

PASTORAL MOVEMENTS AND MOVEMENTS IN PASTORALISM:
SHIFTING TRADITIONS AND INSTITUTIONS OF MODERN
MANAGEMENT STRATEGIES IN LAIKIPIA, KENYA

by

Kayla Marie Yurco

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Faculty advisors:

Professor Arun Agrawal, University of Michigan, Chair
Professor Johannes Foufopoulos, University of Michigan
Professor Rebecca Hardin, University of Michigan
Assistant Professor Lauren Persha, University of North Carolina

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Preface

This collection of papers explores the emergence of, implications for, and justice issues surrounding a new tradition of pastoralism in central Kenya: conservation-driven privatization and commercialization of traditional knowledge and environmental labor. It draws on fieldwork completed for my master's thesis during May to August 2010 among pastoralists in Laikipia, Kenya, at the Mpala Ranch and Research Centre and the nearby Maasai communities of Ilmotiok and Tiemamut. Through semi-structured interviews and household surveys, I found that conservation and development agendas in this region are contributing to a new wave of livelihood shifts for local pastoralists in which individuals are transitioning from being animal owners to animal 'caretakers' employed by powerful conservation groups.

At large, my thesis focuses on the social outcomes of these livelihood shifts, including shifts in the sharing of traditional knowledge, decision-making strategies, and associated environmental justice complexities of a new kind of labor-based rather than landscape-based mobility. Using interdisciplinary means and different focal points, these papers explore that theme closely, including issues surrounding resource dependency, insider/outsider knowledge and resource control, shifts in economic norms on individual and landscape scales, and associated questions of cultural transition and justice.

The overarching research question in these discussions is what are the tradeoffs of various outcomes of contemporary coupled pastoral management and conservation strategies in an integrated natural-human system? More specifically, what carries over from traditional herding patterns and processes, and what is gained and/or lost when there are attempts by conservation efforts to transform this system? For example, to what extent have conservation strategies such as the Mpala model done away with the socio-spatial mobility and use of ecological heterogeneity by implementing fixed boundaries on the landscape, or have they instead increased flexibility by altering the natural landscape (i.e. through infrastructural development)?

The introduction in this series serves as a broad introduction to this landscape, its ecology and its society, its history and its present challenges, as well as a more focused introduction to framing my study sites for further discussion. Beyond this introduction, the three following papers attempt to capture the holistic "identity" of this complex multi-part, multi-person, multi-landscape, multi-national endeavor. My intent is to capture the experiential identity of all of these efforts as one that is not static, drawing from oral histories, present experiences, and theory in relevant literature to understand the institutional and cross-continental complexities of conservation and development attempts in this landscape.

Part one then focuses on shifting norms of perceptions of land use and land use change in these landscapes. I rely on information represented in my surveys of pastoralists at Mpala and in the surrounding community group ranches. I explore tolerance of wildlife by pastoralists at Mpala and their associated challenges versus tolerance of wildlife by pastoralists in the group ranches and their challenges; such tolerance levels lend information to a transition of knowledge, information output, and communication networks in both landscapes that I compare and contrast across two communities in the same landscape.

Part two discusses the privatization and commercialization of traditional knowledge and environmental labor, and I hypothesize on the ecological consequences and social outcomes of this privatization. I draw from the literature in other African pastoral contexts where similar questions are being asked, i.e. of the Maasina in Mali, the FulBe in Côte d'Ivoire, and the Fulani in other West African nations. Within the realm of political ecology and institutional analyses, I write about the shift from animal ownership to animal caretaking and the implications for institutions that are changing norms of mobility in these ecosystems. This paper relies heavily on my ethnographic fieldnotes and informal interviews from key informants, as well as a literature review of the privatization of knowledge and pastoralism.

Finally, part three explores the theme of technology and transition in this landscape closely, namely with regard to the changes brought to the experience of pastoralism with the influx of technology. The comparatively large budget and profit margin of Mpala and similar ranches in the region allow for the use of technology in a way that is not seen in other parcels of Laikipia. Here, pastoralists use cell phones to aid in daily and seasonal decision-making but have difficulty finding infrastructure for charging those phones; some use vehicles for transportation or moving injured livestock; radios give warning of dangerous wildlife nearby; and expensive, easily transportable metal fences are used to rotate cattle pastures more frequently than in nearby Maasai group ranches to try to control environmental degradation. Major themes considered include the relationship of technological resources to sustainability, knowledge and resource control, shifts in financial agendas, and transitions in traditional knowledge networks.

Collectively, these papers attempt to offer at once snapshots of a landscape complex in its history, present use, and future potential; as well as a holistic overview of a natural-human system in transition, one that is increasingly being recognized for its importance as a leader to conservation in East Africa. In the following analyses I suggest that despite this recognition in the conservation world, there are in fact many more questions to be answered, more social concerns needing to be addressed, and more knowledge to be gleaned before this system is used as a model for conservation, pastoralism, or development in this landscape or elsewhere in Africa.

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The words of the elders are blessed.
--Maasai proverb

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Metii oidipa, oldoinyo ake oidipa otunokine eweji nemedotunyie.

(No one settles anywhere forever, it is only the mountain which does not move from its place.)

--Maasai proverb

Introduction

Pastoral Movements and Movements in Pastoralism: An Introduction

The dynamic relationships among pastoralists, livestock, and wildlife are of much interest to both natural and social scientists regarding use of, access to, and control over scarce environmental resources in shared rangelands. These webbed relationships have existed for thousands of years, but accumulating stresses in recent years have created new complexities for our world's pastoral communities. New challenges are becoming more and more apparent in savannah ecosystems that are home to pastoralists all over the world due to changes in land use, increasing human pressure, and changing climate systems, among other factors.

These challenges are greatly affecting the composition of the land itself, including changes in vegetation cover and wildlife distribution due to rising human resource demands, as well as the ways in which pastoral societies are utilizing their land. East Africa is one region that is experiencing particular shifts in habitat distribution and shifts away from traditional pastoral environmental resource use. Wildlife numbers in Kenya, for instance, have declined by 35-50% in the last thirty years (Western et al. 2009). Much of this decline is matched with and directly related to changing uses of pastoral lands and changing livelihood strategies for ethnic groups such as the Maasai.

Furthermore, changing livelihood strategies not only affect the environment but also directly affect human culture and community structure. Indigenous knowledge institutions that have formed over thousands of years within pastoral communities have been altered in the past two hundred years from a string of events including colonial influences, post-colonial national governance strategies, recent decentralization efforts, and current NGO conservation and development projects.

This paper is attempting to understand the historic, present, and future movements of these knowledge institutions, the ebbs and flows of pastoral knowledge over a range of internal and external, ecological and sociological, economic and political shifts that are working to redefine a pastoral culture that is simultaneously working to redefine itself in the modern era.

