results of this research, this chapter concludes that the trite representations of gendered labor systems employed in development discourse do not do justice to the complex reality of frontier life unfolding in Kulaale. Further, this chapter argues that future efforts at diversifying rural livelihoods, promoting gender equality, and staving the effects of environmental change would do well to acknowledge the flexible nature of rural subsistence strategies and the social safety net provided by kin and charitable neighbors in times of economic or ecological hardship. These alternative elements, or “links” in the subsistence economy—all features of a complex and variable system of social organization—are missing in much of the development and planning literature. These features are absent, it seems, because a majority of development work emerges from a neoliberal, bureaucratic logic that views the world through the Western lens of biological determinism and rugged individualism, and, so sees not the ways in which individuals—men *and* women—cooperate, exchange, and reciprocate in daily life.

This chapter seeks to correct these lacunae and, in so doing, champions pairing the theoretical frameworks of feminist political ecology and African feminisms with a quantitative, geospatial methodology. Such a pairing, this chapter contends, sheds light on the many *missing links* in the chain of research and interventions dealing with gender, development, and environment.

Feminist Theoretical Framework

Feminist social scientists have demonstrated the pivotal role of women in contributing to agricultural production, domestic reproduction, and household economies (Beneria 1982; Dwyer and Bruce 1988; Guyer 1980, 1991). But, the role of women in provisioning environmental resources for household use is less understood. Scholars contributing to the interdisciplinary subfield of feminist political ecology have shed light on the ways in which the conservation, commodification, enclosure, degradation, and dispossession of nature may be experienced disproportionately according to multidimensional

subjectivities “where gender is constituted through...social differences and axes of power such as race, sexuality, class and place, and practices of ‘development’ themselves” (Elmhirst 2011:130). Through this body of work, scholars have come to appreciate that human-environment interactions are variable, dynamic, and innately gendered. Still, gender, itself, has been under-theorized and remains largely absent in environmental social science and development research (Banerjee and Bell 2007). Where it is discussed in both literature and policy, ‘gender’ remains overly synonymous with ‘women’ (Chant 2002; Nightengale 2006).

In describing the difficulty encountered when attempting to study ‘gender’ in non-Western contexts, scholars like Oyewùmí (1997) and Helliwell (2000) note the entrenched nature of bio-logic in Western thought. As Oyewùmí writes, “almost all scholarship, even by Africans, utilizes [Western body-based categories] unquestioningly” (1997:x). This is due to a history whereby the majority of African societies emerged from European colonial rule only to fall under the conventions of a transnational state whose ministries and social service agencies adhere to knowledges produced in the West. Recent studies of the African state and its gendered institutions show that “government and donor agencies usually ignore the minutiae of women’s labour by basing development programmes on skewed [Western, binary] notions of what this labor actually entails” (Lewis 2004:27-28).

It is against this backdrop that the writings of African Feminists are “concerned with many ‘bread, butter, culture, and power’ issues” (Mikell 1997:4). Tied to the general movement to understand gender in historical, processual, non-essential, non-binary terms, African feminism is founded on “power-sharing, complementarity, accommodation, compromise, negotiation, and inclusiveness” (Nnaemeka 2005:34). Writes Nnaemeka, “[African feminism] has a life of its own that is rooted in the African environment.” Its resistance to gender separatism “is less a reaction against Western feminism and more a manifestation of the inter-gender partnership that is a prominent feature of African cultures” (ibid:33).

Even after feminists began to question the universality of patriarchy, a divide still persisted between Western and African understandings of gender and gender inequality.

While this divide is slowly being dismantled by feminist scholars, it lingers especially in the feminist theories that have been appropriated by development agencies (ESCAP 2003; Harrison and Watson 2012; Riles 2002; Subrahmanian 2007; True and Mintrom 2001; UNESCO 2003).

Wanga Mumba, executive director of the Environment and Population Center of Zambia, describes Zambian women as the “links” between their families and the environment and, thus, the crux of their communities’ development and subsistence (1992:22).⁴¹ Rural women’s involvement in agriculture and in the provision of household environmental resources, according to Mumba, makes them key stakeholders in effective environmental management, as they are the ones who will have to seek out new pockets of environmental resources when the ones they regularly exploit become exhausted. This sentiment, which is reiterated in much of the gender and development literature, has the potential to inspire interventions, according to Leach (2007:72), that could erroneously place women in charge of ““saving the environment’ without addressing whether they actually have the resources or capacity to do so.” Meanwhile, the class / age / ethnicity / other differences between women are blurred, men’s relationship with the environment is rendered invisible, and the gendered experiences of youth in natural resource management remain unacknowledged. Because it is the focus of Chapter Four, I limit my discussion of children’s labor in this chapter and focus primarily on the experiences of women and men.

⁴¹ A similar description of women as “links” was iterated as recently as November, 2012 during the eighteenth Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP18) in Doha, Qatar (WEDO 2012).

TABLE 4.1: Expectations to be Tested with Seasonal Resource Survey and Mapping Exercise		
DESCRIPTION	VISUALIZATION	OUTCOME
<u>Expectation 1</u> : The average extractive workloads for Gwembe Tonga migrants living in Kulaale will be inconsistent across the two research zones; agricultural expansion in the deforested Zone 1 will necessitate larger extractive workloads for Zone 1 residents.	Figure 4.1	Expectation met
<u>Expectation 2</u> : Because of women’s role in procuring firewood and other resources (Agarwal 1992; Dankelman 2002; Denton 2002; Grigsby 2004; Mumba 1992; Shiva 1989; Virtanen 2003), we expect the average extractive workload associated with Gwembe Tonga women in Kulaale will be larger than the average extractive workloads associated with other age/gender groups. In other words, we expect women to travel <i>further</i> than men, girls, and boys in order to extract the bush resources for which they are responsible.	Figure 3.1 Table 3.3 Figure 4.1	Expectation NOT met
<u>Expectation 3</u> : Since existing literatures (ibid) suggest women are more vulnerable than men to environmental change, we expect (a) the extractive workloads of women in the deforested Zone 1 will be greater than those of men in Zone 1, men in Zone 2 and women in Zone 2 and (b) the difference in extractive workloads between women in Zone 2 and women in Zone 1 will be greater than the difference between men in Zone 2 and men in Zone 1.	Figure 3.1 Table 3.3 Figure 4.1	Expectation NOT met

Three Widows and a Locked Butala

“Ha. Ha....Ha,” I forced myself to express amusement at a joke I did not fully understand so I would not be the only member of our trio who was not roaring with laughter. “Ba Ethan, I asked, “are you married to this woman?” “No! Ali,” my friend and interpreter Ethan hooted. “Traditionally, because of tribal affiliation, I am something like a grandson and a husband to this woman,” he snorted. I then understood the interviewee’s threat that she would divorce Ethan, because he does not bring her gifts to be a clever ruse and common technique in such “joking relationships”. Like many African peoples, the Tonga are adept at employing complaint discourse—a combination of scolding and teasing language which reminds individuals of their obligation to kin and neighbors. In this instance, the interviewee—a 55 year-old widow named Julie—was making a joke which simultaneously called upon fictive kin ties and communicated to Ethan and his anthropologist friend the profundity of social affiliation between Gwembe families.

Our interview continued until Ethan and Julie exploded with laughter again. This time, their chortling was directed at a woman passing the homestead carrying a bucket in each hand. Once the woman with the buckets had passed beyond earshot, Ethan explained that the woman's husband keeps his granary (*butala*) locked so his wives do not tap into the family's store of maize without his knowledge. This woman, who was the senior wife of the local headman's son, needed to cook *nsima*, the staple of a Tonga meal and, because her husband was away from the home, she could not access the grain inside the family's *butala*. And so, she traveled to Cikolo market in order to purchase or borrow (the nature of the transaction was unclear to me) two buckets of maize to bring back to her homestead and with which to prepare the evening repast. I should add that her homestead was experiencing no deficiency of maize. Rather, the majority of homesteads in Kulaale were teeming with maize on account of it being harvest-time, but because the husband locked the *butala*, none of the wives could access it, not even to prepare food for him and his children.

On our return from the interview, a widow named Lillian called Ethan over to her homestead so she could give him four bags of seeds. The seeds (for maize and garden vegetables) were provided by the Henwood Foundation, a humanitarian wing of the New Apostolic Church designed to help "vulnerable but viable farmers" by supporting sustainable agroforestry. Since her children shifted, she cannot find the time or means to plant them, and requested Ethan, who is a "lead farmer" with the Henwood Foundation give the seeds to another beneficiary in the area.

One week later, I found myself in the middle of a desiccated field shelling groundnuts with another widow in her mid-fifties. This widow, Sarah, and her late husband moved to Cikolo (Zone 1) in 1999 from the Southern Province Plateau, where, she insisted, a person cannot grow maize without fertilizer. "The [Plateau] land had lost fertility... At [a] height [of] about a meter from the ground, the leaf of maize could start flowering and no cobs." On the contrary, she has not applied fertilizer as long as she has lived in Kulaale. The year I interviewed her, Sarah potholed her crop using hand hoes—for lack of a plow—and managed to produce half an oxcart of maize. Still, she explained to me that, since the loss of her husband five years ago she has been struggling to support

herself. When she migrated to Cikolo, Sarah left her family in the Plateau. The only kin at her new residence are her only son, his wife, and their three children. The six of them live together in a small homestead. Sarah lamented:

Here the neighbors, they are not good. Sometimes, even if you have... a problem, you go to approach someone, saying that 'maybe you help me collect poles or cut poles for me.' They say, 'how much do you have for me to do all that work?'

Here, Sarah is alluding to the primacy of kinship among the Tonga, who are matrilineal and virilocal. As Colson (2006) explains, in matters of succession and inheritance, the Tonga trace descent according to the mother's (female) bloodline. But, in terms of residence, women are expected to "follow their husbands who [can] live where they [find] the greatest advantage" (2006:26). The fertility of Cikolo soils and the promise of large, productive land was enough to compel Sarah's husband to move his family from the Plateau, a move Sarah herself was grateful for. But, after her husband's passing, she found it difficult to reside in Kulaale, away from her matrilineal kin. Unrelated to those around her, she had little power with which to leverage assistance. The work of neighbors (assistance with plowing or home construction) would have to be paid for with exchange labor (typically a contract between men), or with the bartering of food, livestock, or other supplies.⁴² In addition to illustrating the primacy of kinship among the Tonga, Sarah's story also points to new forms of marginality that women experience when they migrate with their husbands to frontier regions.

Sarah's grandchildren are too small to offer her much assistance around the house. But, she does receive help from her son and a youth charity club at the nearby Seventh Day Adventist Church. Asked what changes when a woman loses her husband, Sarah replied:

...the major problem comes for building the homestead. That is mainly done by the men. And like this time, we are in a situation when we don't have [cattle] for plowing [because they were killed by corridor disease (east coast tick fever)]. When the husband was there it would be easier to find animals for plowing. Now,

⁴² It might be that some of the neighbors are related to Sarah's deceased husband, but they would feel little obligation to her on account of matrilineality.

there is no one unless my son finds money to hire people to plow for me... My son nowadays is helping to build my house... [but] I have to find the poles to help him... For the building poles, even God as my witness, I had to go up on that hill where I collected those poles. I was cutting those poles and lifting those poles on my head. I brought them down. That is why I have told you that I have problems... When [my husband] was alive, I was not doing that. That work was done by the husband... If I had [cattle], that job could be easier because I could take my oxen and oxcart to go and collect those poles... Since I am poor, it is difficult for me to hire people or to beg someone to do work for me. I have to do all things by myself.

Taken together, these two stories illustrate two important aspects of Tonga social organization. The first aspect coincides with the patrilineal “link (*lutundu*) between fathers and their children that provides the basis on which a father claims his son’s and daughter’s labor” (Cliggett 2005:65-66). Here, I am referring both to the substantive power a husband wields over his homestead and the invaluable contribution of male family members to household economies and familial well-being. The second element coincides with Tonga matriliney (*mukowa*). Here, I am referring to the primacy of matrilineal kinship among the Tonga and also the ability of women to conjure (using complaint discourse) the obligations of their children and fictive kin which, as Cliggett (2005) has indicated, constitutes an important social safety net to rural families, especially older women and widows, in times of hunger or stress. In addition to demonstrating the extent to which kinship and social organization shape people’s experiences of environmental change, these stories also show the gendered division of subsistence labor in Kulaale to be flexible and obliging in nature (rather than rigid and purely self-serving). Further, they show that religion in Kulaale also influences men’s and women’s differential experiences of labor and environmental change.

I will lay out each of these points in greater detail in the section below. What is important to iterate here is that none of these elements—the authority of the male household head, the value of male labor, the role of kinship and neighborly/religious charity, or the flexible division of labor—operate in exclusion of another. Indeed, the gendered division of labor is flexible *in response to* variations in household composition (kinship) and socioeconomic status. In the discussion below, I draw on additional

qualitative data to illustrate how these *missing “links”* in the chain of Tonga subsistence—gendered labor, social organization, and religious life—contribute to men’s and women’s differing experiences, not just of environmental change but of social and economic vulnerability. By fleshing out some of the dimensions of men’s and women’s vulnerability, I hope to further disrupt the stereotypical imagery which depicts rural African peoples in dichotomous (i.e. ‘lazy man’/ ‘vulnerable woman’) terms.

The Father as Witch and the Wife as Widow: Men’s and Women’s Physical and Socioeconomic Vulnerability in Kulaale

“Here is where it happened.” Ethan gestured to a patch of grass near the entrance to the Chapa homestead. “Here is where the old man fell.” In my head, I could hear the crack of gunfire and the rustling of startled cattle. I imagined the shrieks of frightened children, the wailing of the man’s four wives that surely followed. The horror of rolling a body over and witnessing the violence to which it was subjected. I pictured a corpse bowed in the weeds and wondered how long he lay there, how long it took for neighbors to congregate around him. How long to cleanse the body and make funeral arrangements. “And there,” Ethan nodded to a collection of banana trees, “there is where the intruder hid.” I pictured the barrel of a shotgun peeking through the palm-like leaves. The concealed shooter’s breath held in his chest as he squeezed the trigger and exhaled as he saw his target stagger, go limp, and collapse. Ethan was laying out the scene of the crime as we stopped to make an appointment to talk with the four newly widowed wives of a local headman. Their husband had been murdered that year, a scandal many suspected involved his nephews who had openly accused their uncle of witchcraft. “It is said the deceased headman did not approve of his nephews acquiring their own property. The headman would ask if the nephews were trying to challenge him. Then, the nephews would fall ill,” Ethan explained.

I include this short story in a chapter on gendered labor to draw attention to the ways in which men and women are differently vulnerable, economically and physically, in this rural subsistence farming community which is currently witnessing environmental change. As I mentioned above, the Tonga are matrilineal; familial ties are traced through

the mother's bloodline. In such societies, the mother's brother is like a second father to his sister's children, since he is of their same bloodline. Young men will more often approach their maternal uncles for help in paying the brideprice for their intended spouses. Too, in the event of his maternal uncle's death, the nephew may be called upon by the matriline to inherit his uncle's widow(s) and act as the breadwinner for the deceased's family in the absence of its original household head, a point I will return to shortly.

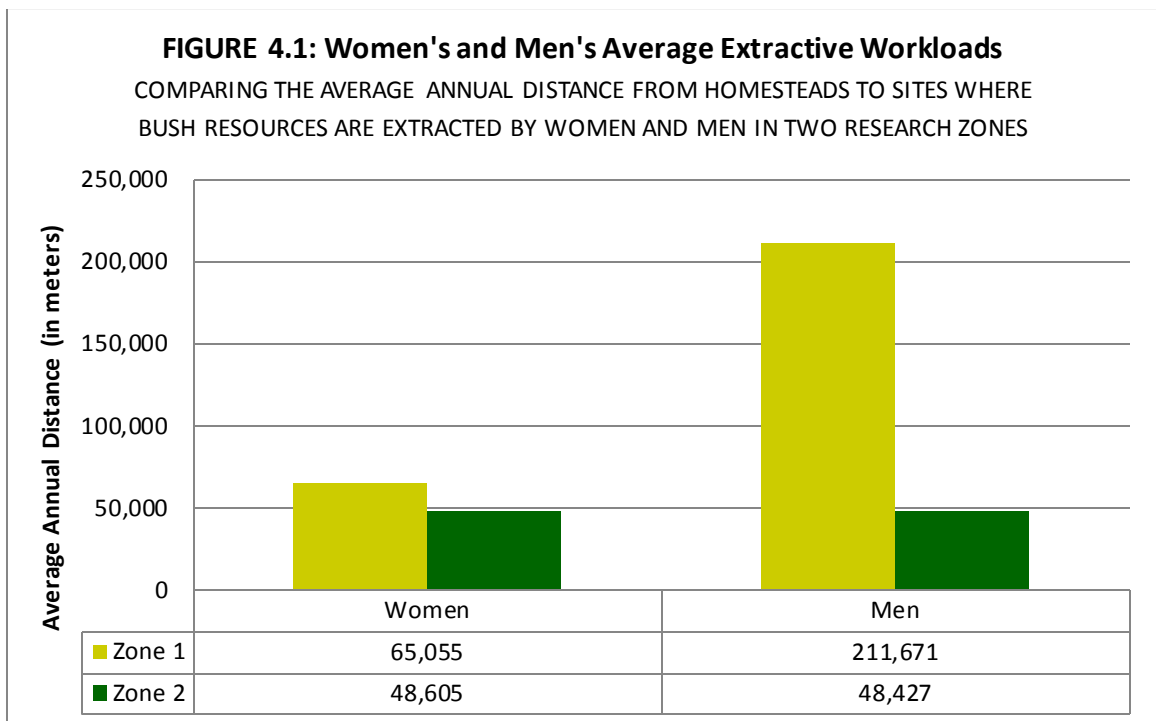
But, as Colson (1980) reminds us, matrilineality need not imply a weakening of paternal claims to children and children's labor. The Tonga are also virilocal, meaning a married couple will make their home in a place of the husband's choosing. In many instances, upon marrying, a young man will establish his own house within or adjacent to his father's—or depending on familial circumstances, his maternal uncle's—homestead. Even after he has fathered children of his own, a son may be expected to plow and harvest in his father's fields, to herd his father's cattle, or spray pesticides on his father's crop of cotton. The same can be true of a nephew and his maternal uncle. Indeed, male power among the Tonga comes from a father's (or uncle's) ability to mobilize the labor of his sons (or nephews). This is compounded by the father's (or uncle's) withholding of resources. For, so long as a father (or uncle) owns the land, the oxen, and/or the farming implements, he can either limit his sons' (or nephews') access to farming land, or request his sons (or nephews) use his oxen and implements to plow his fields before tending to their own.

Paradoxically, the source of male power among the Tonga is also the source of male vulnerability, vulnerability meaning a "susceptibility to be harmed" (Adger 2006:269). During my tenure in Kulaale, I witnessed three forms of male vulnerability related to the subsistence economy, extractive labor, and environmental change. The first form of male vulnerability is tied to the nature of men's extractive labor, the distances men travel to collect the bush resources for which they are responsible. The second form of male vulnerability comes from men's role as 'decision-maker' and economic head of their households. The third form of male vulnerability includes the physical and economic consequences men face when accused of sorcery. For each of these male forms of

vulnerability, there is a female counterpart. In the paragraphs that follow, I describe men’s and women’s gendered vulnerability as it is influenced by three “links” in the subsistence economy: gendered labor, social organization, and religious life.

Gendered Labor

Recall Figure 3.1 and Table 3.3 (page 62) which depicts the average extractive workloads associated with women, men, girls, and boys in two research zones. When we zoom in on the extractive workloads of adults’ (see Figure 4.1), we see a pattern of gendered labor that deviates from the iconic images of women’s work referenced earlier in this chapter.



Looking within the research zones, we see that men and women in Zone 2 travel roughly equal distances while men in Zone 1 travel an average of 3.25 times further than women in the same zone. When we compare the *difference* in the extractive workloads associated with women and women *between* the two research zones, we see that the inter-zone difference is dramatic, and dramatically greater for men than it is for women. The average extractive workload associated with women in Zone 1 is 1.34 times (or 34%

greater than) that for women in Zone 2. This compares sharply with the inter-zone difference for men; the average extractive workload associated with men in Zone 1 is 4.37 times (or 337% greater than) their counterparts' in Zone 2.

Among the Tonga, the gendered division of labor dictates that men are responsible for building homestead structures, a task I have not seen acknowledged in literatures warning of the gendered effects of environmental change. Houses, cattle kraals, maize bins, and seating areas are all built primarily with male labor. Most often, men will find and cut the building poles, and boys will haul it back to the homestead. This task is more easily accomplished with an oxcart or a chain (items typically owned by men). And, since men and boys are the primary owners of cattle, managing their health at home and working with them in the fields, the task of herding is considered a male responsibility. Families without oxen may borrow an ox, cart, or chain from relatives or they might pay for the use of these items in cash, maize, or labor. In many cases, men without oxen and without the means to borrow them end up carrying tree trunks on their shoulders.

IMAGE 4.2: Three men transporting building poles on their shoulders

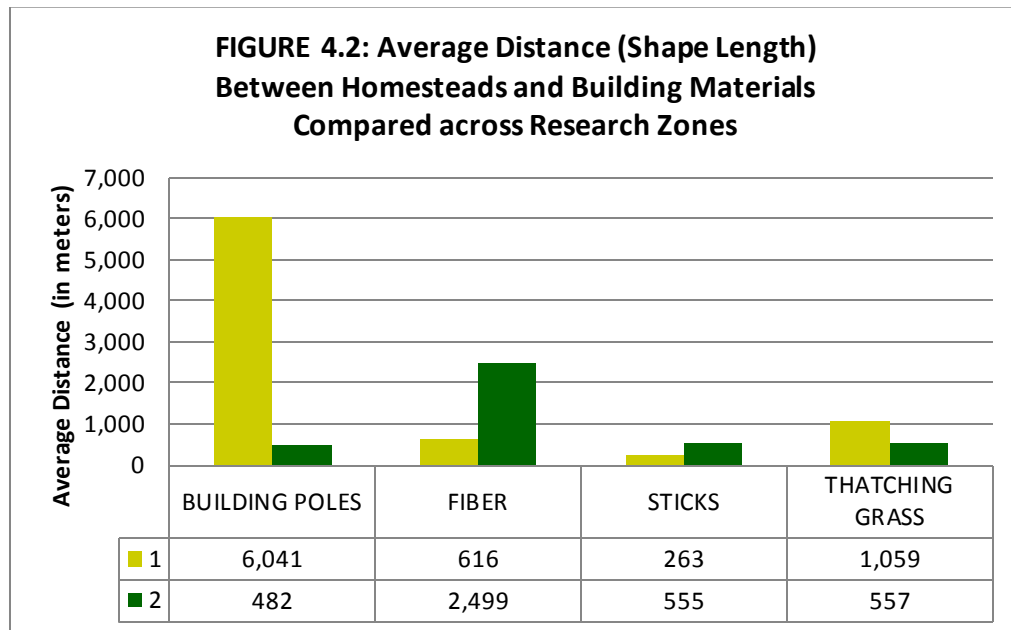


In one instance an informant recalled traveling a distance of twenty kilometers with an oxen and chain (not an oxcart) in order to secure the poles, rafters, and fibers for a household structure. “Going, it might take five hours. And coming, five hours. About ten hours...not including [the time it took for] cutting [the building materials].” In other interviews, men reported hauling building poles on their shoulders (see Image 4.2) over distances ranging from 500 meters to sixteen kilometers.

Women may also haul large poles, but in rarer instances where children are too small to handle lumber or when a family is building an entirely new homestead and all hands are called to the task of building a structure from scratch, or as in the case of Sarah, when a husband passes away and the widow’s son’s efforts are divided between caring for his mother and providing for his own young family.⁴³ In interviews with Kulaale residents, I learned that sticks (used for fencing) and firewood—both “women’s resources”—are more often collected near the homestead. Meanwhile, the fiber stripped from lozi trees (*Hagenia abyssinica*) for the purpose of lashing structures together—a resource collected by men and boys is not always so readily available. And, as Sarah mentions in a quote at the beginning of this article, the long straight mopane trees (*Colophospermum mopane*) ideal for building poles are receding as families clear the forest to create agricultural fields. Figure 4.2 shows the average shape length⁴⁴ associated with each material.

⁴³ That is not to say women do not participate in the building of homestead structures. On the contrary, the thatching grass used in roofing is collected by women and girls, and some women earn extra cash selling thatching grass during the dry summer months when families are repairing homestead structures and preparing their *butalas* for the upcoming harvest. Depending on the family dynamics, women may also take the lead in erecting or repairing a kitchen edifice. Though, in my experience, it seems women typically mobilize their children’s labor to assist in the molding and transporting of clay bricks and other materials for this purpose. Also, among the Tonga, gardening is considered women’s work and women collect the sticks used for fencing their gardens. Again, this is usually done with the help of children.

⁴⁴ This is not the same as extractive workload. Here I am referring to the straight line distance between waypoints marking the locations of homesteads and the sites where they extract building materials.



One possible explanation for the difference in men’s and women’s extractive workload observed Table 3.3 and Figures 3.1 and 4.1 is that maize cobs—the desiccated post-harvest remnants of the fields which are replacing much of Kulaale’s forest land—act as an alternative fuel source for women. In the absence of firewood, women use maize cobs to stoke their cooking fires and warm their children at night. The clearing of forestland for agricultural uses offers no such alternative for men, who must travel great distances to find the long, straight mopane trees which are ideal for building homestead structures.

The dwindling availability of building materials, especially building poles, means men spend more time in the bush and, as a result, other household duties which require their attention may be neglected. As an example, the same male interviewee who reported traveling 20 kilometers to find building materials recalled how the increased extractive workload affected his harvest:

When you are about to harvest, that is the time when you build the butala... If you see that the maize is doing well, that is when you prepare to increase the size of your butala. And if there is nothing, you cannot make a new butala... One time, I wanted to do harvesting in my field. But, because I was supposed to collect some poles for building [a new butala], I stopped [harvesting]. I concentrated on collecting the poles in the bush.... It took a long time. It took me about one week...

By the time I finished the collection of poles, when I went to the field I found that my maize was eaten by termites...

Men’s role in procuring building materials, combined with the fact that men and boys are also responsible for the herding of livestock (a point I will visit in the following chapter), means they travel as far or farther than the women in their homesteads for the extraction of bush resources.⁴⁵ Asked in a 2008 survey “Who in your family spends the most time in the bush?,” 15 out of 37 respondents answered “men” (see Table 4.2). And, of those 15, nine added that this was because the husband of the family “knows how to use fishing hooks,” “is responsible for hunting,” “looks after cattle,” or “gathers sticks, poles, and fibers.” In one instance where a female respondent (a widow and female homestead head) answered that *she* spent the most time in the bush, her reasoning was “because I am working like a man. Every work brought from the bush is done by me.”

“Men”	15	40.54%
“Women”	11	29.73%
“Boys”	6	16.22%
“Boys and Men”	2	5.41%
“Children”	2	5.41%
“Boys and Women”	1	2.70%
“Men and Women”	1	2.70%
“All”	1	2.70%
	N = 37	N = 100%

Because it is discussed in Chapter Eight, I will say little of men’s work at procuring fish and game meat, except that—because Kulaale is inside a game management area (GMA) and adjacent to a National Park—men are subject to the brutality of game scouts and the punitive measures that befall those who are caught hunting in the GMA or trespassing in the National Park in a way women simply are not. To quote an interview with a Wildlife Police Officer:

⁴⁵ This is reflected in Figure 3.1 and table 3.3 (page 62), and Figure 4.1 (page 104).

Usually, women don't poach...women are not like men, because men are very hard-workers. They can get inside there and kill the animals. Maybe the jobs the man can do through poaching, it's very hard for a woman... [Also, there are things women do] which are hindering. Maybe she has got a child and then she could think of going into the bush to collect some meat with the child on [her] back. Maybe she is having a very big family, then who is going to prepare food and care for that family, for those small children? Nobody. Maybe that's one of the things that is hindering [women from poaching]. But even though the job which is usually there, it is very hard for a woman...The cases where women are arrested, it is only when they buy... Women go inside [the National Park] for fishing. But what is there, like these who were caught last time, it happened that [the game scouts] felt pity on them because they had some small babies and so on. So they had just only to let them go.

Social Organization

That husbands are “the decision-makers,” “the managers,” “the head of the family,” and “the ones in charge of finances” was reason enough for many interviewees—male and female—to conclude that men, not women, are most affected by changes in the natural environment. The story of Hugo, a young farmer, is telling: Hugo’s forty-five year-old mother, Margaret was one of several female heads of homestead I interviewed in 2010. Margaret came to Musamu in 1989 from the Gwembe Valley to escape hunger. In 1998, Margaret’s husband left. He returned to the Valley, Margaret explained, because she was sick and he thought she was going to die. “The day he left, he said he was going for beer. He did not say goodbye.” At the time, there was no one to care for her and her four children, and she was struggling to get by. For years, Margaret and her two oldest children, Hugo and Valerie, took on piecework—laboring in the fields of others in exchange for maize: “We were rotating, doing piecework for two days then coming home to work our own fields. We planted crops by potholing since we had no animal power. We had poor yields because we lacked farming implements.” Maggie is still sick and cannot exert herself, or she will have difficulty breathing. But, now that her children are older, her situation has significantly improved. Margaret now lives with her two youngest children—a boy and a girl (approximately twelve and fourteen). Also in her homestead are three grandchildren, an adopted niece, and an adopted nephew, all school-aged. The

children in her homestead do most of the daily work. And, as Hugo grew up, he was able to fill the position of his absent father. Margaret recalled:

Since my son grew up, I stopped doing piecework. We are now able to produce enough maize. Hugo was doing exchange labor with neighbors. He planted cotton, then sold it and bought one ox. He planted cotton again and bought a cow. [In time,] the two animals became four. My son plows for me and the family of his uncle. Now I only grow for consumption. If my son has a good year, he sells his surplus maize and buys soap and salt to help his mother.

Not only does Hugo farm for his mother. He also plows and cultivates his own fields, as he is married and has a family of his own to look after. When Margaret's brother died in 2009, Hugo inherited his uncle's wife and, so, he is also responsible for a third family's fields. Margaret surmised that even though her son has grown and moved into his own home, he still does much of the daily work around her homestead. In this instance, we can see the male role of 'decision maker' may place even a young man in charge of providing for multiple homesteads. Here also, we see the primacy of the matriline in Tonga society helps to insulate single women (in this case, Margaret and her brother's wife), from the loss of a "decision maker."

It is important to note that the job of providing for a family does not only include plowing and harvesting; it involves purchasing inputs like seed and fertilizer and negotiating with others for inputs, labor, or farming implements like oxen, plows, harrows, and reapers. It requires planning and navigating around obstacles. For instance, Hugo decided not to plant cotton the year I interviewed his mother, because two of his four cattle had died and because he was too busy helping three separate homesteads to grow maize. Hugo, like many other men in Kulaale, stands in sharp contrast to the common stereotype of rural African men: that they are always "standing by, while their wives and daughters are overburdened with work" (Whitehead 1999:49).

In the article "‘Lazy Men’, Time-Use, and Rural Development in Zambia," Ann Whitehead (1999) critiques a recent assessment of rural labor that contributes to a dominant perception amongst development agents that African men are lazy, allowing women to do *all* the work of securing a household livelihood. She uses a case study of the Lamba people of Zambia to illustrate the colonial roots of this 'lazy men' stereotype as

well as its implications for social science research and contemporary economic intervention strategies. Since the Lamba preferred to work on their own farms, making a living marketing grains and vegetables, rather than subject themselves to the low pay and poor, alienating conditions of colonial farms and mines, Europeans had historically regarded them as “timid, lazy...backward indolent and apathetic” (Whitehead 1999:50, 51). Whitehead posits that many men’s activities—like developing social networks, making contacts, gathering information, and attempting to find employment—are essential to generating household income, but are either not accounted for or classified as ‘resting’ in time-allocation studies. This article, considered in tandem with the calls for women’s empowerment in contemporary development literature, suggests social scientists have made important strides in making women’s work more visible. But, in so doing, they have allowed for a re-emersion of the colonial stereotype. The term *work* is value-laden even amongst trained social scientists, allowing for the wide acceptance of flawed data collection strategies and the propagation of stereotypes that can have severe effects on the ways in which development policies are formulated and implemented (ibid).