Background

A socio-ecological history of pastoralism in Kenya

“Pastoralism is not just a question of one animal [human being] following another [livestock]; people need to know that the pastoralist is a hero who has overcome adverse conditions of nature to make a viable livelihood.”
--Ali Wario, Assistant Minister, Kenyan Ministry of Special Programs, Office of the President

Roots of pastoralism in Kenya extend back to the third millennium B.C. when small-scale cattle herding, fishing, and hunting began to dominate the economies of Southern Cushites from Ethiopia and Southern Nilotic-speakers from the Sudan (Spear 1993). These and other communities descended upon central and southern Kenya, becoming more and more characterized by pastoral tendencies with each generation. By the eighteenth century, Maasai,

Turkana, and other pastoral groups established dominance over the savannah plains through communal reforms that gave way to a transhumant existence. Cattle became the primary source of value for these communities, with the rearing of cattle the central focus of livelihood energies. The ecological variability of Kenyan rangelands created significant challenges for pastoralists.

Savannah ecosystems make up around forty percent of Africa's land and support approximately fifty percent of the continent's population (Mwangi and Ostrom 2009). Much of Kenya's land falls into this category of semi-arid savannah, characterized by little rainfall and persistent droughts that challenge its people on daily, seasonal, and yearly scales through dynamic and often unpredictable weather patterns.

Risks of loss for pastoralists are greatly increased by unpredictable and harsh semi-arid conditions. Uncertain rainfall patterns mean that high-quality grazing areas cannot be taken for granted; threats such as diseases and predators become more significant when combined under these conditions. Cattle survival and, thus, human livelihoods depend upon ecosystem integrity, and pastoralists are keen to find ways to maximize their gains and to secure those gains if possible.

Spear (1993) notes that the only real insurance a herder can take in order to combat these potential threats is to participate in "complex exchange networks" that widen his risk by distributing his cattle among widely dispersed stock partners and that maintain access to wet and dry season pastures. The option to scatter herds among different stock partners ties directly to the need for pastoralists to mitigate the amount and intensity of labor in relation to the size of their herd. Small herds cannot sustain most families, but larger herds might require too much management for limited available family labor. As herders acquire more cattle, they have to either also acquire more labor from outside the family or place some cattle in the care of others; as herders lose cattle, they have to work for others or perhaps borrow cattle from others (Spear 1993).

This relationship of herd size and labor availability framed within the context of mobility challenges and opportunities is the foundation upon which historical social institutions were built in traditional Kenyan pastoral communities. These institutions broadened social relationships and facilitated exchange of information and identity. Maasai clans, for example, were extended across different territories in order to embrace potential agnates who could be of mutual assistance in these terms. The concept of descent was widened to include all Maasai men within a certain age range over a large region, a grouping that became known as a familial "age-set." Strong connections among members of an age-set facilitated the fostering of cohesion for the family herding unit and loyalty to community pastoral values (Spear 1993).

The colonial period: Changing institutions

"Colonial nature was made productive, but only through drastic restructuring. New species, new systems of production, new forms of social relations were all the out-workings of the colonial mind. Nature was conquered, made productive despite itself. People were dealt with in the same way."

--W. Adams, *Decolonizing Nature: Strategies for Conservation in a Post-Colonial Era*

Traditionally, pastoralists have been considered to be conservation-minded and to be living in sustainable harmony with wildlife (Gadd 2005; Parkipuny 1989). Life for pastoralists has traditionally involved negotiated, seasonal herd movements between wet and dry season grazing areas over rangeland landscapes. For the Maasai, land was largely held communally, and it was simply by virtue of membership in the community that each herder was entitled to grazing area, available water, and other resources necessary for producing livestock. Most importantly, a council of elders was established by the community and given the authority to allocate members' resource use and to mediate outsiders' access to the rangelands (Mwangi and Ostrom 2009). Elders developed a common language and social norms for various environmental management techniques, including judicious grazing activities to prevent complete destruction of grass roots as well as regular burns of regional grassland areas to aid in the regeneration of new growth.

This resource governance structure was replicated in different scales over the landscape. Communities were governed by councils in small, autonomous groupings (sections, localities, neighborhoods, houses, and households). Smaller councils all the way up to the largest councils would consider and adopt strategies, norms, and rules that reflected changing ecological conditions over space and time. Mwangi and Ostrom (2009) call the transhumant herding system of the traditional Maasai a "robust socio-ecological system," a system in which the community was able to adapt through its social institutions to changing standards in its ecological surroundings. The nature of these institutions that developed from social organizations meant rules were easily respected and enforced. Common property regimes combined with cultural norms meant there was enough flexibility for livestock movement across seasonal pastures, enough time for degraded areas to recover, and an efficient method of mitigating conflicts among community members sharing resources. This early organizational structure is the key to understanding the long-term success of traditional pastoral activity in Kenya and to understanding the breaches in institutional knowledge that have occurred beginning with the colonial era.

The end of the nineteenth century brought serious changes to Kenyan savannahs in the form of restriction of local control over resources, the forced encouragement of sedentarization, and eventually the beginnings of established protected areas for wildlife conservation (Campbell et al. 2000). The British colonial government settled farmers in Maasai areas that were vacant due to seasonal herd movements and converted these collectively-owned areas to private, individually-owned farms and commercial ranches. The Maasai were then relocated to reservations under a new kind of collective ownership, but these new regions were smaller, more arid, and had higher occurrences of tsetse fly infestations and East Coast Fever, among other problematic issues (Mwangi and Ostrom 2009).

An interesting philosophical contrast developed between the Maasai and the British from the initial onset of the colonial period. British administrators concerned with soil degradation pinned the Maasai as having a "cattle complex," believing that they had a kind of irrational psychological attachment to the animals and were therefore intent on acquiring as many cattle as possible despite rising degradation problems (Mwangi and Ostrom 2009). The Maasai, on the other hand, believed British settlement and cultivation to be the cause of degradation due to their takeover of high-quality pastures and resultant overgrazing on rangelands.

To combat the issue they perceived to be the problem, the colonial government began modifying Maasai property rights systems and limiting livestock numbers. The newly created Kenya Land Commission developed “grazing schemes” which attempted to define when, where, how many, and how long cattle could be grazed (Mwangi and Ostrom 2009); the schemes were also supposed to be led by a group of Maasai elders, though these elders were given little to no autonomy in real decision-making. These schemes were intended to increase productivity of rangelands by reorienting pastoralists away from dairy production for subsistence and instead toward commercial meat for market production (Lesorogol 2003).

Mwangi and Ostrom (2009) report that these grazing schemes failed drastically in many ways: fences did not keep out game animals, which led to increased human-wildlife conflicts; grazing areas and particularly those around watering points were subject to extreme degradation; and encouraged destocking practices through culling rather than traditional lending, renting, or borrowing systems were met with great resistance from the communities.