One of the largest sources of income for residents of this farming community comes from the sale of commercial crops—maize and cotton—to Food Reserve Agency (FRA) buyers and private cotton traders. And men are the ones overseeing these enterprises.⁴⁶ Existing literature suggests female-headed households are less likely to engage in commercial agriculture. As Sitko (2010:88) writes, Women in Kulaale are “often denied control over the means of agricultural production, including their own labor, thus severely limiting their access to cash. What economic autonomy women can obtain is often diverted to paying for children’s clothes, medicine, and kitchen supplies, leaving little surplus cash to participate in ...government support programs.” Also, households that hold less social influence (i.e., they are not connected to the community through headmanships or service on village committees) will encounter greater obstacles to

⁴⁶ The commercial farming of maize, cotton, and groundnuts are considered men’s duties, though husbands often require their wives and children to plow, plant, and weed the commercial fields before tending to subsistence crops or garden vegetables.

obtaining enhanced seeds and fertilizer (Sitko 2010). Though women plant, weed, and harvest in their husbands' fields, they are not the direct economic beneficiaries of surplus crops. Women's economic enterprises are generally restricted to beer-brewing and the sale of fritters, groundnuts, garden vegetables, or bundles of thatching grass.

But, just as women may be vulnerable on account of their restricted economic autonomy and the limited economic opportunities available to them, male heads of house may be equally vulnerable to the predations of a peripheral market economy, where corrupt agricultural extension officers run off with the funds collected from farmers as a down payment for fertilizer and seed, or where wealthy farmers loan poorer farmers funds with which to purchase seeds and fertilizer at outrageous interest rates.⁴⁷ In 2010, I interviewed three co-wives living in Inzoka (Zone 1) whose husband, Sobino had run away four months prior on account of his inability to pay an overwhelming debt (borrowed at 100 percent interest). Because the husband was unable to harvest enough to repay the man he owed, he ran away—presumably until such time as he can come up with the funds, repay the debtor, and rejoin society. Asked what problems women face when their husband leaves home, the wives, who had been doing piecework—cutting trees and shelling others' maize in order to buy food—responded:

There is...a problem of looking after children. Like, when one is sick the husband could take them to the clinic, helping with the expenses if the child faces serious sickness... Our husband left after plowing. Now, we don't have soap. Look at this one [the woman pointed to a daughter in the household, as an example of the family's declined ability to bathe regularly].

Where male power (and also male vulnerability) among the Tonga appears to come from their role as 'decision makers' who oversee the economic enterprises of the family, female power comes from the nature of the familial structure itself. Matrilineality is advantageous for the single mother who can draw on the assistance and estates of her parents or maternal kin (brothers and mother's brothers) (Colson 1980). Likewise, wives who are widowed or otherwise without a spouse and breadwinner can count on the support of their sons.

⁴⁷ Both such events transpired during the research period.

Mukaintu, an elderly woman who was widowed then inherited and divorced by her late husband's nephew, exemplifies both such instances. She lives in a homestead with her elder daughter, a granddaughter and three great-grandchildren. Also living in the homestead is Mukaintu's married son, Sankwa, with his wife and two children. The ten of them all live and eat together. Sankwa built all of the structures in the home. Because he walks with a crutch, he cannot manage to carry lumber on his shoulder. So, Sankwa cuts poles. Then, he borrows an oxcart from a neighbor to transport the poles home. In exchange for the use of the oxcart, Sankwa helps the neighbor—a relative—to plow his fields. "They work together plowing," Mukaintu explained. "[Sankwa] walks on a stick. But plowing, he can hold onto the plow. He can be able to move with one leg, while holding the plow... He goes to help that man to plow, and in return they come to help him to plow."

This flexible exchange of labor among men, along with the ability of women, like Sarah to step into male roles in times of economic necessity (recall, Sarah's story of collecting building poles is recounted earlier in the chapter) function to diminish men's and women's vulnerability. Nevertheless, the effects of environmental change are still felt by women, especially those who are working to provide for their families in the absence of a husband "decision maker". To exemplify this point, I will revisit the narratives of Margaret and the wives of Sobino. Asked how changes in the environment affect her economically, Margaret recalled:

We do collect wild relish like lusala [a tuber (Dioscorea spp)]. When we first came, it was abundant, but now it is scarce. We have to walk far, for 1-2 miles. It is finished because people cleared land for their fields. In the past, apart from doing piecework, I could collect lusala to sell and use the money to buy soap or I could exchange it for maize. Now, it is nowhere to be found. I could sell lusala today, but it's not there. In the past, lusala could help us raise money for soaps and things.

In this case, the single mother and female head of household saw an opportunity to earn money diminish when her neighbors cleared fields for agriculture. The wives of Sobino, who charge a fee for neighbors to use their hammermill, took up similar small-scale economic activities after their husband left. They, too, described how changes in the

environment affected them. In this case, the extra time required to gather bush resources which are found at an increasing distance from the homestead led to a secondary labor burden:

Sometimes, our cattle sleep in the bush, because we are too tired to bring them home. The cows then eat garden veg and cotton from the fields at night. Sometimes, the owner of the field will charge if your cattle eats their crop. They will follow the footprints of the animals. If there are ten cows, they will charge five-85 kg bags of maize. Last year, I was told by an owner of the field my cattle disturbed to pay five bags. Instead, the owner required the wives and children to pick cotton. Sometimes, we don't cook for our children.

Religious Life

In “The Father as Witch,” Colson expresses that contemporary political-economic forces play on Tonga social dynamics—causing increasing social differentiation and jealousy—such that household tension or animosity between kin and neighbors may be exacerbated, prompting accusations that particular individuals are “causing and benefiting from the misery of others” (Colson 2000:3). As a result, people (especially young men) are enlisting the service of witchfinders with much more frequency than in previous years. This is in spite of both the great social and economic disadvantage that befalls those accused of sorcery and the spread of Christianity throughout even the most rural areas in Zambia.

This bears notable implications for the men of Kulaale. As young men age, they often grow frustrated with their senior relatives’ monopoly on land and resources. The jealousy accrued against elder men who profit, whether from land withheld or harvests reaped, from the labor of junior relatives makes them vulnerable to accusations of witchcraft. Witchfinders are then called into a community to identify and ‘cleanse’ potential sorcerers as well as provide medicines for the sorcerer’s victims. For each step, the witchfinder may charge exorbitant fees, stripping the accused sorcerer (and, by default, his family) of cattle and other resources (Cliggett 2005). Though many accusations are resolved financially, some cases, as the story of the murdered headman illustrates, are resolved violently. And, even monetary resolutions can be deleterious for families who see their property siphoned to pay the witchfinder and assure the accused is

reinstated into society. As Cliggett (2005:139) writes, “[m]en who have worked hard throughout their lives to build their resource base, provide for their families, and make a place of respect for themselves as they age can have everything taken away...in a matter of days.”

Just as men’s role as ‘decision makers’ makes them vulnerable to the burden of providing for their extended family or to the predations of the commercial agricultural economy, men’s duty of securing a home and wealth for their family, makes them more likely to travel great distances in search of building materials and grazing lands. If men secure too much wealth relative to those around them, they also become vulnerable to accusations of witchcraft, and resulting economic disenfranchisement.

Meanwhile, the proliferation of Christian churches has offered a source of charitable support for vulnerable women in Kulaale. This support, however, does not come without significant labor on the part of beneficiaries. Recall the earlier stories of Lillian and Sarah. Lillian was one of 45 farmers in the region to receive seeds and training in conservation farming practices⁴⁸ from the George Henwood Foundation, a humanitarian wing of the New Apostolic Church. Because of the hard work and special equipment (shovel, hoe, rope, and plastic drums) required to create compost, the program has not been widely accepted in Kulaale (Abdul-Karim 2012). Indeed, because she felt she could not find the time or means to plant the seeds she was given, Lillian returned them to the Foundation.

Sarah fared better in her experience of religious charity, which came from the local Seventh Day Adventist (SDA) Church:

[The change in the environment together with the death of my husband] has affected the entire family very much. We need someone to help. That is why, in some cases, I have to go to the church to tell the church to help me so that they can send the men to go into the bush to collect some poles to build my house... when they saw that I was cutting poles for myself and collecting them and picking them on my head, the

⁴⁸ The Henwood Foundation emphasizes the use of compost over chemical fertilizers. While compost is associated with lower yields than chemical fertilizer, farmers who use compost do not run the risk of compromising soil fertility after multiple years of use (Abdul-Karim 2012).

group from my church called Adventist Youth came to help me [and my son] build the house.

The religious life of Gwembe Tonga migrants in Kulaale, along with gendered labor and the Tonga system of social organization, represent *missing* “links” in the chain of rural subsistence. Together, these “links” influence men’s and women’s differential physical and socioeconomic vulnerability in contexts of environmental change.

Discussion

The many stories included in this chapter inform us of two very important dimensions of subsistence labor in this changing frontier landscape. First, labor burdens can be cumulative. As changes in the environment necessitate longer treks in search of bush resources, families must work harder to either ensure their harvest is not devastated by insects or to compensate neighbors for damage done by untended livestock. These burdens play out differently among men and women, who bear different responsibilities according to a distinct gendered division of labor.

Focusing on adults in this present chapter we see, first, a larger extractive workload for men than existing literature has suggested and, second, a greater difference for men in the extent to which environmental change (research zone) influences their extractive labor. The Tonga system of social organization serves as a broad safety net, insulating men and women alike from the shocks of familial and environmental changes. As Colson (1980:373) writes, “...matrilineal descent is adaptive, especially under conditions where one needs access to a diversity of support” (Colson 1980: 373). The stories of Margaret and Mukaintu demonstrate this point.

Under changing environmental and familial conditions, it is not only the descent structure which is adaptive. Too, the division of labor is flexible, bending and bowing to compensate for absences of male labor or to insulate sons from the shock of providing for multiple families. The stories of the crippled Sankwa receiving assistance from male kin and Sarah hauling building poles are illustrative of this fact. As Moore and Vaughan (1994) discovered in their study of labor and nutrition among the Bemba of northern

Zambia, it was, in part, the gendered division of agricultural labor—or, rather, the flexibility of gendered labor—that enabled women to step into male roles of “cutting down trees” at times when men had emigrated to urban places of employment. Understanding of the reactivity and malleability of local practices, in this instance allowed Moore and Vaughan to counter colonial stereotypes of rural labor.

Likewise, appreciating the extent to which labor, social organization, and religious life shape men’s and women’s differential experiences of physical and socioeconomic vulnerability precludes me from making claims that would paint one demographic as more profoundly affected by environmental change than another. Rather I consider men and women (and in the next chapter, boys and girls) as occupying different “spaces of vulnerability” with variables like homestead composition (the presence or absence of a “decision maker” or able-bodied children), matrilineal relations, and flexible labor systems enabling some to cope with changing ecological and social landscapes better than others (Crooks, Cliggett, and Cole 2007; Leatherman 2005; Watts and Bohle 1993). The fact that labor is not always given obligatorily—that there is a threshold upon which men no longer give their labor unquestioningly to elder “decision makers”—adds another dimension to physical and economic vulnerability of men that is worth stating here. In Kulaale, as in the Gwembe Valley, accusations of sorcery and resulting economic expenses act as a social and economic leveling device for men who are perceived to be too successful in navigating the constraints of rural livelihood. Meanwhile, religious charities have offered an arguable source of support for single women.

The quantitative geospatial data and qualitative ethnographic data presented here support the complimentary understanding of male/female labor heralded by African feminists. This, in turn, encourages a processual approach to understanding rural livelihoods, one less reliant on binary, essentialist ways of understanding the world.

Conclusion

Following a stream of anti-essentialist critiques targeted at the ecofeminist literature that informed much of the gender and development discourse of the early 1990s, feminist academics have taken aim at gender mainstreaming (Cornwall, Harrison, and Whitehead

2007). These scholars assert that the logic and imagery circulated through mainstreaming efforts simplifies complex relationships and promotes mythical meta-narratives that may be easily summed (or “sloganned”) with technocratic sound bytes—e.g. “women are poor,” “women are agents of development,” and women have the “triple role” of performing reproductive, productive, and community related work (Boellstorff 1995; Eyben 2007; Moser 1993). As Cornwall, Harrison, and Whitehead (2007) write, iconic depictions of rural labor not only consign women to dehistoricized, homogenous positions, they also marginalize the experiences of other gendered subjects like men and children.

Persistent stereotypes about men’s and women’s seemingly “natural roles” in connection with environment, the economy, and the home plague contemporary environment and development work, in part, because feminist scholars did such a great job debunking the essentialist ecofeminist theories about women’s relationship to the natural environment that held sway in the 1980s and 90s. As Harrison and Watson (2012:934) write, “...in the wake of disenchantment with myths about women as better nature-carers than men, a vacuum... emerged” and researchers simply do not know what to do with gender anymore.

To fill the space created by this uncertainty, development professionals are retreating to the “safety of the known,” relying on the generalized, Western conceptions of gender that they find familiar (ibid).⁴⁹ Another tactic development agents employ in the context of contemporary uncertainty regarding relations with the environment, economy, and home, is to exercise “cultural sensitivity,” in an attempt to counter any feminist imperialism that might undermine respect for local cultural variation (ibid). As Harrison and Watson (2012:934) write:

Both the “safety of the known” and cultural sensitivity align with the idea of “gender mainstreaming,” which has come to dominate much gender-related policy and has meant a dilution and weakening of feminist arguments... Paradoxically, the formal profile given to gender-related work means that there is also a common feeling that gender issues have been “taken care of.”

⁴⁹ According to Harrison and Watson (2012:933-934) “Men are often seen as the “natural partners” for the technical aspects of natural resources management, while women are thought to be the “natural partners” for what is viewed as “softer” group and communication work.

Despite the proliferation of regional, state, national, and international bureaucracies for gender mainstreaming and, notwithstanding the growth in interdisciplinary “research for development” natural resources management (NRM) projects, gender remains under-theorized in both environmental and social science research and practice (Bannerjee and Bell 2007; Harrison and Watson 2012). Where natural scientists may feel that gender is “too messy,” “too complex,” or “too political” to engage with, the *social* science element of NRM projects is often underdeveloped. As Harrison and Watson write of an interdisciplinary NRM research project in India supported by the United Kingdom Department for International Development (DFID), “[social science] was not used to develop any critical analysis of the ways in which men and women interrelate, nor to explore more critically their different roles, responsibilities, needs, and capabilities” (2012: 940). In their interviews with members of the NRM research team, the authors quoted researchers as explaining that “their projects ‘dealt with gender’ because [they] focused on the poor, many of whom were women.” They go on to explain:

As one [researcher] put it: ‘We work with women because they are the poorest. Women make up at least half of the poorest people. Therefore at least half of the people we work with are women.’... Such simplifications...equate gender issues with working with women, which fails to take into account the social and power relations between men and women that construct some women as poor and powerless. Focusing only on women runs the risk of concentrating on the symptoms of unequal power relations rather than on their cause. The approach also misses unequal power relations between women, constructs all women as victims, and misses men in communities who may be vulnerable (Harrison and Watson 2012: 937).

The fact that gender is currently under-theorized in development research and planning is especially troubling given the propensity for contemporary economic reforms to work through and perpetuate existing gendered power relations (Wangari, Thomas-Slayter, and Rocheleau 1996; Shields et al. 1996; Agarwal 2001). Likewise, the political responses to pressures associated with population growth and climate change have the capacity to engender a store of injustices linked to property, power, and the overlapping social locations of race, gender, class, and age (Elmhirst and Resurreccion 2008).

According to a report by the Food and Agricultural Organization of the United Nations (FAO), there is “almost no information or data available about the respective roles and responsibilities...of women and men as users and decision makers concerning Zambian forests and non-wood timber products” (Eckman 2007: iv). Accordingly, the FAO recommendation is that “gender disaggregated databases for forestry and other economic sectors are urgently needed, and should be established and maintained” (ibid). Because the ways in which Zambian men and women differently interact with the forest environment are more or less unknown, the ways in which men and women differently experience forest decline are also unidentified. And the effects of land cover change on Zambian youth have never been explored. This study represents a first step toward addressing this gap in knowledge.

Using a particular vein of feminist theory, one that grew out of African feminisms and feminist political ecology, I have endeavored here to investigate how these environmental changes play out in a community where human interactions with the environment unfold in accordance with gendered prescriptions for extractive labor. The results of this research show that men and women in the deforested Zone 1 are traveling further than their counterparts in the non-deforested Zone 2 for the collection of bush resources. Here, also, it becomes apparent that the extent to which men and women are affected (in terms of their extractive labor) by changes in the Kulaale landscape is not equally borne.

The data from the mapping exercises present a picture of resource extraction which destabilizes the assumption that women are most affected by environmental change. In Kulaale, the picture of environmental change and gender- and age-based labor systems is one where men also emerge as having intimate and increasingly strained ties with the surrounding environment. One example of the ways in which men and women may differently experience environmental change is that men without ox-drawn carts may be required to trek by as far as 20 kilometers to retrieve the materials necessary for building household structures. And single women, who, by nature of their gender, would ordinarily not engage in the collection of poles for home construction—in the absence of male labor or the resources to purchase it—may take on what would otherwise be

considered a male responsibility, thereby reconfiguring the gendered division of labor and gendered relations to the natural environment.

The results of my dissertation research show women and men are *both* vulnerable to a declining natural resource base, with varying roles, responsibilities, and social connections causing them to experience vulnerability in different ways. Focusing on the essentialized category 'woman' obscures the many *missing "links"* in the chain of rural subsistence which color people's interactions with the natural environment and shape their experiences of environmental change. The "links" I have attempted to flesh out here include the gendered division of subsistence labor, social organization, and religious life among Gwembe Tonga families. Together, these "links" compel researchers to consider the power of the male household head and the invaluable contribution of male "decision makers" to homestead wellbeing. This includes the role of men in procuring bush resources and also the vulnerability men experience when perceived to be too successful at making a living. It also includes the matrilineal system of social organization which allows for both the exchange of labor between male kin and the mobilization by single women of their son's and/or nephew's labor. This helps insulate Tonga families from the loss of male labor and increased workloads caused by deforestation. While accusations of witchcraft are on the rise in parts of Zambia, religious charities are also growing and providing services that aim to mitigate men's and women's physical and economic vulnerability in the face of environmental change. Finally, the flexible nature of subsistence labor allows women to take on male responsibilities of resource procurement while also pursuing economic spheres characterized as feminine. Taken together, these *missing "links"* all help buttress frontier life in times of economic hardship and environmental change.

CHAPTER FIVE: DEATH AND AXES: VULNERABILITY AND AGENCY LINKED IN THE EVERYDAY LIVES OF FRONTIER CHILDREN

“Children’s lives [are] as worthy of study as any other section of society and... a focus on children [can] reveal aspects of social life not found in conventional ethnographies”
- Montgomery (2009: 37)

Introduction

In the previous chapter, I identified what I perceive to be several missing *links* in current theorizing of rural subsistence. These links bolstered my investigation of Gwembe Tonga men’s and women’s socially-differentiated experiences of development, conservation, and environmental change in Kulaale. In this chapter I extend the investigation of missing *links* into the lives of Gwembe Tonga girls and boys, as I explore children’s labor and their socially-differentiated experiences of environmental change in Kulaale.

Social scientists recognized in the late 1970s that children were “others” whose activities, beliefs, and relationships were too often silenced in academic writing. Since that time, the new childhood studies and ethnographies of youth have continuously affirmed that young people are not passive recipients of culture acted upon by the adult world. Rather, they are cultural agents worthy of investigation in their own right. In exploring the ways in which children and youth work, struggle, care for others, and influence change and continuity inside and outside the home, the new childhood studies and anthropologies of youth problematized these taken-for-granted phases of the life course and showed the social characteristics Westerners associate with childhood and adolescence to be neither universal nor “natural”. Studies of African children, in particular, have debunked illusions that childhood is an equally “playful, work-free, dependent, vulnerable and care-receiving phase of the life course” (Abebe 2008: 78) for all the world’s children—though this impression is essentially maintained in the United Nations Convention on the Rights of the Child (UNCRC).

Recently, authors have refocused their criticism dispelling not just universalizing perspectives of childhood, but also universalizing notions of agency. As Holt (2011:3) explains:

...discourse of children's rights has often inadvertently reproduced narrow, dominant, modernist concepts of agency, as self-cohesive and independent. Ultimately, such a view 'others' those who are unable to express such autonomous individuality. This notion of agency, which has been pivotal to the development of geographies of children and youth and the incorporation of children's voices and experiences into academic discourses, is paradoxically integral to the marginalization within contemporary societies of children and young people...who cannot achieve this ideal of independence and autonomy. It is therefore inherently problematic that academic accounts of children have endeavored to suggest that they can be autonomous 'sovereign' agents.

In an effort to balance the scales, to account for young people's agency while also attending to the structural conditions that impinge upon young lives, researchers have done away with the agency/vulnerability dichotomy, asserting children are neither and both. In their exploration of young Zimbabwean's sexual health and their experiences as heads of household in an era of HIV/AIDS, Kesby, Gwanzura-Otemoller, and Chizororo (2006:185) assert "children must be understood as competent and independent agents of social change *and* as vulnerable social becomings in need of protection" (emphasis mine). In this chapter, I present a series of qualitative and quantitative data which takes this assertion one step further. I conclude that children in Kulaale are not simply agentic *and* vulnerable. Rather, their agency and vulnerability are inextricable. Each one influences the other; agency and vulnerability are *linked* in children's everyday lives. I reveal this linkage through examples from three spaces of children's daily lives: the school, the home, and the bush. Specific attention to children's labor helps explain how women, men, girls, and boys are all differently vulnerable to environmental change in Kulaale, with varying socioeconomic connections, roles, and responsibilities causing them to experience vulnerability in different ways. Drawing on ethnographic "snapshots" (Philo and Swanson 2008) of children's everyday lives, I show the lives of Gwembe Tonga children in Kulaale to be, like the frontier itself, characterized by agentic qualities (autonomy, cooperation, self-determination) and vulnerable qualities (illness, lack of infrastructure, authoritarian social structure), which are not easily disentangled.

On the Anthropology of Childhood

Historical Roots

The discipline of anthropology has a long and varied history of studying some of the youngest members of society. From its earliest days, child-focused anthropology has both influenced and been influenced by general anthropology. Indeed, as Montgomery (2009:9) argues, “a distinction between child-centered and older ethnographies is an unhelpful and limiting one.” In producing one of the first ethnographies to “take children, as children, seriously” Margaret Mead (1928) debunked the biologically determinist theory that adolescence was “a time of storm and stress, when young people were in the grip of powerful biological changes they could not control,” changes which urged youth toward arrest, perversion, hoodlumism, and secret vice (Montgomery 2009:22).

From the 1920s until the 1970s, anthropological interest in aspects of childhood focused primarily on childhood as a liminal phase. Literatures of this era expounded on the initiation ceremonies, sexual practices, marital customs, and intergenerational relations of human populations as they played out in context of the adolescent life stage (Bucholtz 2002). In line with the focus on adolescence and liminality, children were discussed in the literature of the time as “partially cultural” beings awaiting their transition into adult/personhood (Caputo 1995:29). They were studied as a component of mother-child dyads (Fortes 1969), as branches of kinship networks (Parsons 1955), as playful and vocal actors aspiring to adult forms of communication (Piaget 1950; Schwartzman 1978), or as participants in ceremonial initiations and rites-of-passage (Evans-Pritchard 1940), but not as people with distinct social worlds and meanings worthy of investigation in their own right (Hardman 1973; Caputo 1995). Regarded always as in the process of becoming full adults, and defined often by what they are not (civilized, married, with children, with independent resources), youth were depicted through much of anthropology’s history either as vestiges of the past (“primitives”) or as sources of unrealized potential and future financial support (Caputo 1995; Burke 2000). That is, until the emergence of “new childhood studies” in the 1970s.

The new childhood studies sought insert a more complex understanding of young people—as “meaningfully engaged...social actors whose activities and practices influence

a variety of social contexts and settings” (Best 2007:10)—into social research. In so doing, the new childhood studies replaced adult-centered studies of children with studies in which children, themselves, take center stage. “Youth researchers became increasingly disinterested in children’s *becoming* (that is, what they might be) and far more interested in children’s *being* (what they are)” (ibid). As Montgomery (2010: 45) explains, within anthropology the new childhood studies

“[entails] changing the emphasis within studies of childhood from socialization, and how parents [raise] their children, to how children themselves [perceive] their lives, surroundings, parents, and upbringing...Taking children themselves as a starting point [means] that they [can] no longer be seen as a homogenous group with views and priorities that depended only on their physical advancement...children [possesses] agency and... they [can], and [do], influence their own lives, the lives of their peers, and that of the wider community around them. This vision of childhood is a profoundly political one...”

The task of de-homogenizing current conceptualizations of childhood becomes all the more urgent as bodies of international governance, development, and humanitarianism expand their membership and broaden their reach in today’s neoliberal era. To date, the prevailing definition of childhood touted by the UNCRC fails, in its universalizing language, to consider how historical context and cultural particulars play into the many variable and fluid experiences of adult/childhood around the world. As James (2007:265) writes, “...claims that are made about and on behalf of ‘children’ and the use of ‘children’s voices’ as evidence—and as evidence that might be acted on—need...to be tempered by careful acknowledgement of the cultural contexts of their production...It is just such a universalizing view that the UNCRC fails to problematize in its assertion that there can be rights of the child...”

A universal model of childhood based on idealized notions of Western childhood—the model of childhood which is argued for in the UNCRC—undervalues and overwrites the divergent experiences of children in the developing world and in marginal spaces of the West. Culturally-specific understandings of childhood need to be explored, according to Kesby, Gwanzura-Otemoller, and Chizororo (2009:199), not only so that non-Western childhoods may be accounted for, but so that “other, other childhoods”—instances where

children's knowledge and experiences run counter to both international and local norms—do not “fall between the cracks.” This sentiment is reiterated by Durham (2008), who urges a move beyond universal and uniform definitions of *agency*—a term which, according to Ahearn (2001:109), “has become ubiquitous within anthropology and other disciplines.” Quoting Johnson (2003:114), Durham sums that agency “has become ‘a master trope...which overcodes...complex discussions of human subjectivity and political organization.’” She goes on to state, “...it is important to go beyond a recognition that youth have agency. We must ask what kind of agency they might have, how they might come by it and exercise it, and how their agency relates them to others and to their society” (Durham 2008:153).

There are three strands of critique, according to Holt (2011), which can be leveled at the existing conceptualizations of young people's agency. First, the socio-spatial contexts in which young people exercise agency—most notably the family—are relatively neglected. Second, the discourse of children's rights—as Kesby, Gwanzura-Otemoller, and Chizororo (2006), Durham (2008), and others have found—“has often inadvertently reproduced narrow, dominant, modernist concepts of agency, as self-cohesive and independent. Ultimately such a view ‘others’ those who are unable to express such autonomous individuality” (Holt 2011:3). Third, the emphasis on “agency” eclipses the role of “structures” in constraining and facilitating young people's experiences (ibid).

In response to these critiques, I define agency in this chapter in terms of performance, everyday resistance, and accommodation. Following Kesby, Gwanzura-Otemoller, and Chizororo (2006: 206) I perceive agency “not as...innate capacity, but as performance constituted from available resources.” Following Scott (1985), my conceptualization of agency acknowledges that, while children are rarely in a position that enables them to impress their vision upon adults and other more powerful agents, they do have the power to exploit the powerful party's non-immunity to symbolic sanctions. Agency in this sense may include “everyday form of resistance,” like “footdragging, dissimulation, pilfering, feigned ignorance, slander, arson, [or] sabotage” (Scott 1985:29). These “ordinary weapons of powerless groups” require minimal coordination or planning, avoid direct confrontation with authority, are often covert, are concerned with immediate gains (in

contrast to institutional forms of resistance) and are based upon refuting unfavorable claims made by superordinate classes (ibid). Inspired in part by Abu-Lughod (1990) and Mills (2003), the definition of agency I put forth here expands on Scott's definition by incorporating subtler forms of everyday resistance and acknowledging the extent to which accommodation can also be agentive.

Building on Scott's (1995) *Weapons of the Weak: Everyday Forms of Resistance*, Abu-Lughod (1990) stressed the tendency among anthropologists to romanticize resistance, paying more attention to it than to the power it responds to and operates within. According to Abu-Lughod, the efforts of Egyptian Ali Bedouin women to protect the inviolability of their separate sphere, their resistance to marriage, their making fun of men and manhood, and their expression of radical sentiments (sentiments that are too radical to be spoken in ordinary discourse) in oral lyric poetry might pose a dilemma for conventional ethnographers or for ethnographers whose idea of resistance is limited to the very rare occurrences of open revolt among the peasantry.

Analyzing gender inequalities in the global labor force, Mills (2003:50) acknowledges that "workers around the world may tolerate tremendous exploitation and hardship in order to achieve other economic or social goals." In that this accommodation is a "performance" (Kesby 2006:206) carried out in the context of sociostructural constraints—and because this performance is, itself, the product of strategic negotiation and decision-making on the part of the performer (Feldman 2001; MacLeod 1992; Mills 2003)—I understand accommodation, itself, to be a manifestation of agency.

Though they are not children in the biological sense of the word, young men in Kulaale exemplify the link between accommodation and agency in their relationships with their fathers. In the case of the Gwembe Tonga, young men are generally denied full rights to land, labor, and technology so long as their fathers and maternal uncles are alive. However, the fact that senior men monopolize the means of production does not mean that junior men are unagentive. As the previous chapter depicted, young men may accommodate their elders until such time as they are granted fuller rights to their own labor, to land, and to agricultural machinery; they may also perceive their father's or uncle's control over resources and the wealth accrued from such power to be supernatural

in that it benefits the elder men at the expense and suffering of others. In such cases, the junior men may suspect their elders of witchcraft and enlist the service of a witchfinder (or a hired assassin) to balance the scales. Both actions—accommodation and resistance—are agentic. On the one hand, young men may reproduce the conditions of their own subordination by accommodating the wishes of their senior relatives. On the other, they may contest the economic and aged conditions of their subordination with accusations of witchcraft. Both outlets—accommodation and resistance—actively shape the kin-based mode of rural production that characterizes Gwembe Tonga society. Both outlets thus represent the role of young peoples in contributing as cultural *agents* to the construction and contestation of the social structures that outline their lives.

Studies of African Youth

Studies of African children and youth have contributed substantially to both the quality and quantity of ethnographic literature on childhood. Nevertheless, there are paucities in this body of literature that I seek to rectify with this chapter. First, literature on African youth has been overwhelmingly set in urban environments. Within this urban body of literature, youth often operate alone, in tandem only with other youth, or otherwise outside what anthropologists have come to understand as a household political economy. As Holt (2011:3) writes, “...there has been limited dialogue between researchers of the family and...of childhood, and the experiences of children and young people within the family contexts has been relatively unexplored” (Holt 2011: 3).

Second, where youth are studied in both urban and rural environments, ethnographers have been sensationalist in their focus on murder, violence, sexuality, or other “breach cases” (Perry 2009). Child soldiers feature prominently in studies of African youth. Conceptualized as a “lost generation” forever scarred by trauma, children at war are sensationalized and exoticized both in international media and in literature focusing on violent conflict (West 2000:180). But, with the increase in child-focused studies comes the recognition that children are not only aggressed against; they are also aggressors (Bluebond-Langner and Korbin 2007).

Recent works, like those authored by Burke (2000) and West (2000), among others, have challenged prevailing Western assumptions about youth innocence, vulnerability, and the experience of trauma. Interviewing a cohort of female guerillas twenty years after the war for Mozambican independence, West (2000:185) demonstrates that, for these young unmarried women, the war effort represented a source of empowerment and a nationalist movement that framed them—the Destacamento Feminino (DF)—as heroic “girls with guns.” West’s ethnography illustrates how youth absorb, embody, and contribute to ideological narratives that imbue the social categories of youth and gender and also the experience of violent conflict with culturally and temporally specific meanings. Joining the fight against colonial rule as combatants, intel operatives, porters, and staff of revolutionary schools, hospitals, and orphanages emancipated the DF from ‘traditional’ roles of tending agricultural fields, carrying water, cooking, and caring for children. At the same time they freed themselves from the hierarchy of familial tradition, however, these women also subordinated themselves to the agenda and institutional hierarchies of the Frente de Libertação de Moçambique (FRELIMO). In turn, the trauma for these women, West asserts, came years after Mozambican liberation, when the promises of the revolution remained unfulfilled and the narrative that framed and provoked their wartime experience was increasingly destabilized.

For Burke (2000), Botswanan youth are vulnerable in that they may be the objects and instruments of witchcraft, but cannot manage the symptoms of their own bewitching, nor bewitch anyone without the assistance of a parental figure. However, in striking against the ritual murder of a young girl by adults—a tragedy that came to symbolize “government arrogance, inequitable power differentials, poverty, corruption, and lack of care”—University of Botswana students challenged the unequal distribution of knowledge and demonstrated publicly their awareness of their dependent position in society: “They flex their muscles, perhaps a reminder that their dependency and powerlessness is time limited” (Burke 2000:212).

The preoccupation with urban youth and youth’s “breach” experiences marginalizes the experiences of young people in the home and in nature. It has long been recognized that children and youth provide significant labor to households/family groups. It is also

recognized that economic and environmental changes have the potential to affect families in socially-differentiated ways. However, throughout the continent, let alone in Zambia specifically, very little research exists that takes youth (and youth labor) as its focus in examining environmental change, to say nothing of the differential impacts of deforestation and changing environments on girls, boys, men, and women. And so, the third contribution of this chapter to the study of African childhoods is to investigate children's gendered and aged interactions with the natural environment. I do so through ethnographic "snapshots" from children's daily lives as well as through the geospatial mapping exercises described in previous chapters.

Investigating Children's Everyday Lives in Kulaale, Zambia

Methodology

To study children *in their own right*, according to Hadley (2007:159), "demands a research method that allows the adult researcher an opportunity to see the world from the child's perspective. Ethnography does just that." Surveys and interviews are less appropriate means of interacting with young participants, according to Hadley, because children, especially young children and especially in less individual-centric cultures, are less practiced at self-reflection.

In my attempts to conduct focus group interviews with adolescent siblings, I found the authority of their parents who remained present during the interview, the authority of the interpreters (educated, comparatively wealthy, adult men) and my authoritative position as white/Western/wealthy/educated/foreigner did not encourage confidence or candor or on the part of youth interviewees. Children were much more at ease communicating in contexts outside of a formal, structured interview. The data included in this chapter comes from journals kept by five area children aged 13 to 18 and from my fieldnotes—where I chronicled my participant-observations of village life and my casual conversation with youth and adults. I also draw on my interviews with adults and ethnographic findings referenced in existing GTRP literature—including analyses of anthropometric data collected by Crooks, Cliggett, and Cole (2007).

I employ what Philo and Swanson (2008) call a “snapshot” approach to youth-focused ethnography. This approach pays particular attention to the “material, embodied, performative and mundane” aspects of children’s lives (Philo and Swanson 2008:140). This approach is certainly not unique to youth. In prefacing his exploration of wartime experiences among the Acholi of Northern Uganda, Finnström (2008:10), writes that anthropology, as a discipline, is “about painstakingly investigating the common, general, mainstream, and even taken-for-granted stuff of everyday life.” I conjure this facet of the anthropological enterprise most vividly (and most banally) in my exploration of gender- and age-based divisions of labor.

Why Study Children and Children’s Labor?

Reynolds (1991) offers four reasons why systems of child labor deserve intense, systematic anthropological attention: (1) because children work extremely hard; (2) because children’s work often involves apprenticeship and the learning of “real lessons” that will carry them through adulthood; (3) because the labor of children is invaluable to women who are charged with increasing demands tied to farming and feeding their families; and (4) because child labor is key to familial subsistence, because families calculate children’s labor into their plans for next years’ harvest, and because families negotiate control over children’s labor, their access to organized labor, and the use of family, including children’s earnings. Reynolds also outlines several complications inherent to the study of children at work. These complications arise from the tendency for children’s work to be obscured, hidden, or manipulated by various environmental or socioeconomic circumstances. She cautions that children’s labor “occurs in spasms;” that it is often not acknowledged by others or even themselves as work; that it is not always tied to an immediate or foreseeable goal; that it often occurs across household groupings; and that it varies with the season and according to sex, to the child’s level of education, and to the wealth of their household (1991:xxix).

Hunter (2000:28) offers another reason why scholars should take interest in the labor and behavior of society’s young people: the population of the world today is “characterized by the largest-ever generation of young people on every continent except

Europe.” Moreover, the relationship(s) among age, behavior, and patterns of LULC change is “oddly missing” from most accounts of population-environment dynamics (Walsh et al. 2005:141).

Land, Labor, and Cooperation in Kulaale

Children in Africa are “complimentary participants in the social system” (Schildkrout 1978:133). Their work, Nieuwenhuys (2008:159) writes, is especially crucial in the lives of the poor and “cannot be understood in isolation from the totality of activities that make up local economies.” In Kulaale, children play a significant role in bolstering what in the West are regarded as “adult” sectors of familial economies. This includes caring for the youngest and oldest members of the family and providing basic subsistence. Children clear, plow, plant, weed, apply pesticides and chemical fertilizers, and harvest in their families’ fields. Children provision water for drinking and washing and catch fish and small game for eating. They tend garden vegetables, cook their families’ meals, herd livestock, and engage in small-scale enterprises alongside their parents. In the same way that men and women collaborate in daily life (discussed in Chapter 4), adults and children also cooperate in a broad range of household survival strategies.

Because labor is cooperative between children and adults—because children toil in the same chores as their parents—identifying a moment when children cease being children and start being adults is especially tricky. Even after marriage, a son may still be childlike in his dependence on his father for agricultural land and implements. Daughters who bear children may continue to live in their mothers’ houses or labor in their father’s homestead alongside their brothers and sisters. Still, labor remains a key variable to understanding childhood in Kulaale.

After observing adults and children of all ages in various subsistence activities, I came to understand that it is not that the type of labor that differentiates child from adult but the way in which the labor is carried out. This finding is supported by the response one interviewee offered when asked what signifies a child has reached adulthood:

“When the girls have reached the age of fifteen. You can see that even her work can sometimes surpass the mother. The way she will cook, prepare food, even weeding,

you can tell that she has now moved from the youth age and entered the adult age. For boys, sometimes they start doing a better job at the age of sixteen. And sometimes when the father trains the son earlier, the boy can cart at fifteen, but mainly it is sixteen onwards. That's when he can be regarded as becoming an adult. And now an adult, because he can help the father build the butala, build the house” (Interview, Sarah 2008).

It is noteworthy that the interviewee did not mention marrying or having children in her reply. Too, the response points to the collaborative nature of rural labor. Children work with adults, and adults with children in securing a livelihood for the family. As an example of adult-child collaboration, I documented one Kulaale family’s herding schedule. As the Table 5.1 demonstrates, herding responsibilities are meticulously shared among the adult and juvenile males of this particular family.

Day of the Week	Person Responsible for Herding Animals
Friday	Son 1 (Child)
Saturday	Adopted Nephew (Child)
Sunday	Adopted Nephew (Child)
Monday	Brother of Household Head (Adult)
Tuesday	Brother of Household Head (Adult)
Wednesday	Male Household Head and Son 1 (Adult and Child)
Thursday	Male Household Head and Son 1 (Adult and Child)
Friday	Brother of Household Head (Adult)
Saturday*	Son 2 (Child)
Sunday *	Son 2 (Child)
* The male household head schedules weekend herding duties such that no man or boy works two weekends in a row. Since Son 2 is herding the first weekend of this calendar, Son 1 would herd the next weekend.	

Participant observation, coupled with calculations from children’s journals, suggest boys spend an average of 4.8 hours herding per day. While the average distance from Kulaale homesteads to grazing sites is only 640 meters, I estimated during an afternoon in which I helped a teenage boy to herd his uncle’s cattle that the boy and I walked five kilometers or more as we traveled to and from, and meandered around, the grazing site retrieving stray cattle along the way.

Children who are not old enough to labor alongside their parents and older siblings practice the tasks that will one day be entrusted to them during their play activities. Similar to their American peers who push play lawn mowers and pretend to bake in their pre-school years, boys in Kulaale will drive toy oxcarts almost as soon as they are able to walk. Girls will tuck flip-flops and other small knick knacks in cloths tied around their shoulders, mirroring their mothers and elder sisters who carry babies in their *chitenges* until such time as they are able to care for younger siblings and, eventually, babies of their own.

The flexibility and ambiguity surrounding current definitions of childhood mirrors the shifting, liminal nature of the frontier landscape. The dynamic relationship between children's autonomy and dependence, their agency and vulnerability, echoes the interplay between access and alienation, tradition and modernity, state and periphery—features which collectively characterize the Kulaale frontier.

In the paragraphs that follow, I will flesh out three instances in which children's agency and children's vulnerability are linked in the everyday happenings of frontier life. The first instance is revealed through an analysis of qualitative data which describes children's activities on school grounds. The second and third instances emerge from analyses of qualitative data which assess children's labor at home and in the bush. In considering the gendered dimensions of children's agency and vulnerability, I draw on my own analyses of quantitative/geospatial data documenting children's extractive workloads and anthropometric data published by Crooks, Cliggett, and Cole (2007) as part of an ongoing study of migration and food security.

Vulnerability and Agency at School: Lucius' Story of Drudgery and Defiance

"Ba Ethan," I asked. "What is that sound?" It was May, 2008. I was walking with Ethan from the first interview of the day to the second. Walking through the bush, running my fingertips along the cresting grains of elephant grass on either side of the dirt path, my ears tuned in to a dull, clapping noise in the distance. I paused and cocked my head to the east. I felt my eyes squint in concentration as I tried to mentally silence the clamber of nearby farm life—clucking chickens, squeaking guinea fowl, singing crickets, mooing

cattle, barking dogs, laughing children, a truck grinding into low gear, and a pestle hammering maize inside a wooden mortar. With the other sounds dulled in my mind, I might identify the noise in question: Swoosh. Clap. Hiss. Clap, clap. Groan. Clap, clap, clap!

“It’s coming from the school,” Ethan explained. “They are clearing a new track and field area.” “Hmm,” I thought to myself as we continued pressing forward. Clenching my fist around a tuft of grass, I strained to imagine how that clapping sound translated into a racing track. I shrugged, felt the florets pop from the grass heads tickling the webbing between my fingers, and allowed the cacophony of other sounds to flood back into my ears. The truck engine sputtered to an idle maybe a half mile away and the children’s voices grew louder as they poured out of an adjacent homestead onto the trail behind us. “Magua!” the four sandy bodies exclaimed as they half-skipped, half-stumbled in cadence at the back. I turned to smile at them, prompting the group to jump in surprise, explode into high-pitched laughter, and then fold into a whispering huddle. This series of events would repeat itself for the next four or five minutes until Ethan and I reached a fork in the trail that diverted eastward toward the school grounds.

In the clearing, I could see twenty silhouettes sweeping back and forth, bending and rising as they hacked into a dozen scattered saplings and cropped the waist-high grass. The two of us paused for a moment to watch the current of thin, knobby arms fling into the sky and hammer into the ground with an assortment of battered axes and machetes. Where the trail curved toward one of the teacher’s houses two students plunged handmade axes into a large tree trunk, condensing it into smaller transportable segments that might be carved into stools or burned as firewood.

“You see?” Ethan said. “The pupils are making a track.” “Ooooooh” I announced, falling rather forcefully into the exaggerated Zambian inflection. “Ba cicikolo,” I choked out in an effort to practice my CiTonga. “Ba cicikolo ba la kunka musamu. The students are cutting trees.” “Inzha, ba la beleka. Yes, they are working.” And work it was. I watched for a few moments as the group pressed their way across the plain, axes swinging.

I would soon learn that this was but one of many occasions in which students, supervised by their teachers, work to maintain the school facilities. The school in Kulaale employed no groundskeepers. All sweeping, arranging, and repairing of school property was performed by students. Students called “weekly boarders” who lived too far to commute on a daily basis packed themselves tightly into boys’ and girls’ living quarters—a small house (roughly 10 feet by 18 feet) with clothing draped along the ceilings and blankets and bedding covering every inch of the concrete floors. In 2010, the two small girls’ dormitories housed 29 students (fourteen in one and fifteen in the other). In addition to maintaining their own domiciles, weekly boarders earn their keep by cooking and cleaning in teachers’ homes and by planting, weeding, and harvesting in their teachers’ fields, gardens, and orchards. This sort of work is not unique to students in Kulaale. Rural children throughout the Global South “contribute to the maintenance of teachers and school buildings by offering free labor on school gardens or during school improvement days. Were this work unavailable,” Nieuwenhuys (2008:160) writes, “the cost of primary schooling would dramatically rise.” The fact that children’s labor makes schooling possible in places like Kulaale, compels a deeper investigation of both agency and vulnerability in the context of children’s manual work.

On the one hand, we can see children are agents of their own education. Their accommodating labor keeps the school and its teachers functioning inside and outside of class-time. On the other hand, we see educators taking advantage of free/cheap labor and children acquiescing to the demands of those in authority. But, rather than attempting to conceptualize children as *either* agents *or* vulnerable, I suggest that agency and vulnerability inform each other. Not only are children both agentive and vulnerable, their experiences of agency and vulnerability cannot be disentangled.

That same evening, I spoke casually with Lucius, a 14 year-old boy whom I befriended over the course of my research. Lucius’ maternal uncle Aisha adopted him and his younger sister Annabelle following the death of their mother a few years earlier. I came to know the siblings the previous summer, when I camped in Aisha’s homestead during a preliminary research visit. Camped again at Aisha’s homestead in 2008, I spent much of my free time hanging out, observing, exchanging stories, and playing games

with Aisha's children and his adopted niece and nephew. While Annabelle helped her aunt prepare dinner, and as Lucius' cousins mixed their evening chores with a quick game of soccer, Lucius sunk into the wooden stool beside me to watch the commotion unfold without him. He was tired, he explained to me, from chopping trees and clearing brush to make the running track at school.

The work Lucius had carried out earlier that day made him vulnerable to fatigue. Educational psychologists have long known that, even when "fresh air, good health, strong motives, clear aims, and intense interest and the like are present... fatigue may prevent attention, reduce output of work, and hamper learning" (Bhatia 1973:312). But, as a person who became somewhat entangled in the life of Lucius (both as a researcher and a friend), I hesitate to paint him as purely vulnerable. Lucius is an incredibly bright student, determined to do well on his exams so he can attend high school in Choma. But he also has issues with some of the teachers at his school. He confessed to regularly skipping civics because the teacher allegedly beats those students who misbehave or who answer incorrectly.

Just three days after he helped clear the running track, Lucius shared an interesting story. The math teacher at Cikolo Upper Basic had once "proposed" to a friend of Lucius. The girl declined the teacher's advances and told the principal, who Lucius explained, "just forgave" the offending teacher. Ever since, Lucius surmised, the math teacher has disliked him because he thinks he is the one who told the principal. "He thinks I am her boyfriend, but she is my best friend. We study together," Lucius explained. "The teacher is hard on me in class...but I refuse to be punished. The teacher does not greet me, but I greet him. I say, 'oh teacher, I have not hurt you but you have hurt me.'" Lucius went on to tell me that he had brashly given the teacher money "for beer" that same afternoon; he went from working for teachers, to confronting them.

In the same way that young men exercise agency through accommodation and deference to senior men, schoolchildren like Lucius may be seen as exercising agency through their accommodating role in maintaining school grounds and their opportunistically making fun of those who assert authority over them.

Vulnerability and Agency at Home and in the Bush: Multiple Tales of Illness and Independence

At Home

In their homes, the children I observed were never restricted, never confined inside playpens or blocked from certain parts of the homestead by child safety locks. In the absence of play tool sets, children in Kulaale play with real tools. They push wheelbarrows, slice into the ground with hoes and hack whatever scraps they might find laying around with dull (sometimes not-so-dull) metal blades. Compared to their Western peers, toddlers are relatively free to explore their surroundings and it is not uncommon for younger children to remain at home under the custodianship of a sibling not much bigger than they are while their parents and older siblings work in the fields. The autonomy I observed among some of the youngest Kulaale residents confirms the assertion of new childhood theorists—children are agents, both in their role as caregivers and in their own development.

But this autonomy can also lead to vulnerability. I recall one instance in particular where children's agentive behavior in the home contributed to bodily harm. In this instance, a ten year-old girl mistakenly ate poisoned groundnuts that were intended for a rat.

The deceased child's elder sibling found the groundnuts even though they had been hidden by the girl's parents. The older child distributed the nuts among her siblings. The deceased was the only one to continue eating, despite their bitter taste. The others spat the poisoned groundnuts out. When the parents returned and discovered the child had eaten the groundnuts, they induced vomiting but, for this child, it was too late. (Fieldnotes, 20 May 2008).

The child who found the groundnuts had taken up the agentive task of caring for her younger siblings, an act which scholars agree disrupts essentialized depictions of childhood as a purely dependent and care-receiving phase of the life course. In caring for each other and feeding themselves in their parents' absence, these children exercised agency through in-home labor and self-sufficiency. Yet, the devastating outcome of this story shows that agency, in the case of children's labor and children's autonomous

exploration of their home environments does not make them less vulnerable to harm. Rather, their agency brings about unique forms of vulnerability. Their agency and their vulnerability are *linked*.

In the Bush

Children are instrumental to the subsistence of rural families in Kulaale. Just as the school could not function without children to maintain the grounds, families' survival strategies would be stretched very thin were it not for the work of children. In addition to domestic chores (like cooking, cleaning, drawing water, and caring for the young and elderly) and agricultural chores (like planting, plowing, weeding, and harvesting crops), children play a significant role in the extraction of firewood, building materials, and wild foods. Children, boys in particular, also play an instrumental role in caring for goats and cattle. The following excerpts from children's journals reflect both the agency and independence youth experience, and the physical dangers, illnesses, and vulnerability children face, as a part of their extractive labor:

One day, we went to the field plowing. At 10:00 hours, one of the oxen came out of the yoke and started running home. Timothy chased the oxen until he managed to bring him back. We also paired him back and started plowing up to 11:00 hours. Again, the same oxen came out of the yoke. This time, the oxen ran at high speed going home. Axon and Timothy tried to control this oxen to bring him back. They failed until the oxen reached home. The other oxen which remained with the yoke and plow started moving home. Mweemba was told to take this other oxen home to the kraal. But Mweemba, when he saw that this oxen has reached home, he left him. Therefore, the oxen went into the bush with the yoke and the yoke came off of his neck and the yoke was missing. In the following day we found it was not there. After three day's work, we searched for it and we found it (From the journal of an 18 year-old boy, 20 December 2010).

One day I went to draw water in the afternoon. I collected water and returned home. On the way coming home with the containers on my head, I met a fierce cow which ran towards us. The cow chased us with containers on our head[s]. One of my friend[s] cried and the container she was carrying fell from her head to the ground. She said, "My mother, I am dying." The animal stopped running, and looked at us, [then] turned back and disappeared. Our friend went where her container was and found that water was still there. We all lifted our containers and started the journey going home. The cow did not follow us (From the journal of a 16 year-old girl, 7 January, 2011).

One day, I went to the field plowing. We started plowing. In the process, one of the oxen I was using was injured. The plow injured the oxen. I tried to continue plowing [but] the oxen failed because the injury was very big. Therefore, I stopped plowing. My uncle told me to go home and collect some herbs in the bush and treat the animal. I went home and took the bicycle to go to the Njoko River to collect the herb. When I reached the Njoko River, I found the herb and brought the herb home to treat the ox. When I reached home, [I] started treating the animal. After treating the ox, I took all the cattle to the grazing area together with the cow which had a newly born calf. That cow chased me, and I ran and ran but the cow was following me until I reached home and closed myself inside the house. That is when the cows returned. I will never forget in my life. (From the journal of a 17 year-old boy, 20 December, 2010)

One day, I went in the bush to collect firewood in the afternoon. I collected a bundle of firewood which could manage to carry on my head. As I wanted to lift a bundle of firewood, I saw a big snake with spots on the body advancing where I was standing. When I saw the snake, I cried and was very afraid and I ran away. I left the bundle of firewood in the bush and returned home. [I] stayed at home for about two hours and returned in the bush where I left firewood. When I reached the place, the snake was not there and I lifted the bundle of firewood and came home (From the journal of a 16 year-old girl, 19 December, 2010).

One day I went in the bush herding cattle with friends. In the bush we were herding cattle till 12:00 hours. When my routine came to check the cattle, where they were grazing, I found the wild fruits called futwe. All the branches were brown with fruits ready to eat. I ate the fruits [so] that the hunger which I was feeling was gone. From there, I took the cattle to my friends. When I reached where I found my friends I told them that I found the wild fruits in the bush. I took them to the fruit plant and my friends climbed the tree and ate the fruits to the last. All my friends complained of stomach pains because of overeating the fruits. When time came at 17:00 all my friends started diarrhea and each one was crying and crawling wherever he was. (From the journal of an 18 year-old boy, 5 January 2011).

As the above excerpts demonstrate, children's domestic and extractive labor—their agentive contribution to homestead economies (in these instances, their contributions included drawing water, plowing fields, collecting firewood, and herding livestock)—makes them vulnerable, like their adult counterparts,⁵⁰ to the increases in labor burden brought about by uncooperative cattle. They are also made vulnerable to encounters with

⁵⁰ Recall the story from the previous chapter where the wives of Sobino described paying buckets of maize or picking cotton to compensate neighbors after the women's cattle ate a portion of the neighbor's grain.

dangerous wildlife⁵¹ or to illnesses brought on by local flora. In the following paragraphs I will explore how children are vulnerable, through their extractive labor, to increases in labor burden brought about by environmental change. Also, I will explore how these burdens play out differently based on gender. To do this, I will return to the extractive workload data referenced in the previous chapters and draw upon the child anthropometric data of Crooks, Cliggett, and Cole (2007).

More on Children's Extractive Labor

When we calculate and compare the extractive workloads associated with bush resources gathered by women, men, girls, and boys (see Figure 3.1 and Table 3.3 on page 62), we see that the extractive workloads for each age/gender group are visibly unequal. The extent to which the average extractive workloads vary between the two research zones (a proxy for longitudinal deforestation) is also unequal. While boys have the largest average extractive workload *within* both research zones, the difference *between* the average extractive workload for men in Zone 1 and men in Zone 2 (4.37 x, or 337%) is greater than that for any other age/gender group. The next greatest difference (3.41 x, or 241%) is associated with girls. The smallest difference (1.24 x, or 34%) is associated with women. This finding runs counter to the expectation that women should be the most affected age/gender group when it comes to environmental change.

In the previous chapter, I suggested that men's and boys' role in procuring building materials is one possible explanation for the high average extractive workloads observed for men and boys *within* research zones and for the and the large difference in the average extractive workloads associated with men *between* research zones. In the paragraphs below, I present what I suspect are the primary drivers for the large average extractive

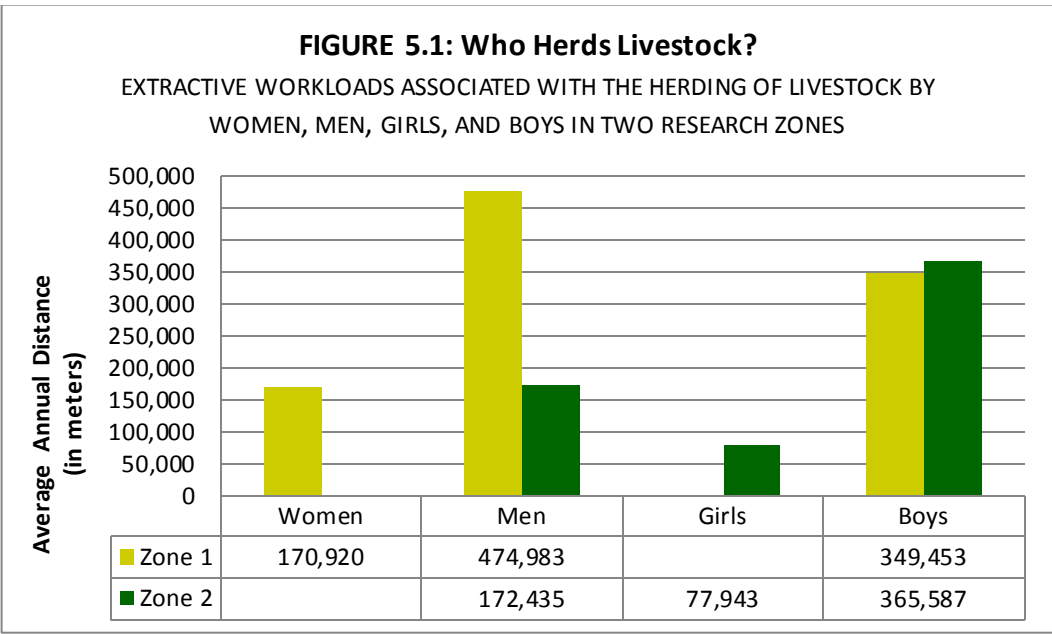
⁵¹ While fatal snakebites are incredibly rare, such tragedies do occur. In 2009, a child in Musamu *katengo* died from a snakebite. During the year (2010-2011) that I was in Zambia, a visitor to a Lusaka farm neighboring the home where I spent my Thanksgiving and Christmas was blinded by a spitting cobra. As one doctor in Monze explained, very few medical centers would actually have antivenom in stock. The serum typically requires refrigeration (and, therefore, consistent electricity); even when it is refrigerated, it has a short shelf life. Even if centers did carry antivenom, the long distance most Zambians would have to travel to access would mean certain death for someone bitten by a black mamba, whose neurotoxic and cardiotoxic venom is the fastest-acting of any snake in the world.

workloads associated with boys in both research zones and the large *difference* in the average extractive workloads associated with girls in Zone 1 compared to girls in Zone 2.

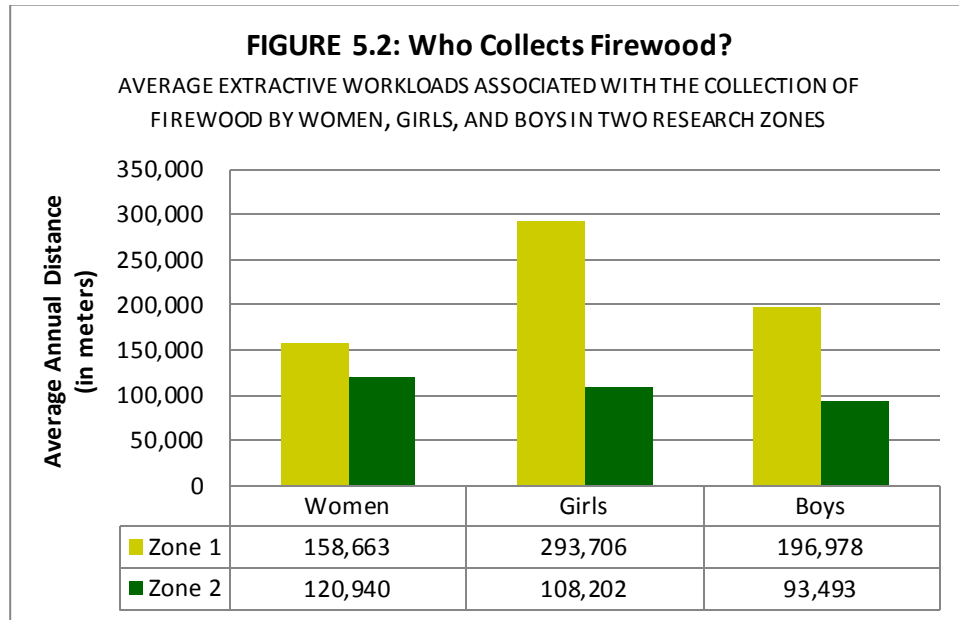
TABLE 5.2 Comparing the Average Extractive Workload associated with each Resource Group across Two Research Zones					
Resource Type	Zone 1	Zone 2	Kulaale Average (Z1 and Z2)	Difference (Z1>Z2)	Difference (Z1>Z2)
Grazing Area	341,880 m	303,694 m	320,665 m	1.13 x greater	13% greater
Firewood	136,823 m	120,940 m	127,480 m	1.13 x greater	13% greater
Wild Foods	37,709 m	12,013 m	24,005 m	3.14 x greater	214% greater
Building Materials	3,802 m	1,533 m	2,423 m	2.48 x greater	148% greater
Grand Total	96,019 m	74,406 m	83,394 m	1.29 x greater	29% greater

Honing in on particular resource groups (See Table 5.2), we see the greatest extractive workloads in Kulaale are associated with herding livestock and collecting firewood. Next is wild foods, followed by building materials. Because it is discussed in the previous chapter, I will not focus on building materials here.

As Table 5.2 indicates, the distance to grazing areas in Kulaale requires herders to travel an average of 320 kilometers annually, with herders in Zone 1 traveling approximately 40 kilometers (1.12 x, or 12%) further than their counterparts in Zone 2. Who are the herders? Figure 5.1 below shows men and boys are overwhelmingly responsible for herding livestock. Taken together, Table 5.2 and Figure 5.1 (below) suggest that men's and boy's comparatively large extractive workloads, as seen in Figure 3.1 (page 62), may be partially explained by their role in herding cattle, in addition to their role in collecting building materials.

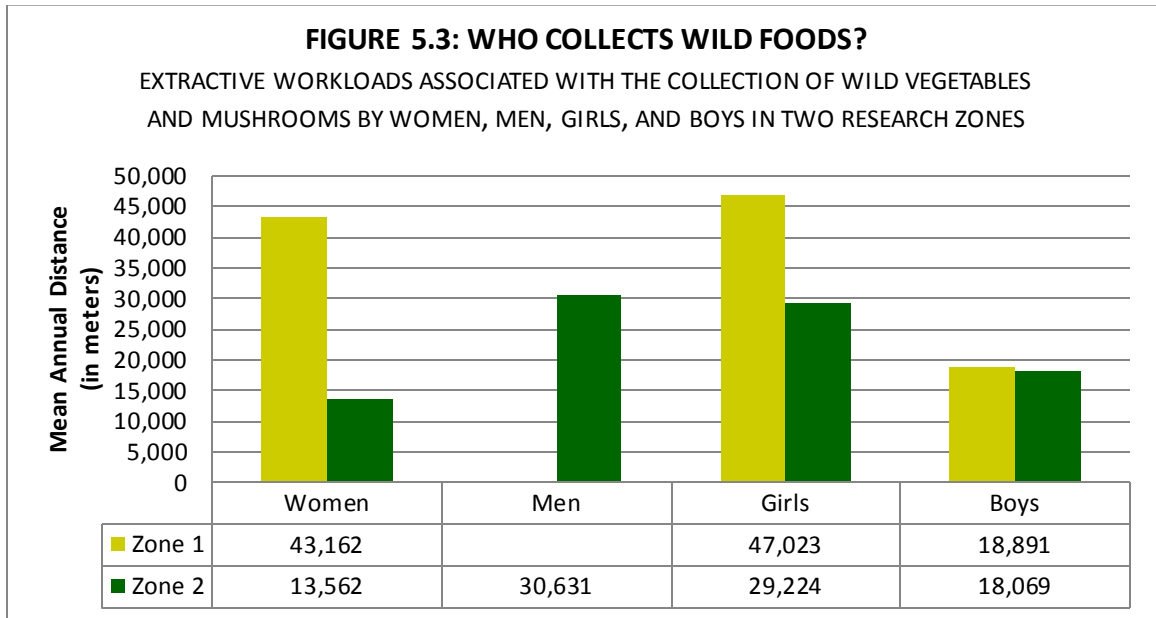


After herding, next largest extractive workload is associated with firewood, a resource for which participants in both zones travel an average annual distance of 127 kilometers, with participants in Zone 1 traveling roughly 16 kilometers (1.3 x, or 13%) further per annum. Who collects firewood? Figure 5.2 shows that firewood in Zone 1 homesteads is primarily collected by girls, with boys and women playing a supporting role; in Zone 2 homesteads, firewood is mainly collected by women, with girls and boys in support.



Notice that, *between* Zone 1 and Zone 2, the difference in the extractive workload associated with firewood collection is greatest for girls and boys. In other words, girls and boys in Zone 1 are traveling markedly farther for the collection of firewood than their counterparts in Zone 2. If we look at the difference between Zone 1 and Zone two as it corresponds to firewood collected by *women*, we see it does not follow the same pattern; the difference in women’s extractive workloads between Zone 1 and Zone 2 is comparatively smaller than the difference for girls and boys. This small difference is not only visible in this depiction of firewood collection; it is also present in Figure 3.1 (page 62), which considers the age/gender workloads associated with *all* resource groups.

Table 5.2 shows the resource group requiring third highest extractive workload is wild foods (wild vegetables and mushrooms). Who collects wild foods?



While boys play a big part in the collection of building materials, and in the herding of livestock (Figure 5.1), it appears that girls have higher average extractive workloads when it comes to collecting both firewood (Figure 5.2) and wild foods (Figure 5.3). Taken together, Table 5.2 and Figures 5.1, 5.2, and 5.3 suggest each group of bush resources (pasturage, firewood, wild foods, and building materials) is sparser in Zone 1 than it is in Zone 2, and this means Zone 1 residents, including children, must travel further for their extraction.

Recall from Figure 3.1, that while boys are traveling the farthest in both zones, the *difference* in the extractive workloads *between* the two research zones is largest for men and girls. In these visualizations of children’s extractive labor, we see youth are agents in homestead provisioning. Indeed, children’s role in procuring bush resources means they interact with the environment, and are affected by changes in environmental resources, on a level that was previously linked solely to women. Here, again, we see children’s agency implicated in their vulnerability; in this case, children are vulnerable to increased labor burdens resulting from environmental change.