What did these changes mean for livestock mobility and productivity? It is easy to see the social and ecological losses that occurred: by removing the decision-making authority from local herders, the colonial government effectively prevented herders from employing indigenous knowledge to understand environmental relationships at a level and in a certain depth than non-native communities could ever hope to understand. In traditional pastoral societies, for example, tracking or monitoring of one’s animals is a key socio-ecological strategy used to observe and understand ecological variability over scales of time and space (Butt 2010). This is just one strategy that ensures that herders can effectively graze cattle on heterogeneous landscapes over long periods of time. Grazing schemes, however, were prescribed plans of actions that directly contrasted with the old traditions of tracking and other autonomous choices for herders.

This loss of knowledge use was only exacerbated by the official establishment of group ranches in the late 1960s. Tenure complications and unclear missions of the government meant that group ranches, though intended to be collective units, were often divided and managed as individual units distributed among community members. Furthermore, quotas instituted by the government in order to maximize rangeland productivity did not translate into the traditional Maasai production system, a system that is dynamic and motivated by incentive to avoid risk and remain true to cultural obligations (Mwangi and Ostrom 2009).

Ecologically, much of the country suffered: studies show a decline in range conditions from 1967 to 1977 (Mwangi and Ostrom 2009). Generally, shifts in Maasai lifestyle patterns resulted in unsustainable land use techniques and a subsequent reduction in biodiversity in the region’s arid rangelands (Roberson 1996). Humans, their livestock, and wildlife are all suffering the consequences of this. Excessive use of rangeland resources, for example, has resulted in reduced soil fertility, compromising both short-term and long-term productivity potential (Roberson 1996). Perennial plants that are more palatable for herbivores in many ecosystems are diminishing and being replaced by less reliable, shorter-lived species, and the rangelands are increasingly consisting of less and less viable biomass for livestock and wildlife (Morne et al. 1994). More importantly, Morne et al. (1994) note that severely degraded rangelands in an arid climate may never return to their original state even after a period of inactivity. Without sustainable resource utilization in ecosystems with human activity and in wildlife dispersal areas,

the land will continue to deteriorate until there is little or no available biomass left. Humans, their livestock, and wildlife may be unable to locate sustainable sources of water or vegetation during future dry seasons.

But just as important is the sociological degradation that followed this period. The transfer and continuance of Maasai knowledge systems was challenged and in some cases entirely suspended by the institution of British norms in a place where these norms did not belong, a place where scientific and European privileged ranching techniques were not welcome. It would seem there is a reason that more than half of the world's pastoralists are in Africa, and that pastoralism is the primary livelihood system in East Africa where semi-arid rangelands dominate the landscape (Butt 2010). This is a livelihood strategy that exists and has existed because pastoralists who live within arid lands are equipped with knowledge to employ a range of adaptive strategies that encourage mobility and avoidance of risk despite extreme spatial and temporal variability in resources. This knowledge is indigenous, highly generational, a result of present-day firsthand experience and long-term inter-familial cooperative negotiation of the landscape, and very much an adaptive memory of skills that lends itself to a particularly well-informed, sustainable, and productive use of the Kenyan landscape.

The contradiction between British and Maasai beliefs over the mistakes made in terms of degradation points out an interesting argument regarding the well-known idea first introduced by Garrett Hardin's 1968 publication entitled "The Tragedy of the Commons." The colonial British government was quick to believe that rangeland use among pastoral populations followed this scheme, assuming that each individual herder acted individually to maximize personal gains in the commons despite the collective risk of overgrazing if all herders act this way. This rationale, however, applies very much to an open-access system where there is no regulation for access or use. Traditional Maasai rangelands actually do not fall under this category, and this is the key significance of the community's historic knowledge institutions: these rangelands *are* regulated by a variety of social institutions, self-guided and self-enforced, under a canopy of generational and socio-ecological knowledge from the Maasai themselves (McCabe 1990).

The system that emerged from the colonial period is one that distinctly interrupts, clashes with, and in some cases, entirely breaks down traditional Maasai exchange networks. As Mwangi and Ostrom (2009) summarize, pre-colonial rules and norms of the traditional cultural history were more robust than the new, formally imposed rules made by officials who believed they had applied management panaceas. Decisions in the traditional system could be tailored to regional and local events based on a hierarchy of councils, and these decisions depended on the kinship in immediate families and trans-communal age-sets in order to support an end goal of maximal productivity and sustainability. The new post-colonial officials never recognized this nested governance system of the Maasai and continually tried to impose centralized systems to correct what they believed to be management errors in ranching communities (Mwangi and Ostrom 2009). Socio-ecological systems such as pastoral livelihood strategies require diverse, interdisciplinary problem-solving under variable and multi-layered institutions, an organizational structure impossible to implement or maintain under the colonial system.

The modern era: Continued challenges

“Indigenous people have been subjected to ‘the colonization of their lands and cultures and the denial of their sovereignty by a colonizing society that has come to dominate the shape and quality of their lives, even after it has formally pulled out.’”

--I. Smith, *Decolonising Methodologies: Research and Indigenous Peoples*

British influence during the colonial period created policies that not only encouraged sedentarization for herders but also new shifts in land use altogether, including the onset of cultivation practices. By the time of Kenya’s independence in 1963 and the realization of the nation’s community-owned group ranches, there was a growing trend toward more formal livestock production and small-scale commercial agriculture (Seno and Shaw 2002).

How did this shift arise? Although the communal land tenure system was partially accepted by Maasai at first due to its compatibility with pastoralism, cultural changes eventually prompted a second change in land tenure. Pressures from a growing population in an area with scarce resources and the subsequent desire for individual land title as security, weak communal leadership, and the influence of agriculture from neighboring lands fueled the inception of subdivision in the group ranches (Campbell et al. 2000). Following the trend of subdivision, agro-pastoralism began increasingly replacing traditional pastoralism as Maasai herders realized the short-term economic potential of individual agricultural efforts in the region. Cash crops have proven to be both a very profitable form of income for the Maasai compared to their historical reliance on rangelands which are now overcrowded, overgrazed, and quickly diminishing due to population growth (Fratkin 1997). In some regions of Kenya such the southern Tsavo-Amboseli Ecosystem, over 89% of the population is now involved in both pastoralist and agricultural lifestyles, which also means there is a trend toward permanent settlements necessary of agro-pastoralism (Wishitemi and Okello 2003).

This new land tenure system and its associated land uses changes have jeopardized the ecological integrity of the group ranch rangeland resources. Subdivision results in increased human settlement and sedentarization, meaning individuals are more likely to permanently utilize large areas of land for cultivation, divert natural water resources for irrigation purposes, and construct fences around their property lines, all of which fragment habitats traditionally used by livestock and regional wildlife species (Ntiati 2001). Irrigation and agriculture, for example, have rapidly expanded in the last thirty years as a result of diminishing resources for traditional pastoralism and the consequential need for a supplemental market and form of income. Poorly planned irrigation attempts often alter groundwater flows, limit the accessibility to water resources, or entirely eliminate the seasonal patterns of livestock and wildlife wet and grazing patterns by diverting critical water sources (Ntiati 2001).

Unsustainable agricultural techniques compromise livestock productivity and reduce biodiversity in arid rangelands (Roberson 1996). Cultivation, for example, increases soil compaction, decreases water and air filtration into soil, and restricts plant root growth, compromising short-term and long-term soil fertility. Plants in an already arid environment access and absorb even less water. These are only a few of the ecological reasons that account for unsustainable agriculture in semi-arid lands. Kenyan rangelands supported pastoralism for thousands of years

but are already facing insurmountable resource demands in terms of water and vegetation due to these shifts toward agriculture.

Furthermore, between 1946 and 1965, more land was removed from Maasai reserves to create a network of protected areas for wildlife conservation. The gazetted land was prime space for wildlife, but for the same reason that it had originally been strategic rangeland for the Maasai: these lands often included dry season highlands and swamplands crucial for water resources (Mwangi and Ostrom 2009). Now this land was prohibited for human use. The difficult provisions of this arrangement is that human communities were excluded from entering these blocks of prime resources, but wildlife that were not maintained in artificial manmade boundaries were able to easily utilize the areas beyond those sanctioned for them and move into areas settled by humans.

The history presented here leads to the present-day aftermath of a recent attainment of independence from the British government but no independence from the problems of the colonial period. Changes in market systems, restricted local control over resources, limited mobility and subsequent increased sedentarization, rising human populations, increased conservation initiatives within and around protected area boundaries, and changing climate patterns have only exacerbated the challenges left over from the colonial period.

Kenya, for example, currently supports some of the most impressive concentrations of large mammal wildlife species in Africa, but over 70% of the nation's wildlife lives outside protected areas in human-occupied land during all or part of the year (Okello 2005). Most of these areas are experiencing trends of increasing conflict between human populations and wildlife conservation efforts. The viability of the region's wildlife as well as the sustainability of local livelihoods depend on the ecological integrity of dispersal areas beyond park boundaries that are shared by megafauna, livestock, and humans.

Increased settlement combined with a growing human population around protected area borders has resulted in dramatic consequences for the ecosystem and its people in recent decades. Vegetation cover has been reduced due to overgrazing, water availability has diminished, and human-wildlife resource overlap has increased (Wishitemi and Okello 2003). Several assessments in Kenya have shown that 75-90% of herders in various regions have reported problems with loss of resources near protected areas, predation, or even personal injury (Campbell et al. 2003; Norton-Griffiths 1996).

Many regions in Kenya are facing rising resource overlap and an increased prevalence of human-wildlife conflicts among pastoralists in wildlife dispersal corridors (Campbell et al. 2000). Pastoralists frequently incur direct wildlife-related costs due to livestock predation as well as indirect costs due to land degradation from overgrazing. Pastoralists are particularly antagonized by these conflicts because they suffer excessive costs from wildlife but reap none of the benefits that the government receives from endeavors such as tourism in nearby protected areas, nor do they usually receive compensation (Campbell et al. 2003; O'Connell-Rodwell et al. 2003).

These problems are cyclical: pastoral communities seek better grazing land for their livestock due to resource degradation and often move toward protected areas; wildlife in protected areas

face increased risks of insularization associated with nearby human activity; rates of human-wildlife conflicts increase due to resource overlap; degradation continues the pattern. More importantly, this pattern appears as a complex set of challenges not only due to cases of resource overlap but also because in most instances modern communities in Kenya do not have the means of traditional past communities to mitigate them. For the most part they have been restrained instead to small areas of overgrazed land governed by higher institutions that they cannot manage themselves.

Decentralization and the new role of the community in natural resource management

“We must conserve the land, we must conserve the water, we must conserve the trees...”
 --Maasai group ranch lodge manager, Ol Gaboli, Ilmotiok, Kenya

To that end, decentralization of natural resource governance has become increasingly popular since the mid-1980s, in combination with two important trends (Larson and Soto 2008). First, post-colonial political shifts have been leading to the establishment of newly elected and autonomous local authorities, and second, there have been rising tendencies to see people less as a cause of problems and more of a solution to natural resource degradation, recognizing that management and controls are more effective when local populations self-organize and implement their own regulations and rules. According to a recent survey, governments in more than fifty countries claim to be pursuing initiatives intended to devolve some control over resources to local users (Agrawal 2001).

Carried as a theme that is typically joint with decentralization and devolution movements is the idea of development projects, sometimes framed alone or in conjunction with conservation projects. Agrawal (1997) points out that post-colonial development doctrines appeal to the logic of aid and argue almost entirely for the critical role of aid to encourage development in the Third World. While it is certainly true that some successful development projects originate from Western initiatives or funds, much of the development industry has been misguided in its focus on introducing Western knowledge to induce development (Agrawal 1997).

As for conservation, Agrawal (1997) notes that the story has come full circle: Western colonizers originally set out to fully develop production opportunities from resources in the colonies, and now their focus is displaced on the need to conserve those natural resources. This makes for complicated relationships among local communities, newly established governments, and outside Western donor agencies. In Kenya, for example, Maasai communities often feel that they have been patronized by their federal government due to a history of federal encroachment on indigenous lands, and they are just as unlikely to trust outside donor agencies from Western countries due to complicated colonial histories. Even very specific, localized non-governmental organizations (NGOs) often struggle to make real, tangible progress in areas due to the longstanding feelings of antagonism that exist toward outside communities.

Some successful development options have resulted under the node of community-based natural resource management programs. In Kenya these programs often take the form of devolved wildlife management enterprises. Community-owned wildlife sanctuaries as tourist ventures on the outskirts of national parks, arrangements with private-sector safari operations, or tourist lodges are all examples of these ventures (Murombedzi 2004). Often community-owned wildlife

operations are nested within larger conservation protection schemes, such as the protected landscape model, and they provide a safe habitat for wildlife while offering local communities a tangible benefit from tourism revenue to help make up for struggles from traditional pastoral livelihood strategies.

These venues are often successful and are well supported by the tourist industry, an industry that accounts for a large component of the nation's GDP. In fact, a study by Okello et al. (2003) showed that a large majority of tourists in a heavily visited area of Kenya, the Tsavo-Amboseli Ecosystem, reported that not only would they like to visit a community-owned sanctuary, but they would prefer to do so knowing that a portion of their fees directly benefit local communities, not just conservation efforts. This land use arguably has a sustainable market, encourages communities to value wildlife and subsequently reduces the negative consequences of human-wildlife conflicts, and ensures the conservation of resources for humans, their livestock, and wildlife. Many scholars agree that local conservation efforts in shared landscapes must be participatory and integrated with development projects in order to be successful, and ventures such as community wildlife sanctuaries are a first step toward sustainable utilization of Kenya's natural resources (Adams and Hulme 2000).