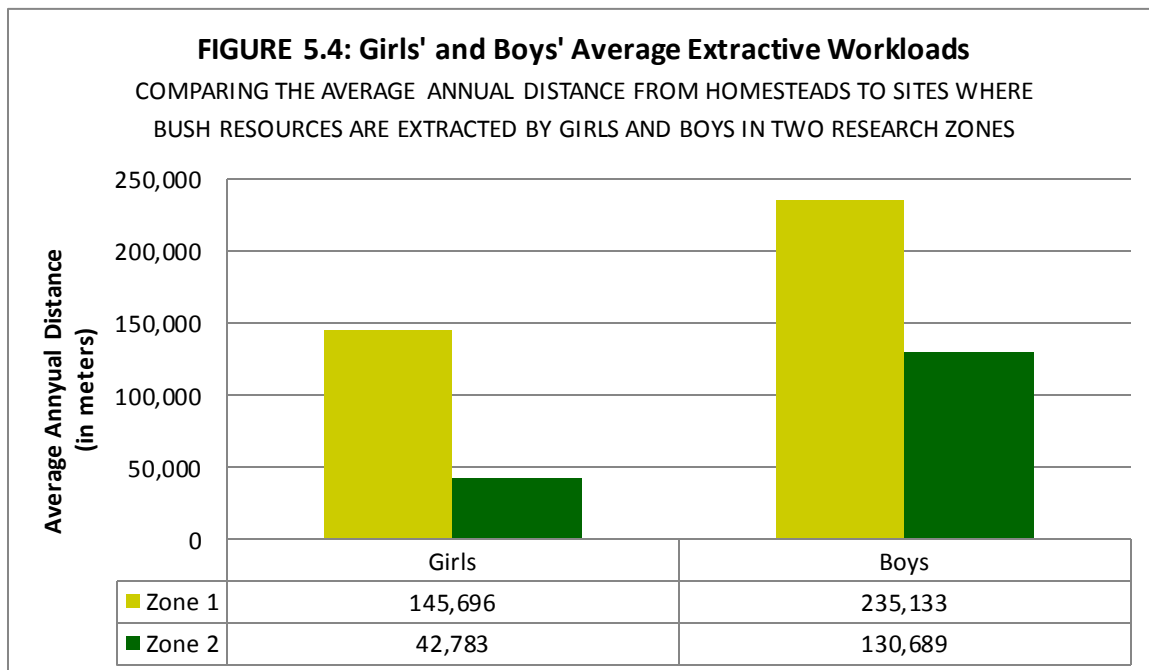
Gendered Considerations

As part of a multi-year study of livelihood strategies and nutrition security among Gwembe Tonga migrants, Crooks and colleagues (Crooks, Cliggett, and Cole 2007; Cliggett and Crooks 2007; Crooks, Cliggett, and Gillett-Netting 2008) collected height and weight measurements for 430 Kulaale schoolchildren. The results of their analyses suggest boys ages 15 and 16 have significantly lower height-for-age z-scores (HAZ) and weight-for-age z-scores (WAZ) compared to girls of the same age. Fourteen year-old boys also have significantly lower WAZ than their female counterparts. Also, “boys exhibit an increasing tendency toward low weight for their height in increasingly older age groups, compared to girls” (Crooks, Cliggett, and Gillett-Netting 2008:373-374). Possible explanations for the observed patterns in children’s growth include: (1) preferential feeding of adolescent daughters to increase marriageability, fertility, and claims to matrilineal grandchildren (Gillett-Netting 2007)⁵² and (2) post-marital residence patterns whereby newlyweds co-reside with the husband’s parents for the first few years of marriage (Cliggett and Crooks 2007). Also, Cliggett and Crooks (2007:165-166) note that “well nourished children are more frequently found in households with articulated knowledge of ‘what makes a good farmer’” and in households that supplement subsistence agriculture with other entrepreneurial activities.

I suspect that an additional explanation for older boys’ low HAZ, low WAZ and tendency toward low weight-for height (WHZ) may lie in children’s labor. In considering reasons for girls’ and boys’ different growth patterns, I would like to consider the latter two spaces of children’s lives that are discussed in this chapter: the home and the bush. I will start with the bush.

Recall Figure 3.1 (page 62) which depicts the extractive workloads associated with bush resources collected by women, men, girls, and boys in two research zones. When we zoom in on the extractive workloads for children (see Figure 5.4), we see a clear gendered dimension to boys’ and girls’ environmental interactions.

⁵² Another possibility is that girls are preferentially feeding themselves. Since many of their chores require them to be near the homestead, they are near a supply to which boys—who are out herding cattle—do not have equal access (Crooks, personal communication).



Looking at the variation *within* each research zone, we see that boys in Zone 1 travel 1.61 times (61%) further than girls in Zone 1; boys in Zone 2 travel 3.05 times (205%) further than girls in Zone 2 for the extraction of bush resources. When we compare the difference in extractive workloads *between* research zones, we see that the average extractive workload associated with girls in Zone 1 is 3.41 times (241%) greater than that associated with girls in Zone 2; the average extractive workload associated with boys in Zone 1 is 1.80 times (80%) greater than that associated with boys in Zone 2. To summarize, while the largest average extractive workload is associated with boys in both research zones, the *difference* in the average extractive workload *between* the two zones is larger for girls than it is for boys. The measurements reported by Crooks and colleagues are not disaggregated by research zone. But, if they were, we might expect to see lower z-scores for boys *and* girls in Zone 1, based on the differences in extractive workloads *between* the two zones shown above.

The fact that boys have higher extractive workloads *within* each research zone offers a plausible explanation for their low HAZ, low WAZ and tendency toward low WHZ.

Table 5.2 shows that the high average extractive workload associated with boys in both research zones is most likely due to their herding activities. Table 5.3 shows that girls in Zone 2 also participate in the herding of livestock, but to a much lesser degree (I will discuss a possible explanation for the difference in herding patterns *between* Zone 1 girls and Zone 2 girls in the next chapter).

Resource Group	GIRLS			BOYS		
	Zone 1	Zone 2	Grand Total	Zone 1	Zone 2	Grand Total
Grazing Area		77,943m	77,943m	349,453m	365,587m	358,058m
Firewood	293,706m	108,202m	170,036m	196,978m	93,493m	137,843m
Wild Foods	47,023m	29,224m	38,123m	18,891m	18,069m	18,206m
Grand Total	145,696m	75,152m	100,346m	277,818m	199,354m	230,179m

Another possible cause of boys' low HAZ, low WAZ and tendency toward low WHZ could be related to their work at home. Boys and girls both contribute to the homestead economy, not only through their extractive labor, but also through farming, gardening, and drawing water. Though I do not have data depicting the amount of time boys and girls spend in fields, in gardens, or at boreholes/rivers/hand-dug wells, I did measure the distances from their homesteads to the sites where these activities occur (see Figure 5.5).

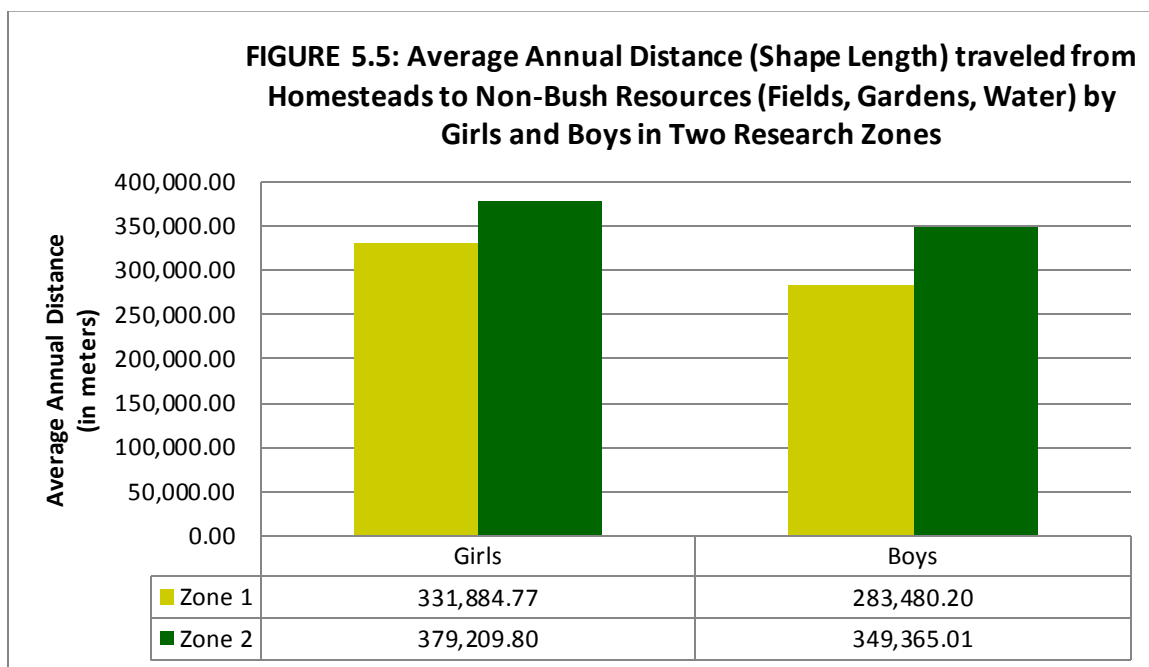


Figure 5.5 shows the average annual distance traveled from homesteads to farming, gardening, and water procurement sites is greater for girls than it is for boys in both research zones, but not by much.⁵³ The possible preferential feeding of girls (Gillett-Netting 2007) could offset this difference. If girls are traveling slightly further, but are also being fed more, then it could be that boys exhibit lower anthropometric z-scores in spite of traveling less frequently to gardens, fields, and watering spots. Whether homesteads led by “good farmers” (Cliggett and Crooks 2007) send boys or girls into their fields and gardens is a question for another dissertation.

⁵³ Here, I am referring to the difference *within* each research zone. Because fields, gardens, and boreholes are not bush resources, I am not considering the differences *between* research zones. I will say, though, that the larger distance observed in Zone 2 is most likely due to the frequency with which people collect water (some homesteads reported making multiple trips a day—this contrasts with occasional and seasonal trips to fields and gardens), and the fact that boreholes are fewer and farther between in Zone 2 than they are in Zone 1. See Appendix G for a visualization of the distances traveled to specific, non-bush resources.

Discussion

In this chapter, I explored the linkages between agency and vulnerability through ethnographic “snapshots” from three spaces of children’s daily life (the school, the home, and the bush). First, I argue that the nature of rural education makes children vulnerable to fatigue and places them in a position where they may be taken advantage of by their teachers. Here also, however, children display agency in that they play a pivotal role in maintaining the daily operations of rural schools through their work as groundskeepers. Also, in the intimate setting of rural education, children like Lucius easily learn of their teachers’ shortcomings and they take steps to either avoid or expose them when given the opportunity. Lucius’ story of working to create his school’s running track, skipping civics to avoid a teacher who allegedly beats students for answering incorrectly, and publicly confronting a math teacher who “proposed” to one of Lucius’ classmates exemplifies this dynamic.

Second, I argue that children’s role in caregiving as well as their autonomy—their freedom to explore their surroundings at an early age—makes them vulnerable to illness and injury at home. While children exercise agency through the work of caring for their siblings and though they display independence in that they are often unsupervised at home, this independence may also lead to accidental poisonings in the case of one young girl.

Children’s agentive role in contributing to familial subsistence means they are primary collectors of bush resources. The seasonal resource survey and mapping exercise carried out in 2010-2011 show boys and girls are primary procurers of firewood, wild foods, and building materials; they also play a key role in the herding of livestock. They are *agents*. Yet, ongoing environmental changes in Kulaale mean girls and boys in the deforested Zone 1 are vulnerable to increased labor burdens, as they must travel further in order to locate bush resources for which they are responsible. The gendered dimensions of boys’ and girls’ extractive labor, considered alongside their role in farming, gardening, and collecting water, could help explain the unequal anthropometric z-scores reported by Crooks and colleagues.

This chapter builds upon the existing literature by examining how different segments of the population—including youth—engage with and are impacted by a changing natural resource base. Further, I advance theories of agency and vulnerability in childhood studies by urging that children are not simply both. I argue—when we understand agency outside narrow, modernist definitions and when we focus on the material dimensions of children’s vulnerability—it becomes apparent that agency and vulnerability are *linked* in children’s daily lives and especially through their labor.

Conclusion

The new anthropology of childhood has made important strides in debunking stereotypical images of children as purely vulnerable and dependent members of society. Still, studies of contemporary African childhoods are overwhelmingly concentrated on contexts of war, illness, and urban poverty. Recent studies of African youth, including adult-child relations, take “breach cases,” or instances in which community members violate local behavioral norms (Perry 2009; Kesby, Gwanzura-Otemoller, and Chizororo 2006) as their entry point. Certainly, investigations of non-normative behavior are a powerful “window on shared norms” (Conley and O’Barr 2004:189, cited in Perry 2009) and to ignore the harsh, discordant facets of children’s lives would be socially irresponsible. But much can also be learned from concentrating on children’s agency. Understanding children’s agency means attending, not simply to instances where young people rebel against authority, but to those in which children actively cooperate with elders, accommodate local kinship and educational institutions, work and thrive within a changing and power-laden environment, or engage in less radical everyday forms of resistance, like making fun those who wield authority over them.

Of course, framing children as cultural agents need not render invisible the ways in which childhood, as a generational space, is characterized by vulnerability. Indeed, when we concentrate on labor as a means of exploring the lives of children, we cannot dispute the interplay and interdependence of agency and vulnerability; some of the very things which delineate children’s agency in Kulaale also contribute to their vulnerability, and vice versa. In exploring the ways in which Gwembe Tonga youth are both vulnerable and

agentive, this chapter helps adds to my exploration of aged and gendered experiences of development, conservation, and environmental change among Gwembe Tonga migrants living in Kulaale.

CHAPTER SIX: SMASHING CYCLES, SWATTING SNAKES, AND SLOSHING THROUGH MUD: THE PRACTICE AND CRITIQUE OF SPATIALIZED ANTHROPOLOGY

Introduction

In the previous two chapters, I described the subsistence labor of Kulaale families, focusing specifically on the extractive workloads of men and women (in the case of Chapter Four) and boys and girls (in the case of Chapter Five). Where the previous two chapters considered the extractive workloads of adults and children separately, this chapter discusses variations in men's, women's, boys', *and* girls' extractive labor. Also, where the previous chapters focused primarily on longitudinal land-cover change (for which the deforested Zone 1 and non-deforested Zone 2 served as a proxy), this chapter considers the nature of LULC change in Kulaale and the role of homestead demographic structure in contributing to the uneven workloads observed for women, men, girls, and boys across the two research zones. By demographic structure, I mean (1) the organization of homesteads on the landscape—nucleated or dispersed, and (2) the composition of homesteads—the age of the homestead head, the number of wives of male heads of homestead, and the homestead's stage in the domestic life-cycle. In drawing on qualitative as well as quantitative data to explain the gender and age disparities in extractive workload, this chapter paints for the reader a picture of what my particular blend of qualitative/ethnographic and quantitative/geospatial research methods actually *looked like* in the context of my fieldwork.

As I revisit the results of the seasonal resource survey and mapping exercise and explore alternative sources for the observed differences in women's, men's, girls', and boys' average extractive workloads, I make the case for a hybrid approach—a combination of classic ethnographic methods with temporally and spatially explicit methods in anthropological research. Also in this chapter, I offer a pair of vignettes to demonstrate how this approach unfolds in the field. I situate my research within the wider context of “spatialized” anthropology—that is, anthropological work which engages generally with temporally and spatially explicit data—and emphasize this dissertation's contribution to that body of work. I note the critiques of temporally and spatially explicit

methods launched by anthropologists and geographers and invoke the counter-critiques presented by feminist geographers and political ecologists. I conclude by offering a corrective to scholars whose primary critiques of spatialized social science rest in depictions of the scientists as detached and “God-like” in their surveying from above those peoples and places they describe.

“Mwa Cela Kuli?” (“Where Do You Gather?”)

Tula joka, ba Lela! Ba Sadie a ndime tu ya ku bona mulonga. “We’ll be right back,” I explained to Lela Siyanda as her sister, Sadie, and I headed off to see the river where the family draws its drinking water. The structure where Lela sat, now a serpentine clump of desiccated vines and chicken feathers heaped over a sizable seating area would be, in a just few short months, ablaze with pink bougainvillea blossoms, brilliant green leaves, and the promise of rain to nourish the family’s fledgling crops. Moments earlier, I had managed to erect my tent inside the botanical shelter. The effort required to manipulate the long, pliable tent poles inside such a small space would pay off, I knew, as the vines shaded my tent, and my “office” (a handmade wooden chair and table) from the sweltering October sun. Once I had successfully hung my home for the next three weeks from its frame, I flung the nylon rain fly over the two-person, three-season tent. With a growing crowd of children looking on curiously, I adjusted the straps at each corner and tightened the fly—my shield from rain, dust, and falling chicken poop—securely against its stakes. Then, satisfied with my work, I began to survey the surrounding area.

The Siyanda homestead was moderate in size but somewhat affluent in composition, relative to other homes nearby. From his earnings as a cotton farmer and his work as a schoolteacher and research assistant, Nathaniel, the male head of the homestead, had managed to finance the construction of three independent structures—a house for each of his two wives and office for himself—plus two shelters for receiving visitors and two small kitchens where each wife prepares meals for her children. The houses were all brick with thatch roofs. The kitchens were brick, wattle, daub, and thatch. And the shelters were assembled from logs and tree trunks, small sticks, thatching grass and (in the case of my new home) a mess of creeper vines. Flanking the homestead were maize

fields on three sides and cotton on one. Nathaniel also had an elevated enclosure for goats (to protect them from hyenas) and a small orchard with mangos, papayas, and bananas. Between the orchard, the two shelters, and the large array of carved furniture scattered about the homestead, the Siyanda residence was welcoming, and capable of accommodating many guests.

Adjacent to the botanical shelter, on the periphery of the homestead, sat a simple circular grass-thatched wall laced with the same blanketing creeper. This was the bathing area, a place I learned to love after a long day's work. People say fieldwork is hard. I say a good outdoor shower—one that is decorated with bougainvillea flowers and angled to offer a view of homecoming livestock juxtaposed against the setting sun—combined with a quenching African Sundowner, helps to wash away the doubts, failures, and insecurities that permeate the skin of those working in a community so dramatically different from their own.

Back underneath the shelter sat Lela. A sturdy, fair-faced child with wide-set, pensive eyes and a dazzling, easy smile, she was not too keen to stay behind while her siblings and I trotted off to draw water from the winding, shifting Njoko River. In its present state, the Njoko was less of a river, and more of a twisting sandy trench punctuated sporadically with hand-dug wells for drawing stagnant water. But, in just four months, the river would be deep and raging, a powerful source of both life and death. From its banks, young boys would ensnare shiny pancake-bodied bream and monstrous whiskered catfish. The latter variety of fish, I learned, is uniquely capable of staying alive long after being removed from the water. I have watched, amused, as a twelve pound catfish squirmed and flopped around the family kitchen for the better part of an hour, stirring up roosting ducks and rousing the curiosity of clumsy kittens and playful pups before finally being scooped up, cleaned, and prepared by the family matriarch.

During the height of the rainy season, the river may produce four or more such beasts per day for a single dedicated fisherman, providing a ready source of protein for those who can spare the time to anchor a few lines into the ground before setting about daily chores. But the river also comes with hazards. The risk of bilharzia, dysentery, and other water-borne diseases aside, the Njoko's waters have literally carried away

schoolchildren on their way to class as well as full-sized men daring to cross at night after enjoying libations at the local market. The landscape of Kulaale is ripped and torn annually by the rising and receding Njoko waters. Gardens, maize fields, and grazing areas crumble and fall intermittently into the canyon left every year by regional changes in rainfall.

I was heading to the Njoko that day with a purpose. I wanted to know how far the Siyanda family traveled in order to find key environmental resources, in this case—drinking water. The Siyandas were one of the twenty households with whom I had arranged to conduct a seasonal resource survey and mapping exercise. I also arranged to stay in their homestead while I carried out my research in Banyama *katengo*.

The head of the Siyanda homestead, Nathaniel Siyanda, has a long history working with anthropologists dating back to his childhood, and eagerly accepted the job of interpreter and field guide during my stay in Banyama. Nathaniel was away that afternoon, having taken his junior wife, Nellie, to receive leg pain treatments from a traditional healer. I ran into his senior wife, Irene, on the way from Cikolo, the more heavily cleared of the two research areas where I had been conducting surveys, interviews, and mapping exercises in the months prior.

I knew the Siyanda family well—having stayed with them on two prior occasions when carrying out preliminary research. The sturdy, shy Irene instructed me to go on to the homestead and get myself set up while she attended a meeting at the local community school. Once I had pitched my tent, washed down a pack of Vanilla Creams with a 12 ounce Havana Cola, and sufficiently rested from the hour-long bicycle ride from Cikolo to Banyama, I explained my research program to Nathaniel's adolescent daughter, Sadie, and invited her to go with me to the river.

Ba Sadie, I asked, *mwa cela kuli meenda?* Where do you draw water? She emptied the final drops from one water container into another and, carrying the empty container in one hand, she motioned with the other for me to follow her to the river. I asked her younger sister Lela to stay behind and take up the most important job of all—guarding the homestead, my research equipment, and my newly erected field tent (which fit perfectly inside the botanical shelter) while we were away. Sadie was taller, slimmer, and

more serious than her younger sister. Her shyness during our walk to the river was offset by the gaggle of interested children clambering close behind. She led the way through the maize fields, her bare callused feet stepping cautiously over the green saplings that would become her family's sustenance in the months to come and, with any luck, help to pay her school fees for the next term. As we approached a hand-dug well in the dried riverbed, I captured the yellow Garmin eTrex swinging from my neck.

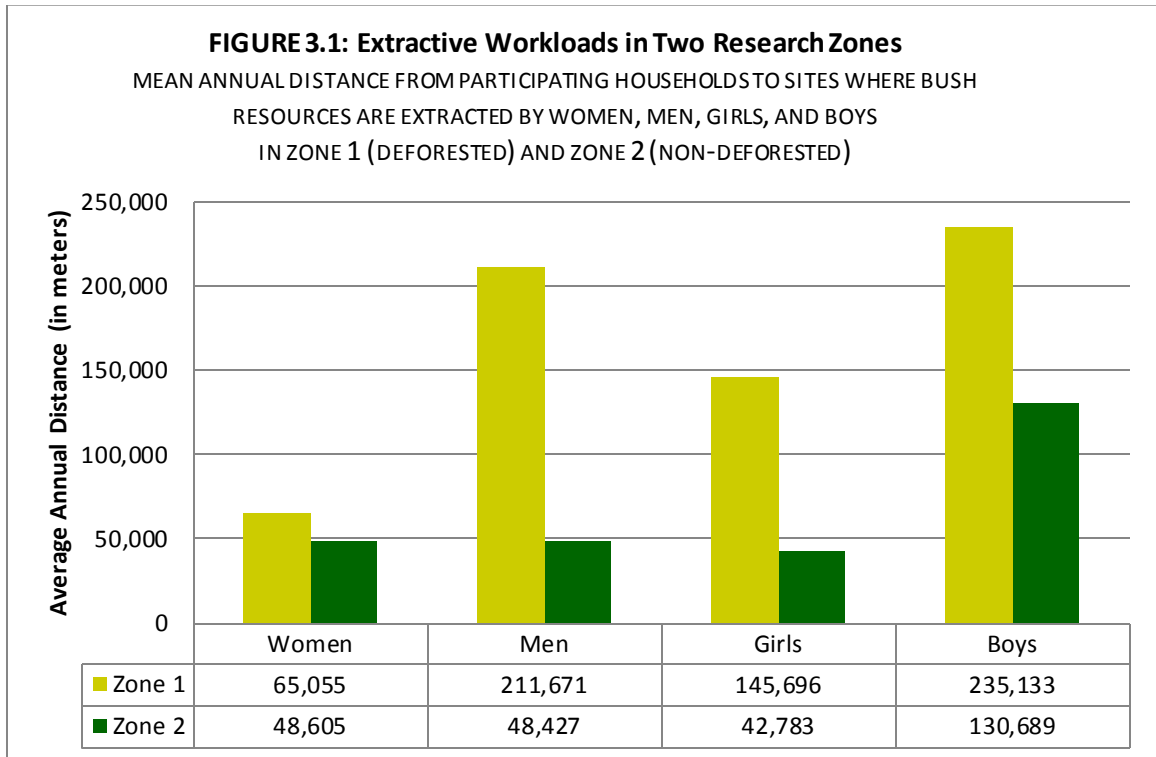
With a grace that far exceeded her thirteen years of age, Sadie delicately lifted the skirt of her blue floral print dress and sturdily planted each foot onto the wooden braces that had been placed inside the well to support its sandy walls. These braces also granted easier access for those with short arms to the water that had ebbed far into the recesses of the cylindrical hole in the riverbed. As Sadie dunked a yellow jerrycan⁵⁴ deep into the murky water, I saved the track, giving it a unique name in the GPS that would distinguish it from the hundred or so I had taken in the previous weeks. I helped Sadie to balance the heavy plastic container on her head, then thanked her (and our audience of bubbly children) profusely as we headed back to the homestead. *Twalumba kapati, ba Sadie. Y twalumba alimwe, bana. Ino, atujoka. Thank you, Sadie. And thank you, children. Now, let's go back.* Back at the homestead we dropped off the water and prepared to set out again. *Ba Sadie, mwa cela kuli inkuni? Where do you find firewood?*

So proceeded my investigation of extractive labor in Kulaale. Having carried out an initial survey which asked respondents to identify resources collected from the bush over the last one month, I made my way down each household's list, making sure to document who from the home was responsible for extracting which of the environmental resources. It should be clear from the description of the Siyanda's botanical shelter and the shifting Njoko river that the landscape in Kulaale changes dramatically throughout the year. And, I wanted to make sure I captured seasonal variations in the environment and in extractive labor as I undertook the fieldwork for my doctoral dissertation. For this project I sought to address a multitude of research questions. But, to research participants, during

⁵⁴ A jerrycan is a 20 liter plastic container used to transport liquids like water, cooking oil, petrol, and beer.

mapping exercises, I put forth a single, repeating question: Where do you gather, or *Mwacela kuli*?

My aim in including this vignette is to insert into my discussion an image of what my utilization of temporally and spatially explicit methods actually looked like in the field. The previous two chapters offer valuable insight into the gender- and age-based division of labor in Kulaale and its role in shaping women's, men's, girls', and boys' relationship with the natural environment. Chapter Four explores the ways in which gendered labor, social organization, and religious life shape women's and men's experiences of environmental change while Chapter Five considers the ways in which vulnerability and agency are linked in the everyday lives of girls and boys and inform their environmental interactions. But, in their review of the qualitative and geospatial data, Chapters Four and Five do not give a strong glimpse into how that data were collected, what the practice of spatialized ethnography actually looked like. This chapter offers such a glimpse. Also, it considers whether there might be other variables that contribute to women's, men's, girls', and boys' socially-differentiated experiences of environmental change. Before I discuss what these variables might be, it is useful to revisit the results of the seasonal resource survey and mapping exercise that I previewed in Chapter Three. Below is the same Figure (Figure 3.1) which appears on page 62 of this dissertation.



It is clear from this visualization of the data that the average extractive workloads observed for women, men, girls, and boys in the two research zones are both unequal and contrary to recent speculations about the distinctive vulnerability of adult women to environmental change. Where the greatest average extractive workload *within* both research zones is associated with boys, the largest *difference* in average extractive workload *between* Zone 1 and Zone 2 is associated with men. The next largest difference is associated with girls. We know that the gendered division of subsistence labor places men and boys in charge of collecting natural building materials and herding livestock, and these are likely sources for their high average extractive workload. But what about women? If the gendered division of labor in Kulaale places girls *and* women in charge of collecting firewood, thatching grass, and wild foods then why are the average extractive workloads associated with women and girls not more closely aligned? Why are the average extractive workloads associated with women and girls in Zone 2 comparable, while those of women and girls in Zone 1 are not? What could explain the relatively high average extractive workload associated with women in the non-deforested Zone 2, when

women have the lowest average extractive workload in the deforested Zone 1? Why are women's, men's, and girl's workloads comparable in Zone 2, but divergent in Zone 1?

In addition to the gender-and age-based division of labor, and in addition to the differing levels of land-cover change between the two research zones, I propose that the nature of the environmental changes in Kulaale, as well as the demographic structure of Zone 1 and Zone 2 homesteads, also plays a role in the observed workload differences.

Interpreting Quantitative/Geospatial Data with Qualitative/Ethnographic Methods

The temporally and spatially explicit data obtained through remote sensing and mapping exercises form the crux of this dissertation. But a reflexive, rigorous feminist methodology demands that these data should not be the sole source of ethnographic information. Indeed, Francis P. Conant—a cultural anthropologist who pioneered the use of satellite imagery to analyze desertification, famine, and the spread of communicable disease in Africa—wrote in 1984 that “satellite data only become meaningful when they can be interpreted against what we have learned through fieldwork, on the ground” (Conant 1984:362). Anthropologist Jane Guyer and geographer Eric Lambin (1993:851) echo this sentiment, claiming “[the] comprehensive coverage” allowed by remote sensing and the construction of geospatial databases “cannot substitute for close study by ethnographic methods.” This dissertation takes these methodological tenets to heart and, in this chapter, I call upon additional data—obtained through semi-structured interviews, participant observation, and a review of existing literature—to explain the aged and gendered workload patterns represented in Figure 3.1.

Through interviews, participant observation, and a review of existing literature, I isolate two elements which I suspect play a role in the varying extractive workloads calculated for women, men, girls, and boys in the two research zones. The first element relates to the nature of land-use/land-cover change in Kulaale. The second pertains to the demographic structure of Kulaale homesteads.

The Nature of LULC Change in Kulaale: Fields to Forests to Fuelsource

Recall from Chapters One, Three, and Four that the primary drivers of deforestation in Kulaale include (1) the increasing population of Kulaale (2) the “clearing to claim” practices of Gwembe Tonga migrants, and (3) the commercial production of maize and cotton encouraged by Zambian agricultural policies. It is the third driver—commercial production of maize and cotton—to which I would like to direct my readers’ attention. As I mentioned in Chapter Four, the clearing of forest to plant maize fields creates an alternative fuel source for women, but not an alternative building material for men. It was through participant observation—through extended homestays with rural families, through helping to start the evening fire and prepare meals in my host-mothers’ kitchens, that I learned of this possible explanation for men’s and women’s different workloads. This theory was substantiated in my interviews with subsistence farmers—though my interview questions were not actually directed at uncovering maizecobs as a substitute for firewood. In fact, I was asking participants to recall the sustainable agriculture and conservation farming strategies they had been taught by the George Henwood foundation. I expected that participants might indicate using corn cobs as compost and fertilizer, but they pointed instead to the utility of the cobs in stoking homestead fires.

Homestead Demographic Structure

Organization of Kulaale Homesteads

According to Rindfuss et al. (2007) the conversion of land in agricultural frontiers is affected more by the number and size of households⁵⁵ than by a simple population size measure. Additionally, where households are organized in nucleated settlement patterns, researchers can expect to see a “more homogenous pattern of land cover change” on the frontier landscape; where households are dispersed, “[living] on the parcels of land they own or control, the overall pattern of land cover change may be patchier and more linear”

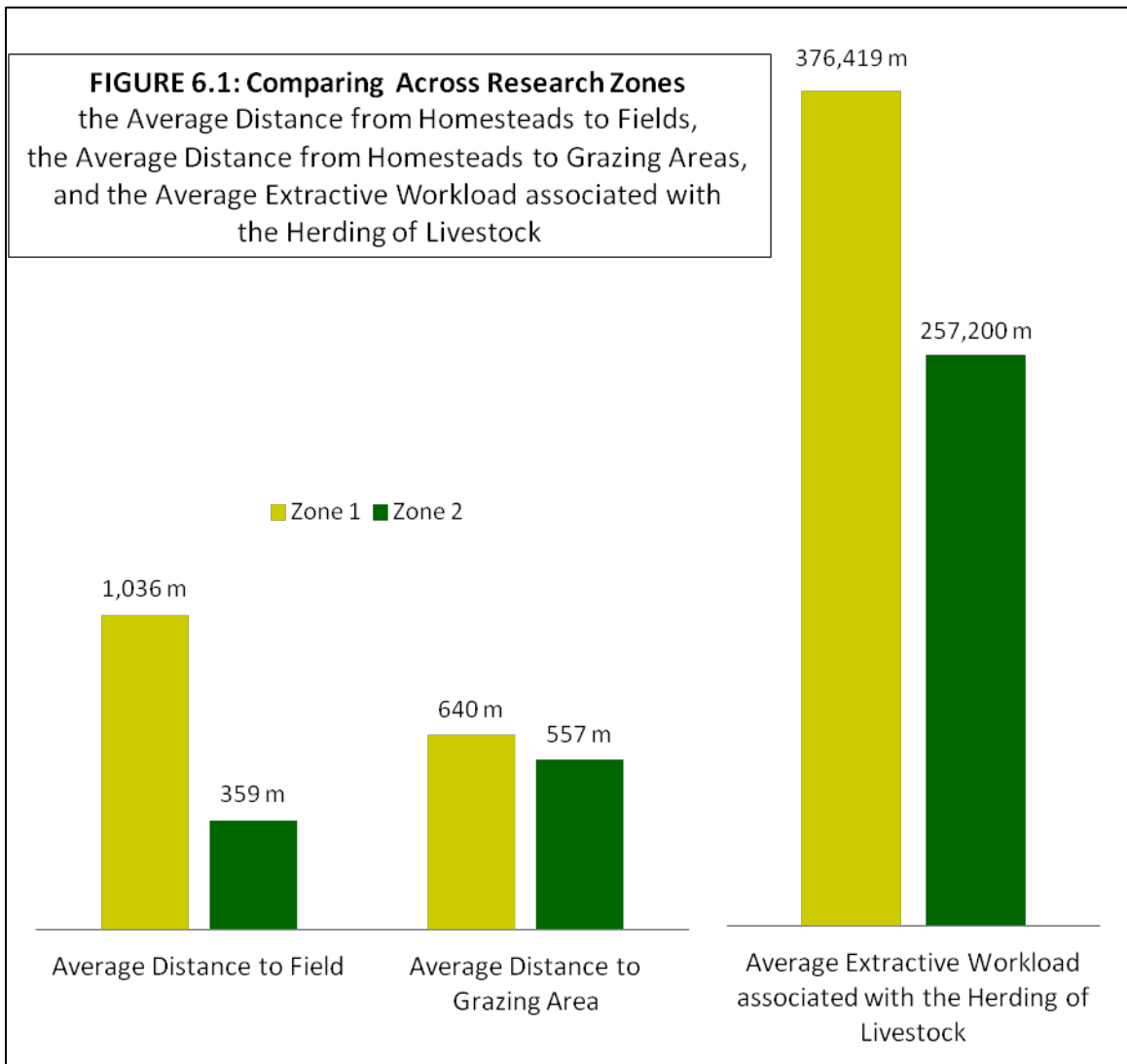
⁵⁵ LULC change is more likely to occur in populations characterized by “a larger number of households with relatively few members (as opposed to a smaller number of households with more members...)” (Rindfuss et al. 2007:740).