But what does the establishment of a sedentary ecotourism lodge do to a society that once freely roamed the landscape, only relying on their own communities, their livestock, and their land rather than fluxes in a highly competitive, uncertain, and variable international industry? It makes economic sense that the Maasai, who once occupied the lands upon which protected areas now stand, who receive little or no support from the institutions that restricted their movements, and who are struggling in an increasingly arid environment, turn elsewhere for compensation. Cultural *manyattas*, for example, are a popular means of directing tourist-related income into local communities. These ventures are mock *bomas*, modeled after the traditional Maasai homestead, and exist only for the purpose of entertaining curious tourist audiences. Maasai dress in traditional clothing, perform ritual songs and dances, give tours of the *manyatta*, and even sell handmade souvenirs (Bruner and Kirshenblatt 1994). Many critics have pushed for the termination of such practices, arguing that cultural *manyattas* are inauthentic and therefore an exploitation of a culture once renowned for its rich traditional heritage. Maasai groups involved with this form of ecotourism, however, typically recognize *manyattas* as an avenue to generate income from an industry otherwise mostly closed to them.

This new movement raises interesting questions for a pastoral community that is no longer defined by pastoralism, a community once defined by their livestock but who no longer have a stake in livestock. Ecotourism ventures such as this have far-reaching socio-cultural implications both for the Maasai and for tourists themselves. Bruner (2001) points out that cultural tourism questions authenticity, tradition, and heritage of the culture involved because of the inherent sense of production needed for the tourist industry. Many establishments are performances staged to achieve a sense of realism for tourists but actually convey little cultural authenticity. Aspects of a culture that tourists are viewing and experiencing may be very different than the community's traditional practices, so tourists may leave with an exaggerated or inaccurate perspective about the culture in question. Cultural inaccuracies are shared due to overgeneralizations made for the sake of presentation; but, as Macleod (2002) explains, there

really is no one perfectly authentic Maasai culture because culture, for any group of people, is continually changing, and there are always developing variants.

The most pressing question comes, however, when thinking long-term about these practices. The first generation of Maasai working at a cultural *manyatta* or a tourist lodge, for example, will still retain firsthand memory of traditional pastoral knowledge. But for the next generation, or three generations removed, it is unlikely that all or even the majority of that knowledge will be passed along. The incredible ecological intimacy wrapped up in traditional pastoral culture may be lost in just a few decades. Although all cultures develop and realistically obtain and lose sets of institutional memory and knowledge over time, it seems a substantial loss to long-term environmental conservation efforts if knowledge of the arguably sole livelihood strategy viable in the semi-arid ecosystems of Kenya disappears from future generations.

This is not to say that tourists should not visit ecotourism ventures or support local communities in new livelihood strategies, but perhaps these issues should be recognized as a push to also assist in the maintenance of traditional knowledge systems. It seems a travesty to lose thousands of years of elaborate indigenous information and belief systems based on a few hundred years of unsustainable and invasive outside influence.

On the idea of outside influence, Agrawal (2001) notes that new demand pressures originating from markets and technological changes create new incentives about the products to be harvested, the technologies of harvest, and the rates of harvest. Furthermore, new markets are likely to change local power relations because different groups emerge depending on different gains from common-pool resources. The effects of the shift from traditional pastoral behavior to agricultural practices, a shift that was based on cash crops and immediate market incentives, illustrate the transformative role and potential of new capital. Such shifts highly affect changes in resource use and management institutions (Agrawal 2001).

Pre-colonial pastoral market systems were based primarily on the acquisition, trade, and loss of cattle. The arrival of agro-pastoralist and agriculturalist tendencies shifted the entire economy of communities in Kenya by offering an additional source of income and trade resource. Now individuals and communities no longer relied solely on cattle as a practical means of income, but this also means that they no longer relied solely on cattle as a theoretical measure of wealth. For a society in which cattle were once the traditional foundation of worth and resource expenditure, the arrival of agriculture did more than just diversify a local economy: it completely revolutionized the way in which people thought about their livelihoods, their culture, and their landscape.

The study of herd structures, or the age and sex composition of livestock herds, offers important information as to socio-economic shifts in a livestock-based culture. The herd structure is a product of the reproductive age, the mortality rate, the offtake rate (including both commercial sales and slaughter for consumption), and the purchase of cattle to supplement the herd. These rates are affected by environmental factors, the degree of integration of herders into the market, the development of markets, and the effects of market demand (Amanor 1995). In a purely pastoral society, the predictability of market influence on herd structures is well understood both within pastoral communities themselves and from an academic perspective. But variations in

demographic pressures related to the ability of users to manage new resources such as cash crops has not only completely altered herd structure but also created the need for the study of the external social, institutional, and physical environment that has placed emphasis on market-related demands that shift pastoral tendencies or incentivize local farmers (Agrawal 2001).

An uncertain future and the case for local knowledge

“Our education is acquired out there on the grazing grounds. We spend our days, months and years exploring the brown plains which extend to Siringet. Instead of passing *intemat* [tests] about things that are foreign, we test our knowledge of our environment by actually getting into thorny bushes, the home of many wild animals. Instead of playing *empira onkejek* [football], we chase after colorful birds and hunt small animals in the open woodlands. Instead of *dansi oo nkeresa* [English dance] we have our *enkipaata* and *emowua olkiteng* [boy’s ceremonial dances which mark the formation of new age-sets].”

--D. Berger, *Wildlife Extension: Participatory Conservation by the Maasai of Kenya*

Another challenge comes with recent levels of confidence that natural systems worldwide are being affected by global and regional temperature changes. The remainder of the twenty-first century will surely descend upon the next generation with more and more challenges for humans, other species worldwide, and their shared environment. The question of how climate change will further affect human-livestock-wildlife interactions is particularly difficult in developing countries where protected areas are most concentrated with wildlife and communities are most vulnerable to uncertain threats from climate change (Mertz et al. 2009). Human-wildlife conflicts are already a significant source of both human and wildlife mortalities as well as inefficient resource allocation and utilization. Achieving a sustainable relationship among humans, wildlife, and their shared land will become even more challenging as climate change effects continue to be more and more observable. For example, if climate change results in the loss of crucial wetlands in protected areas, wildlife will be forced to migrate to regions with available water resources – regions that may be inhabited by humans who are also facing the same problem of diminishing or shifting resources. Humans cannot afford to share their resources with wildlife, and wildlife pose a threat to pastoral livelihoods; but wildlife cannot survive without these resources any more than humans can.

There may be no better indicator of a need to return to emphasizing indigenous knowledge than climate change. Eriksen and Lind (2009) note that strengthening local adaptive capacity is a crucial part of adaptation to climate change, and that collective decision-making for adaptation needs is best met by communities working together through social relations and political alliances in order to seek positive livelihood adjustment options. These authors note that there is often a tendency to understand adaptation as a series of specific policies and technical implementations. It is perhaps more important to think about local adjustments to uncertain changes, both climatic and nonclimatic, that approach the issue of vulnerability more generally in terms of not only building adaptive capacity but also in terms of building resilience (Eriksen and Lind 2009). At a certain point development in the face of climate change shares a common goal with development needs in general, and in staying with recent trends toward decentralization of resource management and empowerment of local communities, it seems logical to suggest that local adaptive capacity building should also depend on decision-making processes stemming from small-scale social institutions and local knowledge schemes.

This is not to say that all communities in the developing world have the social or physical means to make or enforce these decisions, or that there are no external influences that would hinder the success of adaptive capacity building, because both instances are entirely true in many parts of the world. The important notion, however, is the idea that in preparing for risks associated with climate change – risks that will surely cause difficulties on the national scale of the state but will be felt more acutely at the local and household level – it makes sense that individuals of those households and local communities be the impetus for organizing themselves in ways to best respond to these uncertain changes. This harkens back to ideas as simple as extreme tracking abilities of indigenous pastoral communities: having the means to understand weather patterns, wildlife movements, or shifts in vegetation cover in ways that Western scientists cannot. This is therefore an argument to push development projects in the direction that local communities want them to go, to provide not the means to a specific end but rather the means to meet whatever end the community deems useful and appropriate given their unique, localized context and set of challenges. Local knowledge claims are now recognized as quite valuable for conservation, in being more responsive to temporal and spatial heterogeneity and intimate local connections (Goldman 2003).

Eriksen and Lind (2009) carried out a study to understand how social institutions poised to respond to effects of climate change are developed in pastoral communities. Their study found many kinds of structural organizations ranging from local and district meetings, bans on grazing in different areas during some times in the year, and intense negotiations over diminishing water resources. Some of these tactics were successful, but their paper does point out some negatives, including the possibility of increased inter- and intra-community violence due to high-pressure situations in times of limited resources and no assurance of a future that is any different. This is perhaps where the main complexity lies with regard to relying solely on local institutions for development building: in some of the poorest and most resource-lacking regions of the world, daily activities are a matter of survival and there is no leftover energy to put into long-term sustainability projects.

Huge amounts of money and other resources have been invested in achieving success for integrated conservation and development projects (ICDPs) all over the world. Programs that tout the ICDP label imply that natural resources can be managed in ways that achieve economic benefits for local communities while sustaining environmental resources, but research has shown that these agendas can often be quite divergent (Sayer and Campbell 2004). Integrated projects in this region of the world need to carefully reflect upon traditional pastoral livelihood strategies, emerging strategies in the post-colonial era, and potential strategies for an uncertain future.

The future of pastoralism in Kenya

“I don’t see pastoralism perishing; what we need to do is to further develop the skills that pastoralists already have.”
 --Daoud Tari Abkula, advisor on pastoralism, United Nations Office for the Coordination of Humanitarian Affairs-Pastoralist Communication Initiative (OCHA-PCI)

With so many challenges on in the current era and more on the horizon, what is to become of the tradition of pastoralism in an ever-changing landscape? More broadly, there must be recognition for new models of conservation that emphasis the intimate ecological knowledge of indigenous people as well as the rights of those people to continue practicing their culture (Figgis 2004).

Institutions such as the International Livestock Research Institute (ILRI) are launching new joint conservation and development programs to improve the well-being of members of pastoral societies as well as to prevent environmental degradation. As recently as January 2010, ILRI began a scheme to offer insurance to pastoralists in the arid Marsabit district of northern Kenya. Based on satellite images gathered and stored in an international database as well as on-the-ground data on livestock deaths in the region, ILRI created a program to accurately predict when a reduction in available grazing will lead to losses in livestock (Mude et al. 2010). This strategy is already being hailed as a potential safety net for pastoralists to use against drought in terms of providing payoffs for lost livestock as well as preventative methods through funding for food or drugs to help livestock survive difficult months.

Perhaps development projects should be focused as this one is, in terms of directing resources toward sustaining practices known to be profitable or otherwise successful, rather than restructuring entire livelihood strategies. With additional assistance in terms of sustaining present-day livelihoods, albeit mixed strategies, perhaps communities such as the Maasai in Kenya can hold on to as much traditional knowledge as possible while still preparing for a future of new challenges with new coping strategies.

Many researches still agree that pastoralism is the most important and sustainable livelihood strategy for the world's semi-arid landscapes (Butt 2010). It is more complicated, however, for pastoralists in regions like Kenya to hold on to generations of traditional knowledge and activity in a shared landscape that is trying to recuperate from years of extraneous stress and now facing new pressures of the modern era. While the pastoral society should perhaps be viewed as an exemplified strategy of sustainability in this region of the world, it seems that opportunities for other forms of development, or at the very least subsistence, must be granted in many cases without question.

As Spear explains, it truly is more than just a relationship with cattle that defines the Maasai and, by extension, other pastoral communities in Kenya. It is an interactive set of knowledge institutions developed from a social, ecological, and integrative relationship among individuals, communities, domesticated animals, wild animals, and their shared landscape. These knowledge institutions are the hallmark of past success and present-day resilience. Perhaps they will also be the potential for future sustainability and growth of pastoral communities in Kenya for many generations to come.

Case Study: Laikipia District, Kenya, and the Mpala Research Centre

“Mpala facilitates and exemplifies sustainable human-wildlife co-existence and the advancement of human livelihoods and quality of life. We do this through education, outreach, and by developing science-based solutions to guide conservation actions for the benefit of nature and human welfare.”

--Margaret Kinnaird, Director, Mpala Research Centre, Laikipia, Kenya

Laikipia is a region that, like many other parts of Kenya, is facing rising resource overlap and an increased prevalence of resource conflicts among pastorals in landscapes shared by humans, wildlife, and livestock. Laikipia is commonly being acknowledged as one of the most crucial

areas for biodiversity conservation in Kenya. Wildlife densities in this region rank second only to the world-renowned Serengeti-Mara ecosystem, and large mammal diversity in Laikipia is higher than in any other region in Kenya (Gadd 2005). Laikipia is unique, however, in that it is not a protected area; its wildlife is entirely sustained by communal and private landowners. Livestock are kept among large-scale commercial ranches as well as in small-scale community group ranches.

One large stakeholder in the region is the Mpala Research Centre, a well-known research facility situated on 48,000 acres of African savannah near Nanyuki. Mpala is part of a multi-purpose consortium managed partially as a wildlife conservancy, partly a research centre with strong institutional ties to Princeton University, partially as a third-generation expatriate cattle ranching operation, and partially as a nonprofit NGO interested in development projects in nearby Maasai communities. Mpala hosts over 2500 animals managed by pastoralists from all over the country, mostly including Maasai and Turkana with some Pokot herdsman that are employed by the research centre. The research centre has created a regional hotspot for international ecological research, but the pastoralists living among these endeavors are largely neglected. Despite the fact that increasing human populations and settlement have created challenges for the future of this region, little research has been completed regarding pastoralist-wildlife interactions in the Laikipia region from a socio-ecological perspective.