(Rindfuss et al. 2007:748). In three of Kulaale's four *katengos*—Inzoka, Musamu, and Banyama—settlers organized themselves into villages containing dispersed households. In Cikolo, settlers established nucleated villages with fields marshaled in an agricultural enclave away from the domestic units.

It was through semi-structured interviews and participant observation that I learned about seasonal variation in herding patterns. During the rainy season, cattle are driven to far-off communal grazing lands; typically located on hillsides or marshy dambos, these lands are not ideal for farming or homestead construction and, so, are unlikely to be cleared for production. In contrast, during the dry season, cattle often graze in people's fields, munching on the stalks of corn, cotton, and groundnuts after the cobs, flowers, and legumes have been harvested.

The difference in the average extractive workload associated with grazing livestock between Zone 2 and Zone 1 is likely due, in part, to the difference in residence patterns between the two zones. Historically, residents in Zone 1 have built their homes in one area, with the homesteads of subsequent generations radiating outward from their senior relatives.' Homesteads near the riverbed may have a small field on one side, but most Zone 1 fields are concentrated in patchwork agricultural areas that may be over a kilometer's walk from the homes of Zone 1 farmers. Meanwhile, farmers in Zone 2 have fields that directly abut their homesteads. Thus, during the dry season, after they have harvested their commercial crops, farmers in Zone 1 are must graze cattle and goats in fields that are located much farther from their homes. Meanwhile farmers in Zone 2 are able to graze their herds just a few meters from their homesteads.

Figure 6.1 compares not the extractive workload, but the average distance (the shape length, or arc-distance path (a straight line between two waypoints), from the homesteads to sites where those homesteads herd their cattle and harvest their crops. Considered alongside the data elicited from interviews and participant observation, this spatially-explicit measurement suggests the difference in herding workload for men and boys in the two research zones is not simply due to differences in herding frequency or to the clearing of forest and grassland for agricultural production; rather, it is due to differences in the distance to agricultural fields, where cattle are taken to graze during the dry season.



Composition of Kulaale Homesteads

My use of the term homestead composition refers to the age of the homestead heads, the number of wives in the homestead, and the homestead’s stage in the domestic life cycle. A homestead’s domestic life cycle results from the changing age and gender composition of its members over time. Compositional arrangements include (1) nuclear: young adults with small children; (2) nuclear: adults with older children; (3) nuclear: adults with teenage children; (4) nuclear: older adults with teenage and young adult children; and (5) multi-generational and second generation homesteads (McCracken et al. 1999; Moran, Siqueira, and Brondizio 2003).

To understand the effect of homestead composition of women’s, men’s, girls’, and boys’ extractive workloads, I assigned each of the participating homesteads (n=20) to a stage in the domestic life cycle. Where homesteads had children representing multiple stages in the life cycle, I averaged the numbers to arrive at a single score. Each homestead’s demographic information is listed in Table 6.1.

ZONE 1 (n=10)				ZONE 2 (n=10)			
homestead	age of homestead head	number of wives	stage in domestic life cycle	homestead	age of homestead head	number of wives	stage in domestic life cycle
homestead A	47	2	2.50	homestead K	56	1	5.00
homestead B	27	1	2.50	homestead L	29	2	1.00
homestead C	56	2	5.00	homestead M	40	1	3.50
homestead D	36	1	2.00	homestead N	63	FHH*	5.00
homestead E	53	FHH*	3.00	homestead O	39	2	2.50
homestead F	65	2	5.00	homestead P	49	2	2.50
homestead G	36	1	3.50	homestead Q	39	1	2.00
homestead H	38	3	2.50	homestead R	41	1	2.50
homestead I	56	FHH*	5.00	homestead S	44	FHH*	5.00
homestead J	81	2	5.00	homestead T	29	2	1.50

**FHH denotes a female-headed homestead*

Empirical observation suggests that the oldest homesteads in Kulaale are primarily located in Zone 1. This is where the first “pioneering” families settled in the 1980s. Though there are families who migrated directly to Zone 2 from places outside of Kulaale, the majority of Zone 2 residents appear to be the children of Gwembe Tonga migrants representing a second generation of Kulaale residents who shifted from Zone 1 for reasons related to land shortages or declines in soil fertility. Because of this migration history, many of the Zone 2 homesteads are younger—that is, they were settled more recently, and by younger families. Because the male heads of Zone 2 homesteads are younger in age, they have fewer wives and children, and are therefore less able than their male counterparts in Zone 1 to mobilize their dependents’ labor. In contrast, Zone 1 homesteads are older. They are headed by middle-aged and elderly men or by widows with many children and grandchildren upon whom they can rely for subsistence needs. Based on empirical observation alone, I speculate that (1) the homesteads in Zone 2 are

younger, with fewer wives and fewer children and (2) that this difference in homestead composition means adults in Zone 2 are less able than adults in Zone 1 to either distribute extractive tasks among multiple wives or outsource the labor to children of working age.

As seen in Figure 3.1, women have the second largest extractive workload in Zone 2 after boys. Also, the extractive workloads for women, girls, and men in Zone 2 are relatively comparable, while the workloads of children in Zone 1 far surpass the workloads of their mothers. The composition of Zone 2 homesteads could be one explanation for this pattern. Statistical analyses of the demographic information for each of the twenty homesteads who participated in the seasonal resource survey and mapping exercise support this hypothesis

TABLE 6.2: AGE OF HOMESTEAD HEAD		
Results of One-Tailed Independent Samples T-Test		
	ZONE 1 (n=10)	ZONE 2 (n=10)
Mean Age of Homestead Head (Standard Deviation)	49.50 (16.12)	42.90 (10.77)
t = 1.08, 18 df, p=0.54		

TABLE 6.3: NUMBER of WIVES for MALE HEADS of HOMESTEAD		
Results of One-Tailed Independent Samples T-Test		
	ZONE 1 (n=8)	ZONE 2 (n=8)
Mean Number of Wives for Male Heads of Homestead (Standard Deviation)	1.75 wives (0.71)	1.50 (0.54)
t = 0.80, 14 df, p=0.40		

TABLE 6.4: STAGE in the DOMESTIC LIFE CYCLE		
Results of One-Tailed Independent Samples T-Test		
	ZONE 1 (n=10)	ZONE 2 (n=10)
Mean Stage in the Domestic Life Course (Standard Deviation)	3.60 (1.26)	3.05 (1.50)
t = 0.89, 18 df, p=0.44		

The results of one-tailed independent samples t-tests⁵⁶ indicate that the differences between Zone 1 and Zone 2 in regards to the age of the homestead head (Table 6.2), the number of wives for male heads of homestead (Table 6.3) and the stage in the domestic life cycle (Table 6.4) are all statistically significant, with respective *p*-values of .054, .040, and .044. These data offer explanations for (1) the comparably small difference in the average extractive workloads associated with women between Zone 1 and Zone 2 and (2) the difference in the herding patterns associated with girls in Zone 1 and girls in Zone 2. Because women in Zone 1 are members of older, larger, homesteads—with more wives and more children—they are able to share extractive responsibilities with more family members. Where patterns of settlement and agricultural expansion in the two research zones produce large differences in the average extractive workloads of men, girls, and boys in between Zone 1 and Zone 2, the fact that women in Zone 1 are able to distribute work among co-wives, children, and grandchildren means they are less affected by these differences and, thus, the inter-zone difference in the average extractive workload associated with women is comparatively small.

Along the same lines, I suspect that girls are herding in Zone 2 and not in Zone 1 (depicted in Figure 5.1 on page 143) because Zone 2 families have fewer male children to look after livestock. In the absence of male labor, girls take up what is normally a men's and boy's responsibility. A possible reason why women in Zone 1 appear to be herding livestock while their counterparts in Zone 2 are not also lies in the domestic life cycles of Zone 1 and Zone 2 homesteads. Tables 6.2, 6.3, and 6.4 above suggest Zone 1 women are older and, therefore, more likely than women in Zone 2 to either have outlived their husbands or to have seen their children—children who previously lived and worked in their homesteads—grow up and move away. In either of these cases, senior women may have inherited animals from their deceased husbands, or from deceased matrilineal

⁵⁶ An independent samples, or two-sample, t-test compares the mean values from two groups and evaluates the probability that the difference between the means represents two *independent samples* (as opposed to a single population, in which the means would be identical) (Bernard 2006). Where a researcher's hypothesis is directional (in this case, I predicted that Zone 1 homesteads would be older, with more wives, and in an older stage of the life cycle) a one-tailed t-test is recommended.

relatives. They might act as custodians for the stock of relatives who have moved away, or of adopted children who have inherited the stock of deceased parents.

To reemphasize the point I am trying to make, and to connect this chapter with the previous two, I posit that it is not only gender- and age-based divisions of labor that are driving the observed differences in women's, men's, girls' and boys' extractive workloads. The observed differences in extractive workloads are also due to the nature of LULC change in Kulaale—this includes the conversion of forest land (a source of building poles for men and boys) to agricultural uses (an alternative fuel source for women and girls). Observed differences are also a probable product of the demographic structure of Kulaale homesteads—this includes the settlement patterns (nucleated or dispersed) which place agricultural fields, and livestock's dry season grazing sites, at varying distances from Zone 1 and Zone 2 homesteads; it also includes the domestic lifecycles (the gender and age composition) of Zone 1 and Zone 2 homesteads. I am confident that I could not have identified any of these driving factors using a single research method alone. It was through a combination of quantitative/geospatial and qualitative/ethnographic methods that I was able to (1) initially suspect that existing literatures do not sufficiently capture the complexities of rural subsistence, (2) operationalize deforestation with the delineation of two political ecological research zones (3) calculate extractive workloads associated with resources extracted by women, men, girls, and boys, and (4) interpret the observed differences in extractive workloads and speculate the reasons for variations *within* and *between* research zones.

Now that I have demonstrated the power of temporally and spatially explicit methods, when combined with qualitative ethnographic methods, to illuminate the social dimensions of environmental change, I turn to the history of “space” in anthropology.

Spatializing Anthropology: A Review of Temporally and Spatially Explicit Approaches within Cultural Anthropology

The natural sciences have long utilized remote sensing and ground survey techniques to spatially orient their measurements and observations. Now, the social sciences are utilizing the same practices along with other information systems—including geographic

information systems (GIS), global positioning systems (GPS), cellular automata, and agent-based models—to georeference important household, community, and landscape features and processes to spatial coordinate systems. Though anthropologists have only recently begun to understand and evaluate the applications of temporally and spatially explicit data, space-based analyses have a rich history in cultural anthropology, with diffusionist studies of culture areas dating back to the early-twentieth century (Alenderfer 1996). It was during this time that American anthropologists like Alfred Kroeber (1939) developed diffusionist theories of cultural diversity as part of a ‘healthy [historical] reaction against the older naïve view that culture could be ‘explained’ or derived from the environment” (Kroeber 1939: 3). The concept of space was instrumental to this approach, which explained similarities and differences in kinship systems, house form, hunting technologies, clothing style, social organization, and political institutions as resulting from spatial proximity and diffusion.

One school of diffusionist thought focused on culture areas, or “regionally individualized” typologies based on “geographical lines instead of evolutionistically [*sic*] systematic ones” (Kroeber 1939: 49; 4). Another concentrated on *kulturkriese*, or “culture circles” to explain the salience of culture traits across geographic areas (Schmidt 1939). To support their theories, diffusionist anthropologists relied on maps, map overlays, and culture-element distribution tables (Alenderfer 1996). By the 1930s and 40s, as historically-focused views of culture took precedence over geographically-focused ones and, as social scientists sought out reemerging evolutionary theories for explaining social phenomena, diffusionist theories fell out of favor. Thereafter, anthropologists pursued small-scale, interactionist explanatory models. This “turn inward,” Alenderfer (1996:6) argues, transformed space, for cultural anthropologists, into a “passive and sterile... analytical concept.”

For archaeologists, aerial photographs informed investigations of settlement, land tenure, housing and cultivation patterns in places like Cahokia, “the largest fortified Mississippian period centre in the central Mississippi River Valley,” as early as the 1920s, (Rowe 1953; Alenderfer 1995; O’Brien et al. 1985: 173). Today, archaeologists continue to utilize temporally and spatially explicit data at an extraordinary rate.

Analyses of satellite imagery alone are key in helping archaeologists to environmentally stratify an area during the design phase of a site survey, to locate sites through the interpretation of land forms and vegetation patterns, to identify archaeological features through the interpretation of soil stains, plant marks, or traces of structural features, to map the locations of sites discovered during field work, to monitor site disturbances over time, and to aid in the identification and preservation of cultural heritage sites (O'Brien et al. 1982: 173; Rainville 2009). For the last thirty years, archaeologists have relied extensively on aerial photography as a strategy for keeping a practical eye on larger-scale regional spatial patterns. Yet anthropologists have been slow to regain interest in 'space' as an ethnographic concept, let alone integrate the collection of temporally and spatially explicit data into their research design (Maes 2010).

Ecological anthropologists have been at the forefront in integrating temporally and spatially explicit methods with classic ethnographic research. In the mid-20th century, the cultural ecology of Julian Steward prompted researchers like Conklin (1957) to consider the role of spatial variation in environmental and social conditions in shaping human utilization and cultivation practices (Namgyel, Siebert, and Wang 2008; Alenderfer 1996). Following the launch of the Landsat 1 satellite and multispectral scanner system (MSS) in 1972, anthropologists Priscilla Reining (1973) and Francis Conant (1978) began using remote sensing to locate individual villages in Mali (in the case of Reining) and to examine shifting patterns of cultivation and livestock management in Pokat District, Kenya and study banditry on the Ugandan border (in the case of Conant) (Bates 2011; McGuire 2005; Moran 2010). After the 1984 launch of Landsat 4 with the improved Thematic Mapper (TM) sensor (which enhanced spatial resolution from the 60-meter MSS to a groundbreaking 30 meters), ecological anthropologists began investigating land-cover change in such dense and challenging landscapes as the Amazon Basin (Moran et al. 1994; Moran, Brondizio, and McCracken 2002) and the Ituri Forest of Central Africa (Moran 2010; Wilkie 1994). In more recent years, ecological anthropologists have used GIS to develop explanations for, and to understand processes of, changing land cover (Evans, Monroe, and Parker 2005b; Tucker and Southworth

2005) and changes in land use (Brondizio 2005), as well as to compare patterns regionally (Lu et al. 2005; Unruh, Cliggett, and Hay 2005).

Interestingly, those environmentally-focused studies that integrate temporally and spatially explicit data with ethnographic methods do so in a way that one-sidedly emphasizes human impacts on the natural environment. While researchers are increasingly using temporally and spatially explicit methods to clarify the environmental impacts of human behaviors (Fox et al. 2003), the other side of the population-environment relationship—how environmental changes affect human population dynamics—has not been as thoroughly investigated. It is important that researchers address this imbalance, especially given the potential for global environmental change to bear substantial and substantially unequal consequences for different segments of society (Elmhirst and Resurreccion 2008). This dissertation endeavors to do just that.

Historically, the use of temporally and spatially explicit methods has also grown alongside proliferating anthropological analyses of international development. As Alenderfer (1996:10) writes, “the development anthropologist...is faced with [large-scale changes] taking place across regions and larger geographic spaces.” Temporally and spatially explicit data are valuable for linking these regional environmental, demographic, social, and economic changes with more local-level information elicited from interviews, surveys, and participant observation (Stonich 1996). “International development agencies,” according to Bosak and Schroeder (2005: 233), “have embraced GIS as much as the business world.” Accordingly, anthropologists working in the development arena have utilized temporally and spatially explicit data to investigate agricultural change and its relationship to patterns of increasing poverty and environmental degradation (Stonich 1996), to study the participation of community members in analyzing their needs, goals, and priorities for rural development planning (Nelson, West, and Finan 2009), and to understand processes of acculturation and aid in planning effective health programs (McGwire, Chagnon, and Carias 1996).

One of the most well-known epidemiological employments of spatial analysis dates back to the 1800s, when Dr. James Snow created a map showing cholera deaths in the Soho district of London were spatially clustered around a particular public water pump.

This revolutionary approach led him to conclude that contaminated water from the pump was the source of the neighborhood outbreak (Goodchild 1996). Today, anthropologists are increasingly using temporally and spatially explicit data to investigate racial, ethnic, and socioeconomic disparities in health and medicine (Ward et al. 2007; Krieger et al. 2005). Also, in recent years, nutritional anthropologists have integrated GIS with ethnographic research in order to classify barriers to healthy dietary patterns, map the proximity of low-income populations to food stores, and identify effective promotional strategies for farmers markets (Shaw 2006; Antin and Hora 2005; Hora 2004).

Participatory GIS tied to the mapping of indigenous territories and subsistence activities, the management of conservation areas, and the counter-mapping of dominant (or state-sanctioned) land-use systems, represent additional venues through which anthropologists have incorporated ‘space’ into their research (Calamia 1996; Herlihy 2003; Smith 2003; Herlihy and Knapp 2003; Hodgson and Schroeder 2002).

Nevertheless, *ethnographic* engagement with temporally and spatially explicit data remains limited.⁵⁷ The general absence of temporally and spatially explicit data in contemporary ethnographic methodologies points to a persistent passive relationship between cultural anthropologists and geospatial methodologies. The absence of “space” in much of the anthropological literature could be a result of discomfort among ethnographers with instruments that are understood to be either overly quantitative, abstract and/or removed from the local, or imbued with a panoptical power reminiscent of the colonial pasts and presents from which anthropologists are constantly striving to distance themselves.

As an approach to understanding cultural patterns and processes, ethnography tends to be far more qualitative than quantitative (McCurdy 2011). Tied to the qualitative nature of ethnographic research, anthropologists emphasize the importance of observation

⁵⁷ There is a notable contingent of anthropologists and anthropological demographers (e.g. Michael Agar, Mark Aldenderfer, Eduardo Brondizio, Tom Evans, Timothy Finan, Kathleen Galvin, Jane Guyer, Katherine Homewood, Emilio Moran, Mark Moritz, Donald Nelson, Paul Leslie, Catherine Tucker, Colin West) who incorporate geospatial methods in the study of land-use/land-cover change. Still, their analysis of temporally and spatially explicit data is primarily geared toward understanding human effects on the natural environment, not the effects of environmental change on human populations.

and its utility in revealing information not gleaned through structured survey instruments. Also, anthropologists recognize the value of subjective interpretation in the evaluation process and regard objectivity as neither achievable nor desirable (Rosaldo 1993). This approach to social research is shared also by critical geographers and feminist scholars operating from a range of disciplines. GIS research, meanwhile, tends to be “quantitative and technical in orientation and detached from its research subjects” (McLafferty 2002:265). Accordingly, much of the temporally and spatially explicit research pays little attention to subject-centered variables like gender (ibid).

“Feminist politics,” according to Lewin (2006:25) “[have] long been preoccupied with the power of the observer’s stance.” It is appropriate, then, that many of the critiques launched at geospatial research techniques stem from feminist social science. However, as the ensuing review of these critiques—and, more especially, their counter-critiques—suggests, anthropologists’ reluctance to utilize temporally and spatially explicit data in their work may be more strongly indicative of methodological conservativeness and insecurity than of problems inherent to the spatializing of ethnographic research, per se. Furthermore, as McLafferty (2002:268) writes, the boundaries between geospatial and feminist research are becoming increasingly blurred as scholars realize the potential for each to influence the other:

“GIS can enrich feminist geography and feminist activism by creating new kinds of knowledge, by describing the socio-spatial contexts of women’s lives, and by serving as a vehicle for women’s empowerment. Feminist geography can enrich GIS by advocating the incorporation of qualitative information to give meaning to spatial data; by drawing attention to the social construction and contexts of GIS; and by highlighting the gendered geometries of power that shape particular GIS applications and establish the bounds of GIS”

Nevertheless, I find it useful to examine a sampling of the more persistent critiques of temporally and spatially explicit research in order to make explicit my research’s place within this transforming body of literature.

Critiques and Counter-Critiques of Remote Sensing and GIS

The critiques launched at remote sensing and GIS stem from concerns tied to the commercialization and militarization of social science,⁵⁸ the role of maps in aiding colonial projects (Sletto 2009, Parker 2006), and the masculine “God-like” distance GIS practitioners allegedly enjoy when surveying landscapes from above (Roberts and Schein 1995). Critiques of GIS also arise from matters of expense, logistics, and generalizability (Turner and Taylor 2003). In the paragraphs that follow, I review a sampling of these critiques and offer a counter critique—inspired by feminist geographers, political ecologists, and my own fieldwork—to justify my integration of temporally and spatially explicit data with ethnographic research.

Logistical Constraints

There are a number of logistical constraints to collecting temporally and spatially explicit data—limitations related to expense, planning, management, and generalizability. A drawback specific to remote sensing is that it provides information on land *cover* but not land *use* practices—which can only be ascertained through on-the-ground social research. Moreover, whenever researchers aggregate up to larger regional units of analysis, they risk masking household and community-level decisions (Rindfuss et al. 2003). Another critique that has been launched at remote sensing is that those snapshot images assembled in a GIS are subject to changes in real life that may go unacknowledged by the researcher.

Still, the difficulty in combining micro-studies with regional and historical socio-environmental patterns should not mean that we give up altogether on trying to study human-environment interactions at a larger scale. On the contrary, bringing the discrete nature of survey data together with the continuous nature of remotely sensed data (Walsh et al. 2003) presents an innovative channel for ecological anthropologists seeking to

⁵⁸ Turner and Taylor (2003:178) identify several scholars—including Aitken and Michel 1995; Goss 1995; Pickles 1995; Sheppard 1995; Sayer 1984; Schuurman 1999; Smith 1992; and Taylor 1990—who disparage geospatial technologies for reasons tied to their association with war, marketing, planning, and surveillance and for their potential to entice a deflection from reflexive, qualitative research toward “data-driven, positivist analyses that fetishize spatial relations.”

make the most of new spatial technologies while also optimizing the strengths of traditional methodologies. As Guyer et al. (2007:8) write, “[the] play of spatial units and temporal frames corresponding to different social dynamics can at least be experimental,” so long as scholars “contextualize and extend the case material in an empirically-based manner” and avoid “being backed into making weak versions of circumstantial arguments about the locus of causations and the aggregation of effects.” I would suggest that problems with temporal variation—that remotely sensed images capture a landscape that may be utterly different a year later—is not unique to this particular avenue of social research. Anthropologists have long understood that the communities they immortalize in their ethnographies remain constant only on the written page. Ethnographers who return to their fieldsites year after year see enormous change in the communities they study. This does not make their earlier writing less valid, unless the thesis of that piece of writing was that people remain static through time. In addition to these logistical constraints, there are also a number of what I term philosophical limitations to the analysis of temporally and spatially explicit data.

Philosophical Critiques

Social scientists have remarked on the authoritative role of remote sensing and GIS in excluding alternative spatial knowledges in development, conservation, and urban planning (Sletto 2009). As Guyer et al. (2007:13) write, the scientific distance associated with remote sensing can “conceal the fact that gathering evidence of this kind...is itself an intimate political engagement.” In their analysis of advertisements produced by manufacturers of spatial data-based technologies and software, Roberts and Schein (1995:179) concluded “[the] fundamental assumption of any GIS technology (and its advertisements) is that the user can *reproduce* real-world space.” Moreover, the authors add, wherever researchers, developers, or city planners view and record a landscape, “especially from above, [they] are establishing [their] own superiority and domination of the scene” (1995:183). Roberts and Schein (1995:189) go on to infuse their critique with a radical feminist personification of masculine mapping instruments:

The satellites' way of seeing is that of the voyeur or even the violator. The sexual imagery is deliberate...the technology is socially constructed as masculine in the same way that the camera itself has been recognized as an extension of a 'redoubtable masculine will' implying (or forcing) the subject's 'surrender.'

The edited volume in which the Roberts and Schein piece is included (Pickles 1995) is a necessary, indeed pivotal, element in the body of GIS literature. As Bosak and Schroeder (2005) write, Pickles was among the first to draw attention to the social, political, and economic contexts in which GIS is embedded. To be sure, the tools of GIS are like any other social research method in that they are subject to the emotions and ambitions of those who utilize them (Bosak and Schroeder 2005). Human biases penetrate every step of geospatial research, including the collection, manipulation, and representation of data (ibid). Nevertheless, the philosophical critiques launched at GIS deserve careful evaluation.

The Counter-Critique (Part I): Feminist Geography and the Positivist Debate

Accompanying the growth in temporally and spatially explicit approaches to investigating social phenomena, scholars have called for a refocusing of critiques and a change of attitude in evaluating GIS. In particular, geographers Nadine Schuurman and Geraldine Pratt (2002:297) have urged that critiques of GIS be geared toward the task of “uncovering the production of truth” and not “exposing error” from a morally and intellectually ‘superior’ point of view. Researchers must be open in situating their critiques of GIS among particular intellectual traditions. To date, Schuurman and Pratt (2002: 295) attest, the debate surrounding GIS has been overly focused on an unproblematic, hazy conception of positivism. They write:

The use of positivism to critique GIS...allowed debates in GIS to bypass substance and detail. Positivism stood for a 'bad thing' that was ill defined but understood to be inherent in GIS. By focusing on positivism within GIS, critics were detracted from the subtleties of GIS. Existing debates about the social construction of data sets and the indeterminacy of GIS representations, as well as constructing means of engaging with the technology were bypassed.

Mei Po Kwan agrees; while critiques of geospatial methodologies have made researchers aware of the various constraints to GIS technology and methods, the possibility that GIS may yield varying data, varying conclusions, and varying outcomes for research communities according to the critical agency of GIScientists has not been sufficiently recognized (Kwan 2002). Instead, Kwan states, “GIS technology was often treated as an overgeneralized technological complex with a transcendent existence that appears...immutable to localized social construction..[T]here is an element of technological determinism in this kind of argument that precludes the possibility for resistance or subversion of dominant practices” (Kwan 2002: 273).

Discomfort among anthropologists, sociologists, and geographers toward the use of temporally and spatially explicit research methods closely resemble debates each discipline held regarding its unit(s) of analysis and methods of study during the poststructural turn of the mid-twentieth century. In the case of anthropology, animosity surrounding the utility of the term ‘culture’ drove a sharp turn away from determinist, colonial, armchair anthropology, toward reflexive investigations of fluid, changing, multidimensional cultural formations. In the same vein, current transformations in the application of GIS show that research methods are but an extension of their users. Moreover, social scientists’ hesitations in using geospatial methodologies indicate continuing deliberation over the goals of social research and the illusion of objectivity in scientific data collection more so than problems inherent to the spatializing of human research.

To counter any undercurrents of masculinist science in geospatial research, feminist geographers have pioneered alternative mapping practices, called by *feminist visualizations* by some (Kwan 2002). This feminist approach to geospatial research involves diverse research methods, awareness of power’s multiple (e.g. gender, class, race, heterosexual) dimensions, and a critical reflexivity in order to destabilize conventional power hierarchies of masculinist GIS. In the paragraphs that follow, I offer additional examples of GIS as a valuable, refocused, and unmasculinist tool for visualizing social processes and, in particular, human-nature interactions.

The Counter-Critique (Part II): Political Ecology and the Defense of Maps

There are a number of political ecologists (e.g., Bassett and Zueli 2000; McCusker and Weiner 2003; Heasley 2003; Jiang 2003; Fairhead and Leach 1996; Nyerges and Green 2000) who have successfully integrated the advantages of remote sensing and GIS while remaining conscious of their limitations, and I take inspiration from their work. In the article, “Shifting Boundaries on a Wisconsin Landscape: Can GIS Help Historians Tell a Complicated Story?,” Heasley (2003) shows how divergent forest cover transformations in the Kickapoo River Valley of southwestern Wisconsin are tied to cultural, political, and economic variations in understandings of property. In this case, remote sensing and GIS “proved extremely useful in uncovering the mesoscale social and ecological heterogeneities that...often remain hidden in more broad-sweeping environmental histories” (Turner and Taylor 2003:179).

In another example, geographers McCusker and Weiner (2003) integrate GIS-based spatial analyses of LULC change in South Africa with local narratives derived from intensive interviews, transect walks, and community ground truthing. This combination of research tools, the authors write, allowed them to unearth “hidden political ecologies” while also sensitizing GIS analysis to a local context, one imbued with differential power dynamics that satellite images alone simply cannot capture (2003:202).

In West Africa, Fairhead and Leach (1996) used local oral accounts, interview data, participant observation, village resource and vegetation surveys, and a time-series of aerial photomosaics to challenge the received wisdom of deforestation passed down through colonial memoirs, policy documents, and reports. Contrary to what earlier reports and popular sentiment suggested—(1) that deforestation was occurring in Kissidougou and (2) that it was caused by negligent land management on the part of local residents—Fairhead and Leach found the residents of Kissidougou, Guinea actually encouraged the formation of forest islands around their villages as a way to shelter tree crops, provide natural resources, conceal ritual activities, and offer general protection from the elements. In this case, remote sensing helped the researchers to re-read a misread landscape and counter a long-standing inequitable power relation.

Nyrges and Green (2000) describe their application of Amazonian forest change models to the savanna environment of Guinea, West Africa. In this case, the authors discovered the Kissidougou model developed by Fairhead and Leach for assessing forest island growth in the south of Guinea is not applicable for the Kilimi region of northwestern Sierra Leone, where other environmental change processes are underway. The authors conclude by calling for “ethnographies of landscape,” which provide “a detailed analysis of land cover change in relation to physical factors and ethnographically known land use patterns, as depicted in remotely sensed images” (Nyerges and Green 2000:286).

The advantage of such an approach is that it combines the technological and sociocultural analytical strengths of remote sensing and GIS with the rigor and investigative capability of ethnographic research. Thus, as Turner and Taylor (2003) attest, remote sensing and GIS have the potential to “[reinvigorate] highly questioned visual measures of environmental change” in assessing the relationship of humans to the natural environment, so long as scholars take strides to appropriately situate the imagery within its social and historical contexts. When integrated with ethnographic methods, temporally and spatially explicit data can reveal information on broad temporal and spatial scales that are impossible to capture using fieldwork alone.

The Counter-Critique (Part III): More than Masculinist, Less than “God-Like”: An Example from Kulaale

“BaVincent,” I cried, “Wait for me. I am stuck!” I heaved and huffed, pulling with all my might to free my left foot from the quaggy mess of earth that engulfed it. The three of us—Vincent, Luther, and I—were on our way home from our last visit of the day. It was the middle of the rainy season and we were beginning the hour and a half long bicycle ride from Musamu (Zone 2), where we had just administered the seasonal resource survey and mapping exercise with two participating homesteads, back to our home base in Cikolo (Zone 1).