The study site makes it an appropriate one to focus on pastoralists as a means of understanding a historically sustainable tradition and the feasibility of a sustainable future with arguably minimal conflicts among humans, their livestock, and wildlife compared to neighboring lands. By exploring the relationship of these three players and their movements in relation to one another in a richly populated but resource-depleted landscape, the degree to which one modern variety of pastoralism – part wildlife conservancy, part working cattle ranch – is sustainable can be analyzed for its potential. Understanding how herders at Mpala cope with resource overlap and diminishing resources can lend assistance to management decisions at a local and regional scale in Laikipia and in other regions facing similar challenges.

Many scholars argue that the mobility and flexibility of pastoral systems enable them to maximize resource potential from patchy and fragile environments, like the semi-arid savannah ecosystems of East Africa. Lesorogol (2005) notes that when compared to ranching models, pastoral systems are found to be more productive per unit area due to the ability of pastoralists to move their herds opportunistically and to take advantage of seasonally available pastures. One important implication of this is that privatization of pastoral land will lead almost inevitably to the demise of pastoralism as both an effective production system and as a way of life. Lesorogol points to the case of subdivision of Maasai group ranches as a harbinger of doom through dispossession and impoverishment if the privatization model were to be thoroughly adopted throughout the nation. The question becomes more complicated when, for instance, that privatization is enshrined within the institutional, economic, and societal support of a governing partner such as the Mpala Research Centre, a partner who intends to support the role of pastoralism in a shared landscape and embraces its sustainable compatibility with conservation of wildlife nearby as well as of livelihoods.

Important to understanding the entirety of the challenges at Mpala and in Laikipia at large are the social factors that arise when a cattle ranch is officially sanctioned in the same landscape as an unofficial wildlife conservancy. Due to the centralized governance structure of the ranching operations at Mpala, herdsman are employees and only caretakers, not owners, of livestock. Many questions arise:

- How do the herder employees perceive livestock, and how do their perspectives differ from those of traditional herding communities?
- How are conceptions of wildlife and conflict among human-livestock-wildlife interactions viewed and mitigated?
- Based on the fact that these herders are managers rather than owners of cattle as in a traditional pastoral society, are herding decisions made in different ways? Is there less investment in time and strategy for herding practices?
- Is knowledge shared differently among the herding community at Mpala compared to that of a more traditional pastoral community?
- After a few generations of employees raising families at Mpala, how much and what types of indigenous knowledge are lost in the transfer to this new model of co-management from a traditional community entirely focused on pastoralism?
- Is this loss of information affecting the productivity of livestock at Mpala in terms of reaching maximal potential, and is it affecting the success of wildlife conservation efforts based on untraditional grazing patterns?

These are just some of the sociological, anthropological, and ecological concerns that arise in co-managed landscapes such as Mpala. Although complicated, these concerns offer a very modern venue for understanding what has become of traditional knowledge in pastoral communities as well as where that knowledge is heading in the future.

Understanding the inner workings of the Mpala landscape from a socio-ecological perspective will provide valuable insight into whether this institutional model should be adopted elsewhere in East Africa or Africa at large as a potential integrated conservation and development operation. Understanding the decision-making process for herding patterns and behavior that occurs at the individual level and throughout the group collective of the ranching community offers an analysis on the indigenous knowledge surviving at Mpala and its relation to that of wildlife, livestock, humans, and their shared landscape of limited resources. Exploring its success in terms of current productivity and projected sustainability is a valuable contribution to interdisciplinary wildlife conservation efforts and development projects in arid systems.

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Part One

Pastoral Perceptions and Perceptions of Pastoralism: Changing Land Use and Changing Livelihoods in Laikipia, Kenya

Abstract

The Laikipia District of central Kenya is commonly being acknowledged as one of the most crucial areas for biodiversity conservation in Kenya. Laikipia is unique, however, in that it has no protected areas; its wildlife is entirely sustained by communal and private landowners. Management of wildlife, land, and people in this region is heavily wrapped up in the efforts of local conservation and development efforts that are driving livelihood transitions by employing Kenyans as herders or encouraging conservation-driven tourism. In this paper I explore those livelihood transitions, how they have come about, and what their significance may be for the socio-ecological system. I rely on the use of “perception” as an analytic to explore the ways in which people describe and analyze environmental change with regard to their economy and what factors of change that are emphasized in internal discourse. I argue that through these perceptions of environmental change and changing attitudes of wildlife tolerance, we can see that conservation and development efforts in these region are creating new ecologies of the landscape and the coupled systems.

Introduction

Be as familiar with observation as you are with the place you live.
--Maasai proverb

Scholars worldwide have garnered evidence for supporting the integration of local knowledge into environmental policymaking processes (Angassa and Oba 2008; Angassa and Beyene 2003). Local knowledge—also referred to as traditional, indigenous, or practical knowledge—is increasingly being recognized as a useful and, moreover, an appropriate means of integrating relevant ecological information into discourse and practice, particularly in conservation landscapes (Goldman 2003; Dahlberg 2000). These scholars and others argue for the integration of local knowledge with what is traditionally defined as scientific knowledge for policy and management purposes.

In pastoralist landscapes specifically, scholars of environmental history have shown that past and presently existing local knowledge of ecological change is typically consistent with field data collected concurrently in the same sites (Katjiua and Ward 2007; Roba and Oba 2008). Individual and community livelihoods in pastoralist landscapes revolve around a flexible and highly adaptable process of responding to temporal and spatial heterogeneity, and local knowledge systems therefore tend to be particularly useful for conservation planning. Goldman (2003) calls the complex connection of local ecological events with social processes evident in local knowledge ‘intimate,’ as it seems there is at once a level of practicality and a level of personal effect interwoven in such knowledge. This complexity is the subject of study to many environmental historians and anthropologists, and is beginning to be noted for its use to ecologists as well.

A small body of literature exists in support of using perceptions of pastoralists in Africa as a method of inquiry and analysis to accurately understand ecological change and variability (Gemedo-Dalle et al. 2006; Katjiua and Ward 2007), land degradation (Bollig and Schulte 1999; Dahlberg 2000; Ward et al. 2000), and resource utilization (Abule et al. 2005; Angassa and Oba 2008; Angassa and Beyene 2003). The use of “perception” as an analytic in this context refers to the ways in which people describe and analyze environmental change with regard to their economy and the attributes of change that are emphasized in internal discourse (Bollig and Schulte 1999). These scholars and others have relied on formal and informal surveys, focus group discussions, participant-observation, and tales of oral histories to understand attitudes toward management practices or construct narratives of vegetation change or resource depletion, among other topics. Some scholars have matched these qualitative measures and oral histories with more quantitative rainfall, soil, and vegetation data, arguing that these measures complement one another for a more holistic view of rangeland trends and human attitudes toward and understanding of those trends.