When not engaged in conversation with the accompanying research assistants, I learned to cope with the laborious commute by allowing my mind to go blank. I took in

the view, counted pedal strokes, fantasized about gourmet food items, and sang to myself as a way to pass the time. Because Bob Marley is so highly revered in Zambia—each year there is a Bob Marley Memorial Concert in Lusaka and, year-round, his songs spout from speakers in urban boutiques, roadside snack shops, and rural car-battery powered cassette players—I found I would often hum what lyrics I knew of his most popular reggae tunes. This was especially the case whenever I was stricken by nervousness, stress, loneliness, or sadness. The chorus to *Three Little Birds*—“Don’t worry about a thing, because every little thing is gonna’ be alright”—became my mantra as I learned, more than anything, that fieldwork is an exercise in patience. It was not at all unusual for a quick trip to be stretched out by hours on account of a flat tire. And during the rainy season, trips were lengthened as the research assistants and I sought detours around inundated fields and struggled to free ourselves from sticking mud.

Vincent, Luther, and I had long abandoned the idea of riding. Trying to pedal our bicycles through the mud was like trying to climb up the down-facing escalator in Lusaka’s Manda Hill shopping center wearing a weight vest and snowshoes. With each grueling pedal stroke, our tires spun, flinging mud into the face of whomever was behind. We opted, instead, to push our bicycles through the squelchy stretch between two homesteads. In other quarters of the fieldsite, in Inzoka and in parts of Cikolo, the soil is sandy and challenging to ride through when it is dry; when it is wet, the sand in Zone 1 thickens into something not quite as smooth as pavement, but certainly more solid than the sea of dried granules I’d learned to fishtail in and out of while riding at high speed. Here, in Musamu, the soil was the opposite. The loam and clay composition in Zone 2 was a cinch to navigate during the dry season. But in the rain, it was like wading through oatmeal.

Vincent paused ahead of me, leaning against his muddy bicycle. I grumbled various obscenities to myself as the ground sloshed and gurgled beneath me. “I just need to free this foot,” I encouraged myself, “so that I can place it in front of the other, and then repeat this nonsense all over again. Only 100 more paces to go...” I gently folded my bike onto its side, grasped my thigh with both hands, shifted my weight, then half

hopped-half fell onto the ground. “Freedom,” I sang to no one in particular as my body flopped into an adjacent mud puddle.

On the ground, with the brown water seeping into the seat of my pants, I continued crooning to myself what lyrics I knew of Bob Marley’s *Redemption Songs*: “Won’t you help to sing, these songs of freedom?” I cast my glance to the spot where I had previously been struggling and noticed I had only managed to free my foot from its mucky prison; my boot remained swallowed by the mud. I sat up and squatted over the boot, slowly rotating it loose. “Emancipate yourself from mental slavery. None but ourselves can free our minds...”

With a vigorous twist and an upward yank, the swamp belched out my boot and nearly knocked me over again. Regaining my posture, I slid my soggy foot into the knee-high rubber Wellington galosh, picked up my bike, and continued sloshing home. I thought for a moment about removing my boots and carrying on barefoot, but quickly ruled out the possibility when an image of cutaneous larva migrans (CLM)—creeping, red legions caused by parasitic roundworm larvae which pass through the feces of dogs and cats and bore into humans’ bare feet—striating my ankles flashed through my mind. A few weeks earlier, an interviewee lamented to me how painful the rainy season is for those who cannot afford shoes. Around the same time, another informant joked with me about watching farmers and businessmen wearing gumboots and rubber sandals high-step through the muddy fields outside her home on their way to the nearest marketplace. She mocked their awkward style of walking then confessed to losing her own sandals in the sticking mud. It is a catch 22: go barefoot and have nematode larvae under your skin, or get shoes, look ridiculous, then probably lose your shoes and get CLM anyway.

Having resolved to continue the ridiculous high-step hiking rather than continuing barefoot, I daydreamed about other memorable journeys home. “It could be worse,” I thought to myself. “It could be pitch black, and I could be careening down a steep and rocky trail on a bicycle with no brakes. I could be flipping over my handlebars for the third time and landing hard on the dirt road between Musamu and Cikolo. I could be battling wind and rain on the ride home from Inzoka. I could be mending a flat tire for the fourth time in sixty minutes, or I could be giving myself stitches in my tent from an

injury sustained in a motorcycle accident during my first trip to Banyama. I could be watching, stunned, as Senior Headman Inzoka stood, removed a long switch from the thatch roof of his shelter, then bludgeoned an intruding cobra to death, all without pausing or slowing his response to my interview question. I could be sighing with boredom, struggling to silence my growling stomach, and furiously swatting bugs during my fourth hour mapping the movement of an adolescent boy herding cattle.”

All these events transpired over the course of my fieldwork. All these events have stuck with me, lingering like the after-image or flashing spots burned into one’s vision after focusing intently on a source of light. Some of these events have left physical scars, patchwork pieces of flesh, that remind me now and always of what it means to be an anthropologist, what it means to be a part of something and yet also detached, what it means to be a student in the study of life. All these events, in and of themselves, present a strong case against critiques of remote sensing and GIS as ‘far removed’ and ‘god-like’ in its surveying of landscape processes via satellite.

It may be true that the view of the earth made possible through remote sensing is “that of the *spaceman* who has actually attained the god’s view” (Roberts and Schein 1995: 185). But it is true also that, when utilized in conjunction with on-the-ground ethnographic methods, temporally and spatially explicit data can offer a view into peoples’ everyday lives that is far more nuanced, more tangible, and more effectively documented than the glimpses researchers gain through surveys, interviews, or textual analyses. In this case, the analysis of remotely sensed imagery (Cliggett et. al. 2007; Frank and Unruh 2008; Guyer et al 2007; Unruh, Cliggett, and Hay 2005) and the collection of spatially explicit data during the seasonal resource survey and mapping exercise provided a means for recording participant observation in a format other than fieldnotes. I followed men, women, and children, in two political ecological research zones through wood, wind, and mud, over rivers, and across fields. I helped draw water, collect firewood, and locate wild foods. I participated in and observed families’ extractive exercises, mapping as I went. I did not build my investigation of resource extraction solely according to remotely sensed data. Rather, I strived to craft a “rigorous and inclusive ethnography of landscape” that incorporates temporally and spatially explicit

data with conventional qualitative methods to produce a fuller picture of social and ecological reality (Nyerges and Green 2000:281).

My utilization of multiple research methods, including remote sensing and GPS, was not an effort to gain a spaceman's perspective of the landscape, but rather a way to include multiple, partial, situated perspectives in my study of human-environment interaction. In this case, temporally and spatially explicit methods, when they are integrated with classic ethnographic methods like participant and observation and semi-structured interviews, offer quite the opposite of the "God-like" view suggested in critiques by Pickles or Roberts and Shein. The "god-trick of seeing everything from nowhere" may be present in certain visual technologies like microscopes, or even in remote sensing (Haraway 1991:189; Pavlovskaya and St. Martin 2004). But, the collection of temporally and spatially explicit data does not take on a particularly "God-like" view when the researcher is knee-deep in mud, struggling to maintain her composure for the two hour bicycle ride home. Nor is the analysis of temporally and spatially explicit data especially masculinist when it is charged with the sole purpose of uncovering gender and age-based differences in peoples' experiences of environmental change. Walking with research participants the routes they regularly travel when seeking out environmental resources is a far cry from the detached observer depicted in critiques of remote sensing and GIS.

Conclusion: Complicating and Complementing Ecological Anthropology with Temporally and Spatially Explicit Data

The increasing availability of temporally and spatially explicit research methods has opened up new opportunities for anthropologists and other social scientists to explore the relationship between humans and their environment (Turner and Taylor 2003). While remote sensing and GIS have been embraced for their ability to foster increased holism in anthropological research (Guyer and Lambin 1993), there are numerous constraints to their application, including constraints on time, money, and effort. And, there are a number of cautionary notes one needs to consider when utilizing remote sensing, GPS, or GIS technologies. As Guyer et al. (2007) argue, remote sensing has the power to position

itself as “another authoritative objectivized account of [people’s] lives that does not acknowledge its own hesitations and limitations” (2007:13). But, when it is integrated with the classic methods of ethnographic research, remote sensing and GIS can help focus research questions, give confidence to ethnoecological data elicited by traditional research methods, and aid in the examination of hypotheses that are too complex to address with interviews, surveys, and participant observation alone. Moreover, as Guyer and Lambin (1993:854) suggest, the synoptic view of landscapes afforded by remote sensing, allows researchers “not only to describe particular landscapes with greater confidence, but ultimately to work toward comparison and generalization about land use dynamics from a holistic standpoint.”

In this chapter, I have reiterated the value of a holistic quantitative/geospatial and qualitative/ethnographic methodology. Indeed, it is only through the integration of these methodological approaches that I was able to interpret the results of the seasonal resource survey and mapping exercise. Without the geospatial data, I would have little empirical evidence on which to base my investigation of the aged and gendered dimensions of rural labor and environmental change. Without the qualitative data, I would have been unable to interpret the statistical analyses; I would have had no way to explain the surprising differences in women’s, men’s, girls’, and boys’ extractive workloads.

In this case, interviews and participant observation suggest the nature of environmental change (that it is caused by the clearing of forest to create commercial fields) and homestead demographic structure (their settlement pattern as well as their composition) play a role in shaping men’s women’s boys’ and girls’ differential experiences of deforestation. For women, the clearing of forestland to plant maize provides an alternative fuel source—cobs are widely used in homestead cooking fires. The same cannot be said for men, who have to travel great distances in search of the long, straight mopane trees that are ideal for building homestead structures. The settlement pattern of Zone 1 and Zone 2 homesteads (whether homesteads are nuclear or dispersed, with fields located at a distance or adjacent to the family compound) means that Zone 2 farmers have a shorter distance to travel when herding cattle in the dry season. That Zone 1 and Zone 2 homesteads—or at least those homesteads included in my subsample—

differ in their age, number of wives, and stage in the domestic life cycle means that women in Zone 2 have fewer co-wives and fewer children of working age with which to share their extractive labor.

The hybrid methodology employed in this dissertation directs the researchers' gaze to a myriad of contextual factors, in addition to gender-and age-based divisions of labor, that shape Kulaale residents' socially-differentiated experiences of environmental change. In so doing, it supports the claims of feminist geographers—that, when it is integrated with ethnographic research methods, temporally and spatially explicit data can facilitate a rich understanding of the ways in which individuals and communities are affected by environmental change. Indeed, "GIS can be a useful method for illuminating certain aspects of women's [and men's, and children's] everyday lives" (Kwan 2002).

CHAPTER SEVEN: “IT’S BETTER YOU DON’T GO HOME”: LOCATING THE STATE IN KULAALE AND ADJACENT PROTECTED AREAS

Introduction

I met the Zambia’s Director of Conservation and GMA Manager, Melody Zeko, in her office in February 2011. It was a spacey room, with a sofa to receive visitors, adjacent to a cramped waiting area in one of the many rectangular buildings that make up the large Zambian Wildlife Authority (ZAWA) compound in Chilanga, Zambia—about 20 kilometers south of the capital, Lusaka. I waited for roughly one hour in a neighboring office before Ms. Zeko was available to begin our scheduled interview. As I waited, I noticed the grounds of ZAWA Headquarters far surpassed those of the Department of Immigration—a place where I had also recently spent a considerable amount of time in wait. The size, cleanliness, access to electronics and other supplies, and general orderliness of materials at ZAWA headquarters were immaculate. The green space between buildings was neatly maintained. In the office where I waited, there were several three ring binders, each neatly labeled atop a tall filing cabinet. There was a large, black HP printer/copier that was free of dust, scratches and other signs of age. This contrasted sharply with the Department of Immigration, where employees shuffled between flimsy piles of hand-scribed file folders, and where persons lined up in an alley outside the building could count on two hands the number of broken windows in surrounding buildings.⁵⁹

Ms Zeko was welcoming, dressed plainly in a white World Wildlife Foundation (WWF) polo and wearing a bright intelligent smile. She carefully entertained my questions concerning the rumors of eviction in Kulaale and explained, with all the confidence and practice of a senior politician, ZAWA’s mission, vision, and the obstacles it currently faces. “The Bbilili Game Management Area is unique,” Ms. Zeko confessed, “because it is heavily settled and because of the Tonga relocation...The biggest problem

⁵⁹ I speculated that the observed difference in the staffing, supply, and orderliness of the two departments was likely due to ZAWA’s being semi-autonomous, benefiting from private partnerships in a way that the Department of Immigration does not. The volume of people coming in and out of the two facilities probably also plays a role in the varying characteristics of the two departments.

facing ZAWA is dealing with people who are hungry. The solution is to improve food security and improve livelihoods.”

What Ms. Zeko said next confirmed my growing suspicion that Zambia’s ministries had competing development priorities. “They [GMA residents] don’t work,” she said. Although Kulaale is among the most agriculturally productive areas in country, Ms. Zeko expressed that the problem with Kafue National park and its surrounding GMAs is that the people there have a different attitude toward work. “People realize they can make money by encroaching.” This statement flies in the face of the most recent round of settlements in Bbilili Springs GMA which come at the invitation of the Principal Land Resettlement Office, which falls under the Office of the Vice President. This clash of priorities is having very real impacts in places like Kulaale. On the one hand, Zambia is seeking economic development through increasing agricultural production in rural sectors. Kulaale has seen this priority unfold in multiple stages—first with the opening of the frontier in 1979 and later with the establishment of the Lubono Settlement Area, described in Chapters One and Three. On the other hand, Zambia is seeking to pursue development through the wildlife tourism industry. To pursue this development strategy, ZAWA completely evacuated the Sichifulo GMA in 2008, and Kulaale residents have been intimidated by game scouts and troubled by rumors suggesting they will soon be evicted from Bbilili Springs GMA.

As part of my broader investigation of development, conservation, and environmental change in Kulaale, I invited Kulaale residents to reflect on the role of ZAWA in easing or constraining their access to natural resources and the overall advantages and disadvantages to living in a GMA. What follows is an attempt to engage a sampling of this data with key literatures in political ecology. Ultimately, I uncover that, while these literatures each present a notable framework for conceptualizing the relationships between protected areas and the state, no single lens is suitable on its own for explaining the dynamics observed in the field. What is needed is a flexible, integrative theoretical approach that attends to the shifting dialectic between individuals and authority and between the state and its margins.

This chapter unfolds in five main parts. I begin with a vignette describing a failed community-based natural resource management (CBNRM) enterprise in Zambia's Kafue National Park. A symbol of both the state-run conservation ethos and the militarism it exudes, this single image sets the tone for the remainder of the chapter and emerges again as the basis of the conclusion. Next, I summarize the history of Zambia's Administrative Management Design for Game Management Areas (ADMADE) and the neoliberal process by which the National Parks and Wildlife Service (NPWS) was transformed into the deregulated and semi-autonomous ZAWA. Also in this section, I take a closer look at the Community Based Natural Resource Management and Sustainable Agriculture (CONASA) program responsible for constructing and overseeing the failed campsite at Mulilo. Integrating interview data with published research on the environmental history of Kafue National Park, I illustrate the ways in which community-based conservation enacted under ADMADE, ZAWA, and CONASA hardly deviates from the exclusionary conservation strategy of the British colonial regime.

After that, I dissect several political ecological theories of the state in order to help map the contested state-civil society boundary within the Zambian fieldsite. In combining narratives from my own research with insights from Agrawal (2005), Sundberg (1998, 2004) and Neumann (1998), I shed light on the role of the state in implementing environmental conservation and the persistent exercise of militarism in protected areas' law enforcement. Then, I reflect on the edited volume by Das and Poole (2004) and note its value for conceptualizing the relationship of Zambian game scouts to the centralized bureaucracy of the Zambian state. Finally, I conclude that, while contemporary political ecological research is useful for making sense of the preliminary data gathered during the summers of 2007 and 2008, no single framework is perfectly suited for describing the dynamics observed in the Bblilili Springs and Sichifulo GMAs. Following Rutherford (2007), Neumann (2004), and Ferguson and Gupta (2008), I assert that comparative analyses of alternative narratives, when integrated with diverse formulations of state topography, provide a productive foundation for theorizing the complex relationship between conservation territories and the margins of the modern state.

Lost in the Fire: CONASA's Mulilo Campsite

"The community lost." I diverted my gaze from the fresh Land Rover tracks carved in the dry Zambian soil to the polished, black boots of Monroe Muvwimi, the Sr. Wildlife Police Officer (WPO) posted at Mulilo. It was June, 2008. I had been conducting research in the Bbilili Springs GMA for four weeks before making my way to the Mulilo Campsite, where I could see for myself what CBNRM meant to the residents of this area and to those, like Monroe, who are employed to patrol the park border and defend the resources inside.

Erected in 2004 at a main entrance into Zambia's Kafue National Park, the Mulilo Campsite was designed to provide a stopover for travelers making their way between northern Kafue and the nearest town through which visiting travelers would pass. The revenue generated from the campsite was intended not only to deflect the operating the costs of ZAWA; these funds would also funnel through the Siachitema Community Resource Board (CRB) to support nearby schools and other public works. Additionally, the community-based tourism venture at Mulilo was to provide a space where entrepreneurial local farmers and craftsmen could market their wares to visiting patrons. In line with the philosophy of CBNRM, the benefits afforded to local residents by the Mulilo campsite would instill an appreciation for the region's biodiversity and a sense of obligatory environmental stewardship. At least that is what the brochures printed and distributed by the Environmental and Agricultural Sustainability (CONASA) program to Siachitema residents suggested.

Shuffling my feet along the floor of what used to be the campsite's dining hall and eyeing the blackened stumps that formerly bore the weight of the structure's thatched roof, I compared the stark image before me to one I had seen just days earlier. The black and white photos of Chief Siachitema receiving an oversized check from CONASA and of the Mulilo dining hall, untarnished and filled with future stakeholders, contrasted sharply with the charred remnants I was presently surveying (see Image 7.1). Barely a year after it was constructed, the Mulilo campsite burned to the ground. The southernmost entrance into Kafue National Park now hosts only an outpost of community scouts, village scouts,

and WPOs responsible for law enforcement inside the park and within the neighboring Bbilili Springs, Sichifulo, and Mulobezi GMAs.

IMAGE 7.1: Photos from the CONASA-Mulilo Campsite Cheque Handover Ceremony contrasted with photos taken by the researcher at the same location



On one hand, the black and white photos included proudly in the informational leaflet printed by CONASA symbolize the promises of “modernity” and “development” that were made as part of the neoliberal reformation of the National Parks and Wildlife Service (NPWS) during the 1990s (Ferguson 1999). On the other, the sun-bleached ruins of the campsite, skeletal and overrun with vegetation, symbolize the failure of CBNRM—one of the token strategies of sustainable development—to yield positive results for either the state or civil society. And the fresh tire tracks, which only moments

earlier ushered a very martially attired unit warden from a neighboring GMA through the Mulilo outpost, allude to the hierarchy of wildlife authority and the militarism underlying conservation law enforcement. This imagery is instrumental to a political ecological understanding of environmental conservation in Zambia and elsewhere.

Colonialism and Community-Based Conservation in Kafue National Park

Early History

The meaning surrounding the construction, incineration, and (potential) reconstruction of the Mulilo campsite cannot be understood apart from the colonial administrative strategies, the neoliberal development projects, and the exclusionary management policies that have characterized Zambian nature conservation over the last 150 years. Thus, in this section of the chapter, I will briefly recount the history of natural resource management in Zambia beginning with the first game ordinances, leading through the establishment of the Zambian Wildlife Authority (ZAWA), and culminating with the cessation of the CONASA program in 2005.

With legislation dating back to the turn of the twentieth century, Zambia has a relatively long history of environmental regulation. The first European administrators—set on gaining control of nation’s lucrative ivory trade by attributing declines in wildlife populations, not to rinderpest or other epizootic diseases, but to “unrelenting daily hunting by Africans with muzzle-loading guns” (Marks 1984:107)—took steps to restrict Africans’ possession of guns and powder as early as the 1890s. In 1925, the British colonial government enacted its first game ordinance in Zambia (then Northern Rhodesia), which transformed vast tracts of the rural landscape into game reserves and required all hunters to purchase licenses (Marks and Fuller 2008). By the late 1950s, six percent of Northern Rhodesia had been gazetted as game reserves, with much of the surrounding land set aside as controlled hunting areas (Marks 1984).

ADMADE

After Zambia declared its autonomy from colonial rule in 1964, the primary motive of the newly formulated NPWS was to establish the economic importance of wildlife through

tourism and the “sale” of animals residing in the colonially demarcated national reserves (Marks 1984). For the past half-century, these reserves have been hailed as a means for preserving the nation’s biodiversity and improving its economic situation. Today Zambia has 19 national parks and 35 semi-protected GMAs, which serve as buffer zones between lands that are open to human settlement and the fully protected national parks, where human habitation and hunting are prohibited. Together Zambia’s protected areas account for approximately 40 percent of the country’s land surface (Chundama et al. 2004).

Since its independence, Zambia has implemented two main approaches to managing its protected areas, including Kafue National Park. The first was based on the colonial, or “fortress,” model of conservation, which held that humans and wildlife could not possibly coexist. Constructed with a clear preference for Africa’s wildlife over its people, the colonial model brazenly excluded unlicensed and impoverished rural residents from accessing resources inside the park borders. Fueled by concerns that the colonial system had turned Zambia’s national parks into ecological islands vulnerable to human encroachment and surrounded by human poverty (Marks 2001), the second approach stipulated that private enterprises, local governments, and local people could manage environmental resources jointly as a way to integrate conservation with improved human wellbeing (Hughes 2001). Throughout the 1970s, advocates of this second, community-based, approach contended that so long as rural residents could garner the economic benefits of wildlife, they would have an incentive to refrain from illegal hunting (Gibson 1999:119).

The philosophy of instituting CBNRM as a means for achieving ‘modernity’ and sustainable development underpinned the creation of Zambia’s Administrative Management Design for game management areas (ADMAGE) in 1987. The first in a series of efforts to decentralize the NPWS and divide the benefits and responsibilities associated with wildlife management between the national government, the private sector, and the local communities, ADMAGE mandated that half of the proceeds from trophy hunting be directed through a Wildlife Conservation Revolving Fund (WCRF). From there, the monies would be allocated to cover the costs of wildlife management and to support community development within the GMAs (Lewis and Alpert 1997). Before

ADMADE was realized, all revenues from trophy hunting in Zambia's GMAs went to the national treasury. Since its inception, these funds have been used to build classrooms, and clinics, houses for teachers, shelters for hammer mills, village shops, and capital for cottage industries (Lewis and Alpert 1997). That is not to say, however, that ADMADE has been successful at either conserving Zambian wildlife or improving the wellbeing of Zambian people.

After the NPWS devolved into the semi-autonomous ZAWA, the goals of ADMADE shifted. In the following paragraphs, I will re-iterate a finding made by Manspeizer (2004): that this discursive shift actually allowed a renewed colonial strategy of wildlife management to permeate the seemingly non-colonial system that had been in place since the 1980s.

ZAWA

Created under the Zambian Wildlife Act of 1998, ZAWA was a response of the NPWS to the mandated structural adjustments of the World Bank, the European Union, and foreign donors, to whom the highly indebted Zambian government owed roughly 150 percent of its GDP by the close of the 20th century (Lyons 2004). The partnership between civil society and private business stipulated under this neoliberal policy was projected to benefit the local communities economically—sending them down the golden path to development—while also defraying the state's costs of protecting the GMAs and building rural infrastructure (Manspeizer 2004). Following the devolution of the NPWS, ZAWA became the arm of government authorized to manage wildlife throughout all of Zambia (Lyons 2004).

In mandating that residents living in or near the GMAs should raise their own funds for rural development programs—building schools, roads, clinics, etcetera through partnerships with the private sector—ZAWA placed the arduous task of wildlife regulation on the local communities, themselves (Manspeizer 2004). This move towards self-financing GMAs transformed ADMADE's romantic aim of “[reconnecting] rural Africans [with] the resource base” into an economic management strategy that Manspeizer asserts is strikingly redolent of the British empire's demand for self-

sufficiency among its colonies (2004:231). This similarity is not lost on GMA residents. As one informant aptly phrased it, “we are not free, you see, with ZAWA policy” (Interview, 2007).

CONASA

Enacted in the midst of the “protracted, contentious, and on-going process” of transition from NPWS to ZAWA, the USAID-funded CONASA program included as one of its main tenets a “focus on improving the policy environment” for implementing ZAWA reforms and promoting community-based conservation in the Bbilili Springs, Sichifulo, and Mulobezi GMAs (Lyons 2004:1). Established in 2001, and implemented by a consortium of non-governmental organizations (NGOs),⁶⁰ CONASA sought to achieve what has been called “the ‘holy grail’ of rural development: simultaneous improvements in household livelihood strategy and sustainable natural resource management” (Lyons 2004:1). However, at the end of its four-year lifespan—sealed with the demolition of the Mulilo Campsite—CONASA had failed to provide significant flows of hunting or tourism revenue to the surrounding communities. Geographic isolation and restrictions on land use options placed communities in the GMAs at a disadvantage for enterprise development, and no unique or valuable partnerships between the private sector and civil society ever materialized. As a result, GMA residents have “little to bargain with” (Lyons 2002:12). Moreover, the tasks of establishing development projects and reaping their benefits are not equally borne amongst community members:

It is the Chief and CONASA members [who benefit from community-based conservation]. The [CRB] chairperson can name his relatives, vice, and all the members of the committee. Then, when money comes in...they can put it in their pockets (Interview 2007).

⁶⁰ CARE International in Zambia, the Wildlife Conservation Society of New York (WCS) the African Wildlife Foundation (AWF) are the primary agencies coordinating CONASA activities. Other partners in the consortium include TechnoServe, the World Conservation Union (IUCN), SAFIRE, US Peace Corps, German Development Service, Conservation Farming Unit, Wildlife and Environmental Conservation Society of Zambia, Wildlife Producers Association of Zambia, and the Zambia Technical Assistance Center (ZATAC) (CONASA 2002).

ZAWA's director of conservation, Melody Zeko, acknowledged this problem during our interview: "ZAWA is asking for comments on the CRB functions on its website. The job of the CRBs is to support community-based natural resource management as well as licensed hunting. Over time, we realized that the CRBs were misappropriating the funds they were given." Another problem with the CRBs that Ms. Zeko acknowledged is that

[The CRBs] need a small workforce, including village scouts, financiers, and community developers [and] the ability of the CRBs to employ [such personnel] depends on their ability to garner tourist revenue...Because the GMAs earn money from the parks they buffer, the money that is dispensed to them is not uniform. At this point, only half of the GMAs actually benefit from tourist revenue (Interview 2010).

The main task that Ms. Zeko and ZAWA are charged with is looking for partnerships to assist the fledgling CRBs in building up their underdeveloped tourist areas. CONASA was such a partnership. Despite CONASA's short lifespan, and despite the problem of the CRBs' misappropriation of funds, Ms. Zeko glowed with pride when she spoke about the CRBs:

The 1998 Zambia Wildlife Act [which established ZAWA] stipulates that local communities should be involved in the management of Zambia's wildlife. ZAWA claims responsibility through this act for developing Zambia's community resource boards...ZAWA is a pioneer of community-based natural resource management in Zambia. Communities here are not living with wildlife alone. The CRBs are designed to communicate with other national departments [including the departments of forestry and fisheries]...Everywhere, it's CRBs. In parliament they talk about it. When we sell an animal [to trophy hunters] 50% of the profits go to the communities, [with five percent going] to the chief and 45 percent [going] to the CRBs, who must then divide the money between the village scouts and various projects. Sometimes, the CRBs even procure relief food (Interview 2010).

Theorizing the State in a National Park Buffer Zone

It is at this point in my writing that I want to begin synthesizing data from Kafue National Park with political ecological theories of parks and protected areas. I emphasize the application of a political ecological framework for investigating the identities and power relations that come about in the management of natural resources because this body of theory, more than any other, allows scholars to interrogate the "rough and tumble" of

environmental politics (Watts 1990:129). Originally developed by human geographers Blaikie and Brookfield (1987:17), political ecology is a theoretical trajectory that “combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself.” In the case of Kafue National Park, the complex interconnections between political and economic forces necessitate an approach that incorporates global, national, regional, and local ecologies in its focus (Neumann 2008; Blaikie and Brookfield 1987). Political ecology is such an approach. Moreover, as will become evident below, the lens provided by political ecology is instrumental for conceptualizing the relationships between peoples and parks and for theorizing the state in the Kulaale and in the Bbilili Springs and Sichifulo GMAs

I endeavor in the remainder of this chapter to locate the state in the notes and narratives that emerged from my dissertation research. I do not want to be so naïve as to suggest that the state lends itself to comfortable scrutiny. This is no simple task. Part of the challenge in pinning down the state is that the state can be many, many things, none of which are easily theorized, let alone simplified with prose. As Mitchell (2006:169) writes, the state may be “both real and illusory.” It is simultaneously everywhere and nowhere. I cannot express to my reader how frustrating it has been to engage patterns in the Zambian case study with existing theories of the modern state. It has since dawned on me that my frustration is, in and of itself, theoretical and highly emblematic of that entity we refer to as the state. One point I aim to make in this section is that it is precisely when we attempt to isolate the state as a discernible entity, when we define and safeguard its identity between punctuation marks, that we lose the ability to visualize its influence, its capacity, and its meaning on the ground. If we view the state as a monolithic legitimator of violence (Peluso 1993) or as a force that creates knowledge to the exclusion of local accounts (Neumann 1998), we neglect the ways in which states “[seize and reproduce] locally powerful knowledges and [enforce] management through alliances with locally powerful groups” (Robbins 2000:127). At the same time, if we theorize the state as a process or as something that depends for its success on local participation (Agrawal 2005), we risk losing sight of spatial dynamics, the chains of command that mean very

real things to real people. Accordingly, I do not adhere strongly to any single political ecology of the state but, rather, juggle multiple theories and case studies in a comparative analysis of Zambian environmental politics.

First, I describe Arun Agrawal's research on community forestry in India's Kumaon region. I discuss Agrawal's case study here because it is useful for theorizing the often-dichotomized relationship of an external state to an internal, localized civil society. Next, I bring in the work of Juanita Sundberg (1998; 2004). Sundberg's research on CBNRM in Guatemala expounds on what participation actually looks like in participatory development. The Sundberg pieces are also valuable for assessing the ways in which both state and local entities appropriate certain types of imagery to achieve their own ends. Finally, I describe the work of Roderick Neumann to bring the argument full circle. Drawing on research conducted in Tanzania's Arusha National Park, Neumann illustrates how community-based conservation has come to supplement, rather than replace, coercive strategies of natural resource management. This simple, but powerful, insight explicates how the incongruous imagery from the Mulilo Campsite—burned timber contrasted with photos of immaculate tourist lodges, markets for vending handmade crafts next to martially attired game wardens—is actually a ubiquitous feature of conservation policy.

Environmentality

In studying the development of community-based forestry in India's Kumaon region, Agrawal (2005) shows how the decentralization of forest management brought about new relations between the state and society, between individuals and the environment, and between local community members themselves. According to Agrawal, this "new technology," and the relations it triggered, fostered a more internalized system of conserving and regulating Kumaon's natural resources. The involvement of local headman, elected representatives, guards, and villagers themselves in forest governance allowed environmental regulation to "touch the lives" of local residents more lightly, more intimately, and more in proportion to their subsistence activities (Agrawal 2005:90). In this regard, the strategy of CBNRM enacted in India's Kumaon closely

resembles the Zambian turn away from exclusionary state governance toward participatory communal management of natural resources. In both examples, the state did not displace, but rather utilized, existing systems of social organization as a way to bring environmental law enforcement into the local sphere. As a consequence, the once solid boundary between state and civil society became blurred.

In describing the processes by which Kumaon's forests were transformed into exhaustible resources and its residents into a *regulatory community* of environmental subjects, Agrawal insists that the entrenchment of state power and strengthening of local authority reinforce rather than contest each other. This optic of *Environmentality* is practical in that it rejects the idea that a black-boxed entity with absolute control over the means of violence is being created and consolidated in opposition to another black box called the locality. At the same time, however, in that he purposefully theorizes this process as *government* rather than state expansion, Agrawal deemphasizes the colonial qualities vested in the newly established forest councils and the *statelike* (Scott 1998; Ferguson and Gupta 2008) role of the private sector and transnational corporations which are virtually absent from his analysis.

From its inception, ADMADE anchored itself in rural areas by infiltrating the district political structure and vesting management powers in the colonial chiefs (Marks and Fuller 2008:7). The ZAWA and CONASA programs were no different in their method. Indeed, the CRBs established under the 1998 Wildlife Act were deliberately plotted over existing chiefdoms in an administrative design that seems eerily similar to imperial systems of indirect rule. Demonstrative of rural residents' keen awareness of this fact, the following quote draws into question Agrawal's theory of CBNRM which suggests the state's surreptitious role in demarcating and policing park borders is somehow mitigated or made less colonial by communal participation in environmental regulation:

What troubles me is that being in the GMA means ...our land is controlled by a traditional leader and also a government. These two people can negotiate anyhow anywhere and make any policy on our behalf and impose that policy on us without being involved where that policy has been made. So it is good if we are not in the GMA because it would be only the chief and the headmen. But now the government has a bigger hand to control us... So living in the GMA affects us

much because they negotiate things that are bad for us and our potential
(Interview 2007).

Community-Based Conservation as Discursive Knowledge and Performance

In an ethnographic account of community-based conservation in the Maya Biosphere Reserve, Sundberg (1998) describes how NGO staff hesitated to relinquish control over the project to local people. Instead, they maintained a distinct division of labor that kept those with training in agronomy and/or forestry in charge of the mental work and those without such knowledge responsible only for physical labor. According to Sundberg, the local laborers also participated in this reification of class hierarchy by internalizing discourses that depict conservation knowledge and authority as only available to the educated. But, in doing so, they were able to get what they wanted from the project. In another case study of the Maya Biosphere Reserve, Sundberg (2004) explains how women actively constructed and performed a gendered indigenous identity that revolved around expectations of their helplessness, their authenticity, and their “traditional-ness” as strategy for soliciting NGO assistance. The two examples from Sundberg illustrate how essentialized notions of a traditional local identity may be utilized from the *bottom up* as a way of negotiating certain constraints. But, to make sense of the Zambian data, I actually have to turn Sundberg’s analysis on its head, flashing light on the ways in which totalizing images of a modern state may be appropriated from the *top down* and used as a vehicle for policing national park buffer zones.

I found in my research that rural residents (and graduate students) are often unaware of the distinctions between ranks of ZAWA employees. For most community members, the internal hierarchies of ZAWA operations are extraneous; the various ranks and classes of ZAWA staff all fall under the single category of “game scout.” Interestingly, with its many positions and titles and its total staff of 1,361 employees, ZAWA does not have a single “game scout.” What it does have are area wardens, park rangers, wildlife police officers and senior wildlife police officers, prosecutors, investigation officers, community scouts, radio operators, drivers, and messengers (Booth et al. 2004). There are also a number of village scouts who receive training and are supervised by WPOs.

The village scouts serve as witnesses in court cases and perform citizens' arrests. The village scouts are paid by the CRBs to report to ZAWA any illicit hunting activities that transpire within their communities. Their uniform depends on the ability of the CRBs or local game ranches to purchase them. In my interview with Melody Zeko, the director of conservation explained that safari operators are obligated to support anti-poaching efforts. In doing so, they provide area law enforcement with uniforms and transport. Because they are financed by the CRBs, and because the CRBs do not equally benefit from tourism revenue, the village scouts' pay is intermittent and variable; WPOs, receive a regular, uniform federal salary.

Looking at the network of ZAWA administration from above, one will notice how the staff positions filter into the local echelons, blurring the boundary between state and locality in Zambia's protected areas. Hierarchically speaking, the village scouts are in the bottom rungs of ZAWA administration. They are salaried only part of the year and this money, technically, comes from the community, not from ZAWA. By Agrawal's formulation, village scouts are both participants in and beneficiaries of CBNRM. At first glance, this appears as a clear example of participatory regulation. From the ground level, however, we see that community members make no linguistic distinction between high- and low-ranking ZAWA officials. Authority is authority; the gamescout label is used for everyone.

Thus, village scouts are in a unique position to toe the line between state and locality. Also known as "spies" or "informers," the village scouts capitalize both on the shrouding of ZAWA hierarchy under the single "game scout" label and on their ambiguous position between the state and civil society. In the same way that an indigenous identity may be co-opted to gain access to goods and services, the imagery surrounding state authority may be strategically appropriated as a way to pressure community members into obeying park policies. As the following quote reveals, this same imagery may also be used to dispossess local people of illegally obtained wildlife meat which, in some cases, the village scouts will either consume or sell themselves:

There's a man...who calls himself a game scout. Really, he is an informer. But he uses his connections to intimidate local people. Because they know he visits [Mulilo], the villagers will give up their kills or pay money to avoid being snitched on. This same man uses his connections with [Mulilo] to organize hunting and fishing parties in areas where he knows the scouts won't be patrolling (Interview 2008).

Marks (2001) indicated in his analysis of the ADMADE program that the incentive for individuals to act as informers against community members who illegally hunt Zambian wildlife has elevated tensions among local residents. In applying a modified version of Sundberg's analysis to the Zambian data, it becomes apparent that this tension is not only due to the vesting of state-like powers in local community members. It is also wrapped up in the exclusion of GMA residents from knowledge pertaining to ZAWA hierarchy. Because community-based conservation in the Kulaale and surrounding areas depends for its success on the fortressing and bounding of information, it does more than maintain a structural consistency with the colonial model of nature preservation; it also justifies the use of violence, both physical and discursive, in the protection of Zambia's natural resources. This brings me to the third and final case study.

The National Park Ideal

Neumann contextualizes contemporary conflicts between Tanzania's Arusha National Park and its surrounding communities with the historical development of what he calls "the national park ideal." Based on a socially and culturally contingent Anglo-American aesthetic, the national park ideal alleges "that 'nature' can be 'preserved' from the effects of human agency by legislatively creating a bounded space for nature controlled by a centralized bureaucratic authority" (Neumann 1998:9).

In investigating the impact of the national park ideal on local livelihood patterns and the actions Meru peasants have taken to "accommodate, resist, and mitigate the negative effects," of wildlife conservation, Neumann illustrates how "farmers living near the park have formulated their own discourse," a discourse that challenges the ahistoric, pristine vision of African landscapes touted by the state (Neumann 1998:192). It is this tension between the state and Meru farmers, according to Neumann, that has led to the enhanced

militarization of Tanzania's national parks. Commenting on Neumann's research, Ferguson (2006:44) lamented, "[there] is...no contradiction in the fact that wildlife management in Tanzania has seen both increasing 'community participation' and increasing militarization in recent years." For Kulaale residents and persons evicted from the Sichifulo GMA, this phenomenon is painfully clear.

Numerous individuals reported incidents where friends or family members had been beaten for trespassing in the national park; many more expressed fears that ZAWA would beat or arrest them if they attempted to hunt game meat or defend their crops and livestock from marauding wild animals. I listened uncomfortably during one interview as a female informant narrated in heavy detail a recent encounter she had with the wildlife police officers from Mulilo. Hoping she would disclose where her husband had hidden a gun that he allegedly purchased illegally, the game scouts "continued beating and beating...beating until [the woman] was bruised" (Interview, 2008).

Describing the horrific conditions of Zambian prisons, another informant recounted a story in which a man served a one-and-a-half-year sentence for illegal poaching, only to fall ill and die two days after he was released. "He did not come back home" (Interview, 2008). I also learned from community members about the close encounters GMA residents have had with ZAWA authority. There were multiple instances in which villagers managed to evade imprisonment or heavy fines by jumping out of moving vehicles, outrunning their would-be arresters, or fleeing from their homesteads. As an example of the last type of close encounter, one male informant reflected on an occasion when both his son and daughter-in-law ran away from home in order to avoid interrogation:

When that village scout heard ...that there were some poachers who had gone into the park, had killed some animals, and that maybe [the] meat could be hidden at [my son's] homestead, the game scouts came. Invaded the whole homestead...Fortunately, [a friend] was coming to visit my son...[The friend] knew that [my son] had meat...[The friend found my son on his way back home and] told him, "Don't go to your homestead. The game scouts will arrest you. You run away, otherwise you will be arrested." ...[That same friend then found my daughter-in-law in the field. He said:] "Don't go to the homestead. They will beat you so that you reveal all the information." Then, my daughter-in-law ...ran away. I ...received her [here at my house] around eleven... She said, "...I think

my husband is arrested. I have left the game scouts at our homestead... They are saying that they will wait until the owner of this homestead [returns].” Then, I said, “It’s better you don’t go home. You just hide yourself somewhere, so that maybe at night they will go back [to Mulilo] (Interview, 2008).

In addition to inspiring the title of this chapter, the excerpt above complicates existing theories of the state and its role in CBNRM. In this instance, the state—or, the state as a hoard of armed, uniformed “game scouts”—literally invaded a family’s home, stayed the night, fed itself over the family’s fire, and eventually made its way back to the Mulilo outpost. How can we negotiate this event or the events referenced above with any single political ecological theory of state? How do we articulate a processual, participatory, or exclusionary relationship of the state to civil society using narratives that drip with power and coercion, imply varying degrees of regulatory knowledge, and emerge from a fieldsite that is *literally* in between the state (as national park) and civil society (as open area)?

In another example, the gamescouts interrupted a wedding party to confront the father of the bride who was suspected of providing his guests with bushmeat. Below is an excerpt from my interview with Moyooma, the father of the bride:

Moyooma’s homestead is perhaps the most elaborate I’ve seen in the villages. He has a tractor and other farm machinery, including a hammermill. After exchanging introductions under one of the open-air structures, we moved inside his large brick house, to discuss his story from the comfort of worn leather furniture.

I decided to find Moyooma to get the story straight after hearing rumors that a wedding in [Musamu katengo] was recently interrupted by gamescouts who had been tipped off by a local spy that the father of the bride procured game meat for the guests. The rumors were rather sensationalist and had me imagining a swarm of uniformed guards tearing through a panicked crowd, smashing the butts of their rifles into the sobbing faces of the wedding party. Moyooma’s story certainly settled the rumors, painting a truth that was far less dramatic, but still disturbing and clearly painful for Moyooma and his family

Moyooma is a middle-aged (fifties) man, bald, with grey stubble. He explained that last week’s wedding was for the first of his daughters to be married. The way Moyooma told the story is as follows:

In making the preparations for his daughter’s wedding, Moyooma asked his cousin to procure some meat for the feast...The cousin ended up bringing two legs of an antelope...to Moyooma’s house on the evening of the wedding. Moyooma

kept the legs hidden in the house. At two am, he heard a knocking at the door. The guests who were celebrating at Moyooma's had gone to [the house next door] to rest. Four officers [who had been tipped off by a village scout] were at the door. They asked "are you the owner of the firearm this man [the cousin] used to kill an animal?" Moyooma said "yes." The officers asked where he was hiding the game meat. After some coaxing, he showed them where in the house he had hidden it. They took the meat outside and called him out of the house for judgment...The scouts charged him 2,050,000 kwacha. They charged the cousin 1,510,000 kwacha. One ranger told Moyooma's wife, "If you want game meat, it is better you ask." To Moyooma, they said "You are an old man. If we take you to jail, you might die; we know the system there." The gamescouts took the meat, leaving just a small piece.

I asked Moyooma to describe their demeanor. He said the scouts were speaking politely, except that they were pointing a gun at him...The ordeal was finished by 3 am. Meanwhile, the wedding guests didn't know what was happening. No one was beaten. The scouts took five bullets. And the wedding continued the next day. The officers had tried to threaten Moyooma, but he was saying "No problem. Take me to prison. I am old. I can die here or there." In the past, Moyooma explains, officers from Ngoma had come looking for guns and taken them. But, they didn't enter the house. This time, the ones who came searched his house even going into his bedroom—something Moyooma seemed to be especially disturbed by... In closing, Moyooma changed the subject and asked me to tell the chief about the need for a borehole in the [Lubono] Settlement Area. He added, "development is here. I like development" (Fieldnotes 8/4/10).

Considered alongside the previous narrative, and alongside the dramatic stories of eviction from the Sichifulo GMA recounted in Chapter Two, Moyooma's tale of a ZAWA home invasion disrupts illusion that the state is "out there." In these instances, we see the state is "here." It is in people's homes, disrupting their most intimate, private ceremonies—a wedding in Moyooma's case, a funeral in the case of the family Felista Mundase referenced in her recollection of the day she was evicted from Sichifulo GMA (see page 26). Moyooma's closing sentiment reflects the ongoing conflict in Kulaale, and within the country at large between development achieved through rural infrastructure and agricultural production and development achieved through revenues gained from wildlife tourism. I find Moyooma's choice of words interesting. His use of the term *judgment* implies that ZAWA acts as judge / jury / executioner (of punishment) in addition to wildlife police. The theme of judgment was recently reiterated, this time with

the punitive finger pointed at ZAWA by the Ministry of Tourism in an interesting course of events, which is unfolding as I type these words.

A New Direction in Wildlife Management?

At the beginning of 2013, Zambia's Tourism and Arts Minister Sylvia Masebo fired Melody Zeko from her position as acting director of conservation along with four other senior ZAWA officials—the director general Edwin Matokwani, the commercial director Rose Chivumba, the director of finance Andrew Sampa, and the head of procurement Taulino Banda. The five were accused of corruptly awarding 13 hunting concessions to a few companies belonging to “family cartels” (Sichikwenkwe 2013). The companies, most of which belong to Zambians of either Indian or European origin, had significant potential, according to Minister Masebo, to “promote money laundering and mafia of sorts condemned widely by leading conservationists...” (Syampeyo 2013). One such conservationist, James Chungu of Lusenga Trust has publicly applauded the bold move by Masebo, saying she “will go down in history as the minister that saved Zambia's wild life from the jaws of a few individuals” (Ibid). Meanwhile, the comment threads on Zambia's online newspapers⁶¹ suggest public opinion is mixed between readers offering unwavering support for Masebo's decision to fire the five officials in advance of any official police investigation into their alleged corrupt practices and those who suspect Masebo is equally corrupt and seeking to fill the newly emptied seats with members of her own family:

Please madam Minister first you must conclude the Investigations before firing people. If not so let the Kabimba and his colleague be fired the President. Justice for all Please My PF Government.

*Haisha - January 2, 2013
15:10*

*ZAWA is tented with corruption, Masebo, please fire them
johnkabengele - January 2, 2013*

13:42

⁶¹ This comment stream may be viewed online at <http://www.zambianwatchdog.com/?p=48325&cpage=1>

SO MASEBO HAS FIRED PEOPLE BEFORE CONCLUDED INVESTIGATIONS? GOVERNMENT COULD LOSE MILLIONS OF KWACHA IN COMPENSATIONS FOR WRONGFUL DISMISSALS.

ngana - January 2, 2013
13:00

A suspension could have been the best to allow the accused to defend themselves. Unlike judge them before they are tried.

Martin Munsaka - January 2, 2013
12:56

She should report the alleged corruption to the ACC. She should not be the accuser, investigator, judge and executioner. She just wants to create vacancies for her relatives and PF cadres. Since when do you fire people on unproven allegations? Honestly this primitive behaviour should come to a stop!

Kgalema - January 2, 2013
12:53

It is high time that Ministers who come into govt and go around accusing people of corruption are taken to court if they fail to prove it. If Masebo fails to prove her corruption allegations she should be taken to court. If she wanted to appoint her own team she should have just said so, without dirtying the professional names of ZAWA officers who have served Zambia dilligently. She needs to be taught a lesson.

Owu-Mulola-Wendi? - January 2, 2013
12:51

GREAT WORK MASEBO . WE ARE BEHIND U!!!

[sekoxchg](#) - January 2, 2013
12:50

Around the same time Masebo fired the ZAWA officials, she also announced an historic ban on all forms of hunting for a year and an indefinite ban on the hunting of big cats. This ban is needed, Masebo said, in order to “save Zambia’s wildlife from a clique of unscrupulous mafia that have robbed Zambia blind in the past⁶²...Government will now partner with traditional leaders and Community Resource Boards (CRBs) to stock

⁶² The same news story referenced a recent report in The Sunday Mail which exposed “how some 153 priceless Zambian sables were sold at a price four times lower than the ruling market price by the dissolved ZAWA (US\$734,000) to a South African consortium. The sables, which have since bred, are now reported to be marooned at Kyindu Ranch in Lusaka after South Africa raised concerns of possible Foot and Mouth Disease” (Mwale 2012).

depleted areas and reward host communities” (Mwale 2012). Masebo appointed a new “crack team” of ZAWA leaders on January 17 2013. Speaking shortly after she announced the members of the ZAWA board, Masebo said:

Government is happy that the new board will start implementing policies that will help to develop the tourism sector in the country...[Zambia’s] government knows that tourism is a fast-expanding sector which can make an important contribution to the growth of the Zambian economy...The onus is now on the board to turn Zambia into a top tourist destination that is capable of creating more job opportunities for our people (Kuyela 2013a).

The new team was inaugurated on January 21, 2013. Following the inauguration, Masebo explained to local reporters:

ZAWA has a debt burden of over KR2 billion (K2 trillion) with some employees having retired and others dying without being paid their dues. Statutory fees have been accumulating and it is important that we ascertain the genuineness of the debt... [G]overnment is concerned that ZAWA has been unable to fully execute its mandate of protecting wildlife estates, a development that has resulted in the institution grappling with a huge debt burden... the precarious financial position ZAWA has found itself in is worrying...the rampant mismanagement and misapplication of resources have rendered the institution irrelevant....government will not promote business cartels and “under-hand mafia style” dealings which seemed to have become normal in the previous [regime] (Kuyela 2013b).

Masebo has since called for increased participation from the private sector in the development and expansion of Zambia’s tourism industry. According to Masebo, it is a goal of the ruling Patriotic Front (PF) party to create 300,000 jobs in the sector (Chisa 2013). The likelihood that these goals will becoming a reality, and the chance that they will benefit GMA residents like those in Kulaale remains to be seen as the nation prepares to co-host the United Nations World Tourism Organization (UNWTO) general assembly with its neighbor Zimbabwe in August 2013.

Making Sense of States and Margins

Following the advice of Neumann (2004) and Ferguson and Gupta (2008), I have created a dialogue between several case studies and pursued a combination of multiple theories to make sense of the interview data. The confusion engendered by bundling the many distinct formulations of state topography together has proven more productive than the

application of a single framework for assessing patterns from the Bbilili Springs and Sichifulo GMAs. As Ferguson and Gupta (2008) aver, it is in directing our attention to the many metaphors through which states are imagined that we may begin to understand the social practices through which these state power is enacted, experienced, and made real for our interlocutors. It is with that in mind that I turn to the heavily theorized relationship between the state and its margins.

Situated, thus, in between Zambian national parks—whose animal residents were considered under the National Parks and Wildlife Act (1971) to be the absolute property of the most powerful politician in the country: President Kenneth Kaunda (Gibson 1995)—and the open areas outside the national park occupied by Zambian civil society, the Bbilili Springs and Sichifulo GMAs provide an interesting spatial environment for theorizing the nature, structure, and reach of the modern state. Too, these frontier regions also represent a “margin of the state,” where the protection of environmental resources takes shape in ways that offset the rationality, political order, and authority that forms the basis of state laws, state formations, and state practices of enforcement, regulation, and discipline (Das and Poole 2004).

Building on the on the theory posed by Schmitt (1985:5) that the sovereign “is he who decides on the exception,” and on the framework set forth by Benjamin (1979) which positions violence as a necessary ingredient for law-making, law-preserving, and state maintenance, scholars like Agamben (2000), Foucault et al. (2003), and Mbembe (2003) have defined the state, or sovereign, as that which has the power to exercise control not over territories, per se, but over life and death (Das and Poole 2004). Contributors to the edited volume, *Anthropology in the Margins of the State*, expound on this relationship and on “the practices, places, and languages considered to be at the margins of the nation-state” (Das and Poole 2004:3). What is more, the authors describe how, in their marginality, these things actually come to constitute that abstract entity known as the modern state much in the way that “the exception is a necessary component of the rule” (Das and Poole 2004:4).

The various ethnographies in the volume locate the origin of law, not so much in a general myth of the state, but in men whose abilities, practices, and labor in everyday life

place them simultaneously inside and outside, or prior to, state jurisdiction. These “strongmen” embody the state of exception and enjoy a certain impunity to the law as they exercise both “particular forms of incivility and modes of violence that are marked as illegal” (Das and Poole 2004:14). Framed as such, the mythical character identified in my research as the “game scout” is not a localized representative of the state because he is vested with some impersonal and neutral state authority. Rather, this entity is a representative of the state precisely because he is he is able to “muddy” the boundary between legal and extralegal forms of punishment and enforcement (Das and Poole 2004:14). In so doing, he joins figures like “brokers, wheeler-dealers, ...and paramilitary” who exemplify both the fading influence of the state—in that they challenge state law—and the perpetual rebuilding of state authority—through the “(not so mythic) appropriation of private justice and violence” (Das and Poole 2004:14).

Spatially bounded in the frontier between the controlled landscapes of the national park and the open terrain of civil society, the two GMAs—sites where national development, environmental law, and bureaucracy are implemented, broken down, and rebuilt in everyday practice—define and sustain the margins of Zambian state and, in so doing, define and sustain the centralized identity of the state, itself. In the everyday practice of environmental politics, it becomes apparent that the state—materialized as a uniformed guard or as a covert informer—“has two faces: one legitimate, the other criminal, corrupt and murderous” (Nelson 2004:134). Depending on the time, the place, and the situation at hand, one face may temporarily mask the other, or they may be worn simultaneously, without illusion of solidarity. The guard can at once be the regulator and the repressor; the covert informer can be a neighbor or an adversary.

Conclusion

“The community lost,” Monroe declared. But the Sr. WPO at Mulilo is still confident that the residents of nearby villages *do* benefit from tourism and from the “careful conservation of Zambia’s wildlife.” The funds acquired from park entry and licensing fees, he asserted, go towards the construction of government schools and the delivery of federal food aid. “Unfortunately, people, for the most part, are unaware of these funds.”

He went on to explain that, given this problem with transparency and communication, he is torn whenever farmers question his duty by claiming that wild animals were given to them by God, or that animals devastate their harvests and, accordingly, that they should have the right to hunt and eat them (Interview, 2008). I had encountered similar testimonies and claims of entitlement during my interviews with GMA residents over the course of my dissertation research. It was, in fact, the assertion by some informants that ZAWA granted no benefits to GMA residents, the stories of others detailing violent encounters with game scouts, and the seeming confusion on the part of many with the actual structure and mission of ZAWA that prompted me to ride for three hours on a borrowed bicycle over dusty trails, through countless homesteads and maize fields, in order to see Mulilo for myself and meet with the WPOs posted there.

Monroe's solemn statement, "the community lost," may be interpreted, first, as a reference to the failure of the regulatory community—the game scouts, WPOs, CRBs, investors, and a syndicate of international NGOs—to capitalize on what was called the "flagship enterprise" of the USAID-funded CONASA program (Lyons 2003:177). A second interpretation speaks to a paradoxical theme within community-based conservation, a theme that—drawing on a litany of resources—I have woven throughout this chapter: Across the continent, African politicians, development strategists, and conservationists condemned the punitive and exclusionary wildlife policies exercised under colonialism. Ironically, however, the same voices later broadened and strengthened these ill-formulated and inequitable conservation strategies following their nation's independence (Gibson 1999). In the Zambian case, it was precisely the turn to CBNRM that allowed for the colonial approach to environmental regulation to continue, albeit disguised, under the Administrative Management Design for Game Management Areas (ADMAGE), the deregulated Zambian Wildlife Authority (ZAWA), and the Community Based Natural Resource Management and Sustainable Agriculture (CONASA) program. As Manspeizer (2004:214) attests, Zambia's approach to CBNRM—whether under ADMAGE, ZAWA, or CONASA—has "[allowed] the state to control remote geographical areas, all without significantly increasing choices, benefits, or freedoms" for GMA residents.

Between 2001 and 2008, Chief Siachitema went from ceremonially accepting a check from CONASA (see Image 7.1)—a demonstration of his commitment to *community-based* natural resource management—to signing off on the forcible eviction every one of his constituents (approximately 8,500 people) who had settled inside the Sichifulo GMA. This mass eviction, according to tourism minister Catherin Namugala was intended to “pave way for game safari hunting and photographic tourism” (Lusaka Times, February 20, 2009). The regressive switch from CBNRM back to a fortress model of conservation reflects a clash of development priorities in Zambia. Not only does the state appear to be uncertain whether it wants to pursue a “participatory” or an outright exclusionary form of tourism and wildlife management, it also seems uncertain whether frontier areas like Kulaale should pursue further settlement and the commercial production of maize (as with the Lubono Settlement Area) or wildlife tourism as an economic strategy. The fact that NGOs like CONASA regularly come and go, offering advice on sustainable agriculture at the same time national policies encourage the use of chemical fertilizers and private companies distribute pesticide spray and genetically modified cotton to rural farmers, further exemplifies the clash of priorities and the cycles of access and alienation that characterize the state’s margins.

Still, as has become apparent through the course of this chapter, the form that the state takes in Zambia’s Kafue National Park and its surrounding GMAs is much more nuanced than either the existing literature or the previous quotes let on. Rather than appearing as a discrete and forceful monolith, the state—and, more specifically, the neoliberal state—exists as a grey amalgamation of external governance by high-ranking officials, internal governance by community members, and intermediate regulation coming from a consortium of NGOs and internationally-funded development agencies. While Agrawal, Sundberg, and Neumann all bring valuable theoretical nuggets to the table, not one of these frameworks is *perfectly* suited for explaining the dynamics of power observed in Kulaale. The lens articulated by Das and Pool and their contributors for assessing the relationship of the state, and state officials, to the margins and back is remarkable for its efficacy in making sense of the spatial and relational positions of the two GMAs and their inhabitants. By combining all of these pieces together, I have tried

to articulate in this chapter the dialectic nature of the GMAs' present regulatory climate, and the multifaceted relationship of this present climate to an importunate colonial past.

Evaluating recent research in green governmentality—a theoretical approach that uses Foucault's governmentality to interrogate the intersections between nature, power, and society—Rutherford (2007) alludes to the source of my original frustration with pinning down a state theory, and poses a possible solution: Because power “bleeds across the social body” (2007:294)—it is scattered across multiple sites and exercised through manifold techniques and discourses that are oftentimes outside the traditional boundaries of the state—it is incumbent that anthropologists and political ecologists develop more complex approaches to the analysis of governed spaces. Comparative approaches, such as the one attempted here, could be a means toward this end.

CHAPTER EIGHT: CONCLUSION

I met the Zambian journalist Nelson Ngwenya in a dilapidated diner—the popular Kalomo Restaurant—where Andrew, a sharp-eyed cab driver, suspected I might find him. A friend in Cikolo informed me that a reporter from town had been traveling around the Kulaale area, interviewing farmers and collecting stories concerning the rumor that ZAWA is planning to evict Kulaale residents. Ngwenya was rail-thin, fidgety, and prone to wring the neck of a glass Coca-Cola bottle as he spoke. It was January, 2011. Ngwenya had toured Kulaale and neighboring areas throughout the previous November, speaking with residents of Bbilili Springs GMA, where there are 36 senior headmen—representing 36 *katengos*—“who are worried their people will be evicted.” According to Nelson, the government is “trying to play hide and seek” with information pertaining to the residency status of GMA inhabitants. Echoing the frustrated sentiments of those with whom he spoke, Ngwenya rhetorically asked, “How many times must these people be relocated!?”

The efforts of Gwembe Tonga smallfarmers to thrive in the Kulaale frontier—and, indeed, the efforts of the Ministry of Lands to populate the Lubono Settlement Area in northwest Kulaale—are under threat from the refocusing of national conservation priorities and the return to exclusionary park policy. In recounting the history of the National Parks and Wildlife Service NPWS—which was transformed under structural adjustment into the semi-autonomous ZAWA—Manspeizer (2004), Gibson (1999) and Marks (2001) illustrate how contemporary strategies to “develop” Zambia’s rural communities through wildlife tourism hardly deviate from the paternalistic, exclusionary tactics exercised under British colonialism. Though scholars, community members, and development agents argue over the extent to which CBNRM is progressive, many can agree that the exclusive fortress model of conservation is even less progressive; in fact, it is regressive.

Until the Zambian state decides on and begins to implement a consistent development and conservation strategy, conflicting images epitomizing the two approaches will continue to bamboozle Kulaale residents: uniformed guards stationed at

the national park entrance where a tourist campsite—a project of the CONASA program—burned to the ground and remains in ruins; the rhetoric of community-based conservation and the swell of government pride resulting from the recent ban on hunting and the appointment of a new ZAWA board; the upcoming meeting of the United Nations World Tourism Organization (UNWTO) in Livingstone juxtaposed against GMA residents’ narratives of abuse, arrest, eviction, and exclusion.

The stories of two more individuals who were evicted from Sichifulo GMA in August 2008 offer a vivid glimpse, not only into the chronic uncertainty and continued land insecurity affecting Gwembe Tonga families, but also into the role of NGOs and private companies in aggravating this insecurity. In the case of these two individuals, the response of CARE International (2013), a “leading relief and development [NGO] fighting global poverty” who had been providing food aid and educational materials to Sichifulo’s community schools, and Dunavant, a private cotton ginning and trading company who was actively purchasing cotton from Sichifulo farmers, was wholly ambivalent:

*FIELDNOTES: November 4th 2010
Interview with two evictees from Sichifulo GMA.*

*The first, Nchimunya, was PTA chairman for Chiliabufu Community School.
The second, Malchus, was a distributor for Dunavant.*

Nchimunya said a scout came in September and collected all the school materials (the books, pots, pencils, iron sheets, heps, etc.). The children were there learning around 15 hours. The scouts removed the things, got the students out, and then burned the schoolhouse. Nchimunya said he collected the things around 18 hours, then brought them to the CARE International office in Livingstone. I asked Nchimunya what the people at CARE said about the burning. He said the CARE people suggested that if he built a new community school, he could come to take back the things. “That’s too bad,” the people at CARE lamented.

Malchus explained that he had already collected ten tons of cotton for his work. He sent a message to his manager in Kalomo to collect the bags. He waited four days between the burning of his home and the arrival of his manager/cotton collector. He sat under a tree, eating occasionally (food brought by Nchimunya) while he waited alone with the cotton. Like the people at CARE, Dunavant said “Sorry for what happened. If you find farmers with cotton, we can resume business.”

The eviction from Sichifulo GMA was fiery and painful. After experiencing physical violence at the hand of ZAWA, many evictees experienced structural violence from the very institutions that were supposedly helping Sichifulo residents to develop and thrive in a politically, geographically, and economically marginal frontier. Both Dunavant and CARE International expressed sore disinterest in the plight of their clients/beneficiaries. This disinterest compels one to ask: just who were these “agents of development,”—agents who offered no solace and no way forward to persons rendered homeless by Zambia’s Ministry of Tourism—seeking to develop?

Farming in Kulaale proved prosperous for settlers in the 1980s. By the 1990s, the imposed structural adjustment programs of the IMF and World Bank stripped the Zambian state of its power to subsidize agricultural credit and fertilizer programs on the level it did following independence. The central role of government in financing services in education, health, livestock, and infrastructure “disappeared virtually overnight with the onset of liberalization” leaving Zambians “at the mercy of donors, NGOs, and so-called ‘investors’ for defining and implementing a development agenda” (Lyons 2002:12). As Sitko (2010:179) writes, farmers in Kulaale “often speak nostalgically about the period following independence up to the initiation of market liberalization policies as a time of abundance.”

After being scaled back under structural adjustment, direct government involvement in grain markets is once again “*en vogue* in eastern and southern Africa” (Mason and Myers 2011:1). In Zambia, the Food Reserve Agency (FRA) has, since its inception in 1996, both stabilized and increased average maize prices, to the detriment of smallfarmers. In spite of this, Kulaale remains one of the most agriculturally productive regions in the country. Its children, meanwhile, appear to suffer from malnutrition (Sitko 2010) and are growing less well than their urban counterparts (Crooks, Cliggett and Gillett-Netting 2008).

The chronic uncertainty, land insecurity, and challenges to making a living in Kulaale—challenges associated with frontier development and conservation policy—are exacerbated by environmental change, including deforestation and declining soil fertility.

Existing literature suggests that households stand to benefit from LULC change, on the one hand, through income generated from the sale of cash crops. At the same time, those households who convert more of their land to cash crops at the exclusion of other crops increase their vulnerability to fluctuations in commodity prices and other period effects. On the other hand, households that are unable to take advantage of commercial agriculture⁶³ are likely to suffer a decline in their livelihood (Evans et al. 2011). As the surrounding forest-savannah mosaic is replaced with the commercial fields, households of both types will have less land on which to graze livestock and extract bush resources (Xu et al. 2005).

As I mentioned at the beginning of this dissertation, it is a mistake to conceptualize the three research themes—development, conservation, and environmental change—as separate phenomena; In Kulaale, they are inextricably *linked*.

Other Missing “Links”

As Chapters Five, Six, and Seven attest, Gwembe Tonga women, men, girls, and boys differently experience environmental change in Kulaale according to gender- and age-based divisions of labor, the nature of LULC change, and the demographic structure of their homesteads.

For adults, the social organization of Tonga homesteads (the authority of the male homestead head and the resilience of matriliney) as well as the religious life in Kulaale (which involves both witch cleansings and Christian charity) prompt men and women to differently experience physical and economic vulnerability in context of environmental change and declining bush resources.

For children—whose agency and vulnerability are linked through autonomy, injury, accommodation, illness, subordination, and everyday forms of resistance—environmental change plays out differently in the extractive workloads of girls and boys. The average

⁶³ Existing literature suggests female-headed households are less likely to engage in commercial agriculture. Also, households that hold less social influence (i.e. they are not connected to the community through headmanships or service on village committees) will encounter greater obstacles to obtaining enhanced seeds and fertilizer (Sitko 2010).

extractive workloads associated with boys is larger than that associated with women, men, and girls in both research zones. Yet, the inter-zone difference in the average extractive workloads associated with girls *between* Zone 1 and Zone 2 (3.41 x, or 241%) is greater than that associated with boys (1.80 x, or 80%). It is possible that—even though girls and boys have comparable extractive workloads and girls appear to make more frequent trips than boys to non-bush resources (gardens, fields, and water access points)—the preferential feeding of girls, if it is happening (Gillette-Netting 2007), could be a source of boys' lower anthropometric z-scores.

The demographic structure of rural households also influences women's, men's girls', and boy's differential experiences of environmental change. While I have emphasized these differential experiences most prominently in terms of the extractive workloads associated with each age/gender group, it is important to bear in mind the extent to which cooperation (between men and women, between adults and children) and the flexible division of subsistence labor also greatly shape women's, men's, girls', and boys' gendered experiences of environmental change.

Each of the “links” in the chain of human-environment interactions that I observed in Kulaale—gender- and age-based divisions of labor, social organization, religious life, the nature of LULC change, the demographic structure of households, cooperation, and the flexibility of rural labor—color Gwembe Tonga migrants' heterogeneous relationships to the natural environment and their diverse experiences of environmental change.

Acknowledging women as a distinct political and economic minority is foundational to effective intervention and planning. Nevertheless, the proliferating concern for women's vulnerability to environmental scarcity has caused many experts to inadvertently neglect men's and children's contributions to rural household economies and ecologies. It is certainly true that deforestation may exacerbate the burdens placed on women responsible for collecting resources such as water and firewood. Still, researchers need not overlook the implications of environmental change for men and especially for children, as these demographic groups may bear equal or greater labor roles that intimately tie them to the surrounding environment. This dissertation, thus, represents an effort to reconsider the roles of men in rural subsistence and to integrate the often-

overlooked variable of age into a feminist political ecological framework. Such an approach is useful here in that it draws attention to the uneven distribution of resource access, ownership and control.

When Elephants Fight

In recent years, Zambia has sought to “develop” itself through state-led, then market-led agricultural programs as well as settlement schemes intended to “carry the thrust of development” into the rural sectors of the country, upgrade the subsistence economy to a market economy, and make the frontiers “more productive” (Ministry of African Agriculture 1962:2, quoted in Sitko 2010:174). At the same time, Zambia has also pursued “development” through its tourist and natural resources industry. These two development strategies have come to a head in Kulaale. While the Ministry of Lands is issuing plots of land to new residents of the Lubono Settlement Area, the Ministry of Tourism is threatening to evict those very same residents in the interests of conserving wildlife.

There is a widely cited proverb of ambiguous African origin that captures the plight of trodden-down people in contexts ranging from presidential elections to civil warfare. Jacques Leslie (2005) employed the proverb in his narrative nonfiction portrayal of three people—Medha Patkar, Thayer Scudder, and Don Blackmore—who have contended with dams in India, Africa, and Australia. Referring specifically to the construction of Kariba Dam, Leslie invoked the maxim:

When two elephants fight, it is the grass that suffers.

The two elephants in Leslie’s rendition are metaphors for “something as big as a government” taking on “something as big as a river” (Vanderbilt 2005:666). While a battle was waged between a powerful human institution and an equally powerful force of nature—and the battle ultimately resulted in the triumph of industry over environment—it was the grass, the Gwembe Tonga people, and the earliest known inhabitants of the Zambezi River valley, who ultimately suffered.

Adjusting the metaphor to incorporate the clashing development priorities that Zambia's Ministry of Lands (elephant one) and the Ministry of Tourism (elephant two) are simultaneously trying to implement in Kulaale and nearby GMAs, the African proverb rings true again today; It is the Gwembe Tonga people and their neighbors in Lubono Settlement Area who saw their land partitioned and reallocated; it is the Gwembe Tonga and their neighbors in Sichifulo GMA who saw their homes, schools, grain stores, and cattle kraals burned by ZAWA; it is the Gwembe Tonga and their neighbors in Kulaale who experience "chronic uncertainty" and land insecurity (Cliggett et al. 2007); it is the grass that suffers.

I can think of several other ways to manipulate the elephant metaphor, including state-led versus market-led interventions, community-based versus fortress models of conservation, and conservation farming versus commercial agriculture. Each of these "two elephants" are fighting in Kulaale with negative implications for Kulaale residents.

Thinking About Long-Term Research and "The New Ecological Anthropology"

Cliggett (2005) emphasizes the value of long term and repeated research stints in capturing a deeper understanding of peoples and places. Long-term research offers anthropologists the opportunity to capture multiple sides of a story, witness the diversity and the conflict that characterizes people and phenomena that have previously been depicted as homogenous, harmonious, and somehow apart from other histories. Short term, rapid-assessment type studies cannot begin to account for the rich, integrative factors that influence cultural change and continuity. Repeated visits to a fieldsite allow researchers to capture the temporal fluctuations that transpire within particular socioeconomic or environmental landscapes much more so than single studies, thereby allowing the researcher to assess not only how cultures, identities, and environments change over time, but also how his/or her own subjectivity influences the project at hand. In the words of Margerie Wolf (1992:1128), "one *never* finishes the job, because each time we return to the field, the people we study have changed, and each new insight brings new questions."

The “new ecological anthropology” described by Kottak (1999:23) is “as much about finding practical solutions to environmental problems as [it is about] building new methodological and theoretical approaches to study those phenomena” (Paulson et al. 2003:212). Yet, only a small portion of anthropological research has integrated temporally and spatially explicit data into the study of human-environment relations. The work that does focus primarily on impact of humans on the natural environment. Where local perceptions and scientific analysis agree that environmental change is occurring, it should be a priority for anthropologists to question the flip-side of this relationship. Such an approach is foundational to understanding dilemmas arising from human-environment interactions (not just human impacts on the environment), stimulating awareness of such issues, and mobilizing to address them.

This dissertation makes several contributions to the academic literature. First, it adds to a growing body of work that emphasizes the diversity of gendered experiences within a changing ecological context. It also answers academic calls for more inclusive ethnographies that account for the heterogeneous lives of children. Numerous studies have examined the impact of humans on the natural environment, yet few have explored the impact of environmental change on humans. Investigating the oft-neglected side of the human-environment relationship with a combination of quantitative/geospatial and qualitative/ethnographic methods, this study fills a gap in contemporary socio-environmental research. In the process, it seeks to move beyond popular dichotomies used to understand the human experience, dichotomies like agency / vulnerability and state / periphery. These binary concepts--as well as such seemingly separate dimensions of social life as labor, social organization, and religion—and the processes of development, conservation, and environmental change that are unfolding in Kulaale are actually *linked* in the daily lives of Gwembe Tonga migrants.

Limitations and Future Research

There are a number of limitations to this study that should be addressed with future research. First, the distances recorded from participating households to resource extraction sites represent the shortest distance between two waypoints; they are straight

line “as the bird flies” measurements. They do not take into account elevation, or the meandering, roundabout way in which people travel. Any detours a traveler might take around a field, household, or body of water are not included in the measurement. Future efforts to measure distances from homes to resources should use the ‘trekking’ feature of a handheld GPS in addition to taking waypoints. This feature will automatically capture hundreds of waypoints at measured intervals on a single journey and link them into a single, more detailed, trek.

Second, the unit of analysis, *extractive workload*, is a resource-focused measure, not an individual-focused one. A more accurate assessment of men’s, women’s, boy’s, and girl’s socially-differentiated experiences of environmental change would include data for each *individual* in the household, rather than information pertaining to the resources that the household uses.⁶⁴ Tabulating the distances traveled by *individuals* would create a much larger dataset and the potential for more sophisticated analyses (e.g. ANOVA).

It is important to note that the data reported here describes *averages* (mean annual distances). This measure obscures extreme high and low values. For instance, one adult male participant described traveling 20 kilometers—more than twice the mean annual distance for represented for Zone 1 in Figure 3—to locate building poles.

This dissertation represents a first attempt to quantify age- and gender-based differences in human labor resulting from environmental change. The results presented here are not widely generalizable. Future research should incorporate a much larger, randomly selected sample and modify the survey/mapping/analytical instruments to address these limitations.

Ending where I Began, with Sand

Riding my bicycle back to the Moota homestead after a long day of interviews, I took a moment to take in the scenery. It was the middle of the dry season, and the earth seemed to creak for want of moisture as the winds tossed the topsoil through between the

⁶⁴ More refined individual-level information will include the specific age of the collector, the time of day, whether the collector was accompanied or alone, the mode of transport used in a particular excursion, and whether each specific trek for resources necessitated a trade-off with other activities.

desiccated treetops. I parked my bicycle alongside a massive gully carved by seasonal rains (Image 8.1). Standing a safe distance from the edge, I noted the striations left in the wall by successive episodes of erosion. I blinked a few granules of sand out of my eye and, as I did so, my gaze was drawn to a sizable pile of earth in the middle of the gully. It was an “anthill,” what Kulaale residents call a termite mound. This particular anthill was one of many I had seen in Kulaale, erected on the outskirts of homesteads, inside of cattle enclosures, and at forks in the footpaths connecting rural villages. I had seen such mounds on the edges of riverbanks, but never *in* riverbeds.

While the thought of termites may initially conjure images of splintered wood and property damage, termites actually provide benefits to farming communities. Along with ants, worms, and other ground-dwelling organisms, termites dig tunnels, which increase soil porosity and allow plants greater access to water. Also, the processes through which these ground-dwelling organisms recycle wood and plant matter can help neutralize soil acidity (Frouz and Jilková 2008). Termites harbor nitrogen-rich bacteria in their gut which get deposited in the earth through saliva and feces, enriching the nutrient content of exhausted soils. Indeed, Zambian farmers have been known to extract soil directly from termite mounds and apply it as topsoil for their crops (Salinger 2012). Finally, termites and ants excavate soil from deeper layers and deposit it on the surface (a process called bioturbation).⁶⁵ Since they contain the clay extracted from deeper soil layers, termite mounds provide an excellent source of building material, and many farmers prefer molding bricks from the soil in termite mounds to digging for malleable clay.⁶⁶

The sight of an “anthill” in the midst of this bleak portrait of regional erosion caused me to pause. Like the hyenas in Banyama—who represent the health of the Kulaale ecosystem as well as the challenges to subsisting in a frontier landscape—the anthill embodies both the tentativeness and tenacity of this agricultural frontier and the culture of a particular group who call that frontier home. Jogging next to my bicycle, stepping

⁶⁵ Certain European species (*Iacius flavus*) are capable of extracting and redistributing between 3,000 and 13,000 kilograms of soil in a single hectare plot over the course of just one year (Frouz and Jilková 2008).

⁶⁶ A third soil unit present in Kulaale is acrisol, also known as red clay soil.

my left foot onto the pedal, and heaving my right over the top tube, I could not shake the realization that Kulaale's landscape—from its sandy earth and blustery air to its marauding hyenas and tunneling termites—epitomizes the persistent vulnerability and the long-term resilience of Zambia's Gwembe Tonga people.

IMAGE 8.1: Erosion in Kulaale, and an anthill in the middle of a dried riverbed



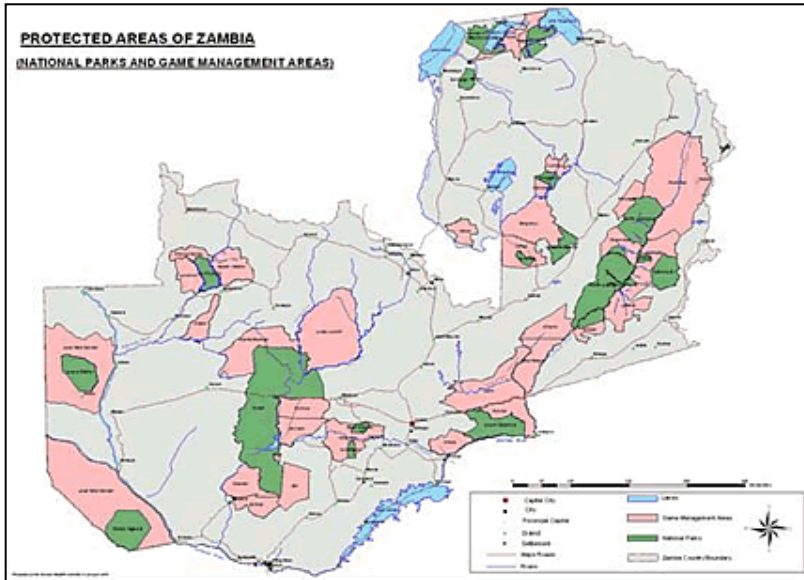
Towards the end of my stay in Kulaale, as I was walking down the same path that would lead me to Ethan Moota's homestead, I was again reminded of the adaptive capacity, creativity, and resilience of the Gwembe Tonga. Just ahead of me on the path, riding a rickety bicycle with no brakes, Ethan came careening onto the road from side path that leads away from Cikolo marketplace. To avoid flying into the deep and desiccated riverbed ahead, Ethan steered his bicycle up a sandy incline just a few meters before the drop-off. The incline slowed the bicycle's momentum enough that he could clumsily leap off, allowing the bicycle to crash into sandy pile of earth at the edge of the river. Noticing the worried look on my face, Ethan took advantage of the teaching opportunity in front of him.

“Ali,” he shouted at me, mildly inebriated from socializing at the market. “Do you see what I have done? When the bicycle has no brakes, we steer it into an anthill.”

APPENDIX A: THE INSIDE OF MY TENT ON A WINDY AFTERNOON
(the tent was closed all day)

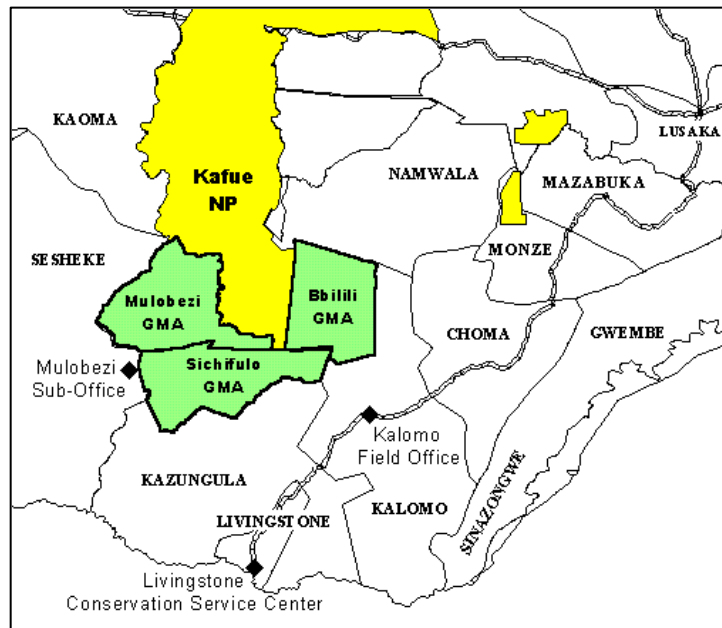


APPENDIX B: ALTERNATIVE MAPS OF KAFUE NATIONAL PARK AND SURROUNDING GAME MANAGEMENT AREAS

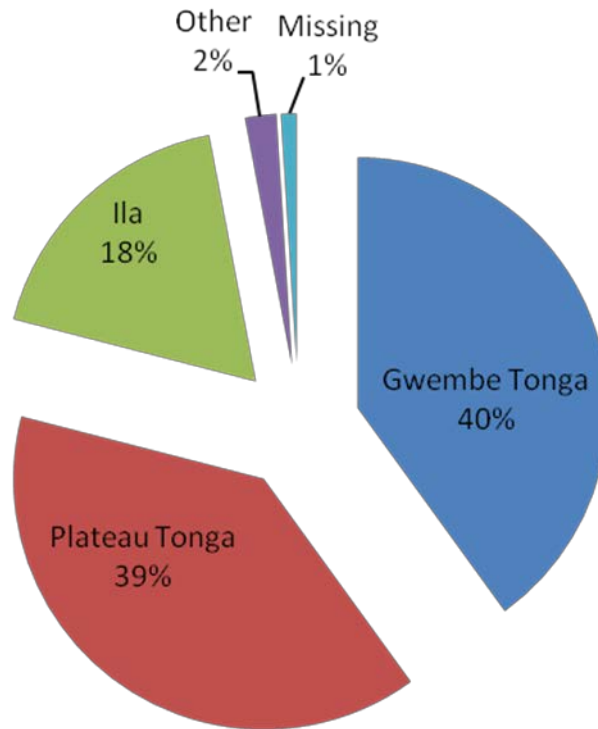


Source:
<http://www.zawa.org.zm/index.php>

Source:
http://www.geocities.ws/conasa_zm/conasa_area.html



APPENDIX C: ETHNIC COMPOSITION OF KULAALÉ POPULATION BASED ON A DEMOGRAPHIC SURVEY OF 646 HOMESTEADS (2005)



Source: Cliggett (n.d.)

APPENDIX D: RADIOMETRIC CHARACTERISTICS OF THE ETM+ AND TM SENSORS

Band Number	Spectral Range (In Microns)	Electromagnetic Region	Generalized Application Details
1	0.45 - 0.52	Visible Blue	Coastal water mapping, differentiation of vegetation from soils
2	0.52 – 0.60	Visible Green	Assessment of vegetation vigour
3	0.63 – 0.69	Visible Red	Chlorophyll absorption for vegetation differentiation
4	0.76 – 0.90	Near Infrared	Biomass surveys and delineation of water bodies
5	1.55 – 1.75	Middle Infrared	Vegetation and soil moisture measurements; differentiation
6	10.40 – 12.50	Thermal Infrared	Thermal mapping, soil moisture studies and plant heat stress measurement
7	2.08 – 2.35	Middle Infrared	Hydrothermal mapping
8	0.52 – 0.90 (panchromatic)	Green, Visible Red, Near Infrared	Large area mapping, urban change studies
Source: Geoscience Australia			

As Bolstead explains, “[landcover] classes often correspond to specific combinations of spectral reflectance values. For example, forests often exhibit a distinct spectral signature that distinguishes them from other landcover classes (2001:176).”

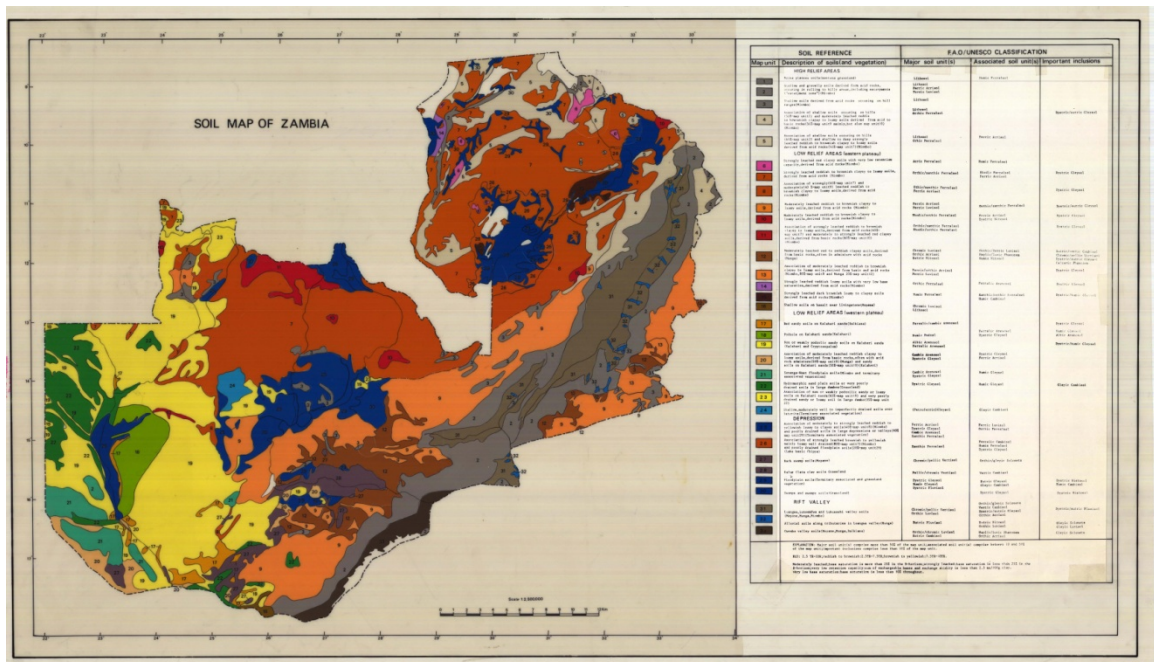
APPENDIX E: LIST OF INTERVIEW CODES

Codes	
"Home"	Access to Fertilizer
Aging	Biggest Problems
Care for Elderly	Changing Subsistence Strategy
Charcoal Burning	Charity
Children	Uncleared Land (<i>Chisaga</i>)
Coming of Age	Common Grazing Land
Community Resource Board	Comparing Kulaale to Dam Resettlement Villages
Comparing Kulaale Villages	CONASA
Corridor	Depending on Wild Foods Shortly After Arrival
Describing the Eviction from Kariba	Description of Kulaale Landscape Upon Arrival
Development: Solutions/Interventions	Difficulty Finding Bush Resources
Domestic Consequences of Resource Shortage	Economic Enterprise: Women
Environmental Change	Eviction: (Il)legality
Eviction: Aftermath	Eviction: Kulaale
Eviction: Gendered Experiences	Eviction: Residential History - Dindi
Eviction: Residential History – Itezhi-Tezhi	Exchange Labor/Helping Neighbors
Extraction Conflicts: No	Extraction Conflicts: Yes
Familial Relations Acted Out in Interview	Fear of Eviction
Female-Headed Household	Female Respondent
Finding Land (Man's Perspective)	Finding Land (Woman's Perspective)
Food	Food Aid

Garden	Gendered Assertions
Gendered Division of Labor (Agriculture)	Gendered Division of Labor (Bush Resources)
Gendered Division of Labor (Cooperation and Reconfiguring)	Gendered Division of Labor (Piecework)
Hardest Resources to Find: Z1 – Building Piles	Hardest Resources to Find: Z1 – Fiber
Hardest Resources to Find Z2 – Thatching Grass	Hardest Resources to Find: Z1 – Water
Hardest Resources to Find: Z2 – Fiber	Hardest Resources to Find: Z2 – Water
Hardest Resources to Find: Z2 – Wild Food	Hired Labor
History of Kulaale	History of Urban Employment
Homestead Construction Materials	Hunger
Illness	Inheritance (Wives, Shades, and Property)
Intergenerational Relations	Kin Ties with Researcher
Labor – Comments	Livestock
Loss of Spouse	Male Contribution
Marketing – Maize	Medicinal Plants
Members of Family (Homestead)	Most Time in the Bush: Adults
Most Time in the Bush: All	Most Time in the Bush: Boys
Most Time in the Bush: Males (Men and Boys)	Most Time in the Bush: Men
Most Time in the Bush: Women	New (Current) Homestead Advantages
New (Current) Homestead Disadvantages	Obstacles
On Establishing a New (Independent) Homestead	Other Migrants
Political Process/Jurisdiction	Rains
Reason for Migrating to Kulaale	Reason for Shifting from Z1 to Z2
Reason for Shifting Within Z1	Regulations

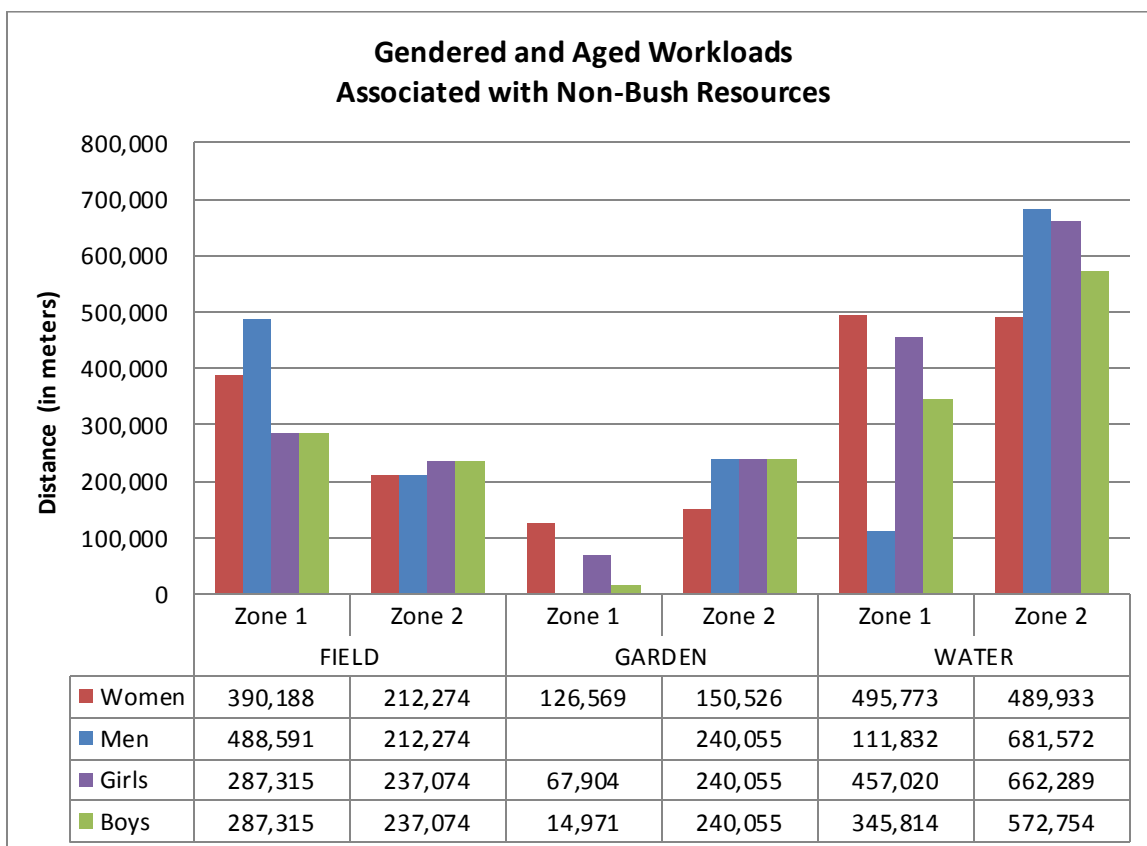
Research Zone: 1	Research Zone: 2
Residential History (The Move to Kulaale)	Schools/Schooling
Scouts vs WPOs	Setting
Setting the Scene	Settlement Area
Soil (In)Fertility	Stereotype of Rural
The Respondent	Water
Wild Foods	Wildlife
Witchcraft	Z1 Advantages
Z2 Advantages	ZAWA: Criticisms
ZAWA: Demeanor/Bribery	ZAWA: Gendered/Aged/Classed Experiences
ZAWA: History	ZAWA: In the Home
ZAWA: Spies	ZAWA: Stories from Kulaale Residents

APPENDIX F: MAP OF ZAMBIA'S SOIL CLASSES



Source: The Soil Maps of Africa. eusoils.jrc.ec.europa.eu

**APPENDIX G: AVERAGE ANNUAL DISTANCE (SHAPE LENGTH)
TRAVELED FROM HOMESTEADS TO FARMING, GARDENING, AND
WATER PROCUREMENT SITES BY WOMEN, MEN, GIRLS, AND BOYS IN
TWO RESEARCH ZONES**



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2006 *Implementation and Competition Report on a Credit in the Amount of SDR*

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WWF (World Wildlife Fund), with C. Michael Hogan, and McGinley

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EDUCATION

- B.A. Western Kentucky University (2006)
Anthropology and Sociology (Double Major), Criminology (Minor)
Honor's Thesis: *Kasigau Kenya: A Qualitative Study of Community Attitudes Toward Ecotourism and the Bushmeat Trade* (Advisor: Dr. Jerry DaDay)
- M.A. University of Kentucky (2009)
Anthropology, with a Graduate Certificate in Gender and Women's Studies
- Ph.D. University of Kentucky (2013)
Anthropology
Dissertation: *Missing "Links" Investigating the Age and Gender Dimensions of Development, Conservation, and Environmental Change in a Southern Zambian Frontier* (Advisor: Dr. Lisa Cliggett)

PROFESSIONAL POSITIONS

- 2013-2014 Visiting Assistant Professor of Anthropology—Department of Anthropology and Sociology, Albion College
- 2012-2013 Dissertation-Year Fellow—Graduate School, University of Kentucky
- 2011-2012 Part-Time Instructor of Anthropology—Department of Anthropology and Sociology, Transylvania University.
- 2012 Research Assistant—Department of Anthropology, University of Kentucky
- 2009 Teaching Assistant—Collaborative Center for Literacy Development, University of Kentucky
- 2007-2009 Teaching Assistant—Department of Anthropology, University of Kentucky
- 2006-2007 Research Assistant—Department of Anthropology, University of Kentucky
- 2002-2006 Laboratory Technician and Teaching Assistant—Biology Department, Western Kentucky University

AWARDS and HONORS

- 2010 William Y. Adams Award for Excellence in Teaching by a Graduate Student, Department of Anthropology, University of Kentucky
- 2010 University of Kentucky College of Arts and Sciences Certificate for Outstanding Teaching
- 2006 National Association for the Practice of Anthropology (NAPA) Student Achievement Award

RESEARCH GRANTS

- 2010 National Science Foundation (NSF) Doctoral Dissertation Improvement Grant
- 2010 US Student Fulbright (IIE) Award
- 2008 NSF Research Experience for Graduate Students (REG) Supplement
- 2012 Dissertation Year Fellowship, President's Office, University of Kentucky
- 2009 Bonnie Jean Cox Graduate Research Award, Gender and Women's Studies Program, University of Kentucky

PUBLICATIONS

- n.d. Harnish, Allison, Nora Haem, and Richard R. Wilk (eds). *The Environment in Anthropology: A Reader in Ecology, Culture, and Sustainable Living (2nd Edition)*. Manuscript in preparation. Prospectus submitted to New York University Press.
- n.d. Harnish, Allison. Extractive Workload: A Mixed-Method Approach for Investigating the Socially-Differentiated Effects of Land-Use/Land-Cover Change in a Southern Zambian Frontier. Conditionally accepted for publication in *Population and Environment*.
- 2011 Harnish, Allison. Review—Migrants to the Coasts: Livelihood, Resource Management, and Global Change in the Philippines. *Journal of Contemporary Anthropology* 2(1):119-122.

SELECTED CONFERENCE PRESENTATIONS

- 2013 Harnish, Allison. Deforestation, Gendered Labor, and Social/Religious Organization in Kulaale, Zambia: A Feminist Political Ecology Perspective. Presented at the Third Annual Dimensions of Political Ecology (DoPE) Conference on Nature/Society: Lexington, KY (March 2, 2013).
- 2012 Harnish, Allison and Monica Stephens. "Mwa Cela Kuli?": Complimenting and Complicating Anthropological Research with Geographic Information Science (GISc)." Presented at the Society for Applied Anthropology (SfAA) 72nd Annual Meeting: Baltimore, MD (March 28, 2012).
- 2009 Harnish, Allison. "It's Better You Don't Go Home': Mapping the State in Zambia's Bbilili and Sichifulo Game Management Areas." Presented at the Southeastern Division of the Association of American Geographers (SEDAAG) 64th Annual Meeting: Knoxville, TN (November 21, 2009).
- 2008 Harnish, Allison. "Missing Links: An Investigation of Differential Familial Roles and Environmental Resource Procurement in [Kulaale], Zambia." Presented at the Society for Applied Anthropology (SfAA) 68th Annual Meeting: Memphis, TN (March 29, 2008).
- 2007 Harnish, Allison. "Negotiating Gender Dynamics and Environmental Constraints in [Kulaale], Zambia: Rural Women's Role in Homestead Consumption." Presented at the American Anthropological Association (AAA) 106th Annual Meeting: Washington, D.C. (December 2, 2007).

- 2005 Harnish, Allison. "Kasigau, Kenya: A Qualitative Study of Community Attitudes toward Ecotourism and the Bushmeat Trade." Presented at the Anthropologists and Sociologists of Kentucky (ASK) 2005 Annual Meeting: Bowling Green, KY (September 1, 2005).

ORGANIZED CONFERENCE SESSIONS

- 2012 Harnish, Allison (Chair) and Sarah Watson. *Situating and Engaging with Feminist Political Ecology I: Climate Change, Conservation, and Development*. 2nd Annual Dimensions of Political Ecology (DoPE) Conference: Lexington, KY (April 14, 2012).
- 2012 Harnish, Allison and Sarah Watson. *Situating and Engaging with Feminist Political Ecology II: Environmental Ethics, Labor, and Dispossession*. (Chair: Rebecca Lane). 2nd Annual Dimensions of Political Ecology (DoPE) Conference: Lexington, KY (April 14, 2012).

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July 22, 2013