In terms of pastoralist histories specifically, McCabe (2003) notes that the issues most common in the literature include discussions of reasons for and variations of mobility, the influence of mobility on social organization, and the value of understanding and communicating specific patterns of mobility. The question of mobility is at the heart of pastoralist livelihoods, and often at the heart of success or failure in a landscape in a given time period or a given space; thus mobility too often frames the ways in which pastoralists perceive land use and land change.

But curtailing mobility is also a common theme of modern national management strategies in Africa and of international conservation efforts sited in local African communities. Fratkin (2008) points to mobility as the essential foundation of pastoralism, noting that the most significant obstacle for its success is the privatization and enclosure of lands used in traditional grazing schemes. By administering group ranches, gazetted protected areas, and implementing conservation and development agendas in pastoralist landscapes, national governments and non-governmental organizations (NGOs) often encourage sedentarization and livelihood shifts that do not revolve around mobility.

But what happens when mobility is no longer the centerpiece of pastoralist culture or the foundation of decision-making strategies? This paper explores this question, one of shifting livelihoods and shifting land uses in a landscape driven by conservation and development agendas, agendas that are in fact altering the influence, potential, and in some cases, the entire existence of mobility. Set in the Great Rift Valley of central Kenya, it outlines a narrative of human-environment interaction that began thousands of years ago and exists in the present in a very different form than even its recent history tells just decades ago. By focusing on knowledge and perceptions of local pastoralists under new institutional presences, it seeks to find an answer to the question of what carries over from traditional herding patterns and processes, and what is gained and/or lost when conservationists attempt to transform this system? It offers a comparison of natural resource management for livestock and wildlife under different and transitioning social, political, and economic structures. But rather than simply taking a competing narratives approach, it attempts to integrate personal and community histories, institutional transformations, and environmental shifts into a tale of the social outcomes of livelihood shifts in a region where

labor, rather than landscape, functions as new kind of mobility focus—a mobility for people, animals, wealth, and ideas.

Using Laikipia, Kenya, as the setting for this discussion, this paper focuses on two microcosms of traditional and transitioning livelihoods amidst the district's mosaic of expatriate private commercial ranches, Maasai group ranches, ecotourism ventures, and public lands: (1) Mpala Ranch and Research Centre with (2) two separate but jointly managed group ranches called Ilmotiok and Tiemamut, just to the northeast of Mpala. These regions are characterized by very different governance strategies but, as they share a regional ecology and many individuals via a flow of employees living and working in both regions, their juxtaposition offers insights into the ways in which each are managed and transitioning. Further, a comparison and contrast as well as a discussion of the flow of people, institutions, and ideas between and among these neighboring communities offers insight into the management of Laikipia district as a whole, a place increasingly being recognized as a hub of conservation interest.

More specifically, this paper focuses on shifting norms of perceptions of land use and land use change in these landscapes. Relying on information from interviews of key informants and surveys of 79 pastoralists split between these two major landscapes, I explore tolerance of wildlife by pastoralists at Mpala and their challenges (low motivation due to non-ownership and personal danger) amidst incentives for conservation (the premise of labor security); and tolerance of wildlife by pastoralists in the nearby Maasai group ranches and their challenges (poverty, personal danger, and limited access to resources) amidst incentives for conservation (the influence of NGO support in the region and promise of ecotourism venues). There is a transition of knowledge or information output in both landscapes: a shift at Mpala toward privatized labor and a shift in the nearby group ranches toward privatized knowledge for tourism that when paired together, offer a unique entry point into understanding tradition and transition in Kenya and, perhaps more broadly, in the dynamic world of integrated conservation and development agendas in pastoralist communities.

The Laikipia District

The Great Rift Valley's Laikipia District in west central Kenya lies just northwest of Mount Kenya and falls mostly in the plains between the Ewaso N'giro and Ewaso Narok rivers and their tributaries.¹ Altitudes vary from 1370m in the lower Ewaso N'giro basin to 2280m in the foothills of the Aberdare Mountains, and the majority of the Laikipia Plateau's 9500km² lies between 1676m and 1980m (Denney 1972). The district covers an area that ranges just north to south of the equator, but due to altitude the region is characterized by moderate temperatures. There is a low, erratic annual precipitation, and the semi-arid climate allows mostly only for grassland, bushed grassland, and wooded grassland common to the Great Rift Valley.

¹ The river's name comes from the local vernacular, meaning brown or muddy water. In some literature and policy discourse of the region it is also called the "Ewaso Nyiro." Most people in the region, however, simply refer to the river as "Ewaso."

Laikipia is commonly being acknowledged as one of the most crucial areas for biodiversity conservation in Kenya. Wildlife densities in this region rank second only to the world-renowned Serengeti-Mara ecosystem, and large mammal diversity in Laikipia is higher than in any other region in Kenya (Gadd 2005). According to Laikipia Wildlife Forum (LWF), the region hosts a full sample of East Africa's large predators, an annual migration of over 6000 elephants, and more endangered mammals than any protected area in Kenya, including Grevy's zebra and African wild dogs (2010). Laikipia is unique, however, in that it has no protected areas; its wildlife is entirely sustained by communal and private landowners.² Livestock are kept among large-scale commercial ranches as well as in small-scale community group ranches.

Laikipia was a focal point of British colonial regimes, a region sought after as a site for cattle ranching and agriculture possibilities around the turn of the twentieth century and in following decades (Morgan 1963). The influence of this time period in which Laikipia was recognized as a frontier for British pioneers is still quite visible today. To that end, the main inhabitants of the district include British expatriates and first, second, or third-generation white Kenyan settlers as well as Laikipiak (later referred to as Mukogodo) Maasai, Pokot, Samburu, and Turkana communities. Although Laikipia is gaining popularity as a tourist destination and an economic resource for Kenya, the jigsaw of power relations, resource disparities, and individual desires for land use profit amidst these different communities makes the district a complicated mosaic of wildlife-tolerant and wildlife-intolerant parcels (Gadd 2005). The fact that there is no official regional policy for managing wildlife in this landscape makes it very difficult for any given conservation actor to promote sustainable practices amidst locally managed parcels of land that share wildlife moving daily and migrating seasonally.

Mpala: A Multi-use Landscape

One large stakeholder in the region is the Mpala Research Centre, a well-known research facility situated on 48,000 acres of the Laikipia Plateau, just northwest of Nanyuki. Mpala is a multi-purpose consortium managed partly as a wildlife conservancy, partly as a research centre with strong institutional ties to universities in the United States, partly as a third-generation expatriate cattle ranching operation, and partly as a nonprofit NGO interested in community development projects. Mpala's history, too, is an interwoven narrative of these different actors and partnerships working in the same landscape to different ends.

After a series of landholders during the early colonial period, the region now known as Mpala was purchased in 1952 by a British family; in 1969 it was restructured for the purpose of commercial cattle ranching. The land experienced more changes in terms of management and overall vision until 1989 when the Mpala Wildlife Foundation was created with the intention of

² The term "private landowners" is a phrase commonly used in this context to refer to the ways in which land in Kenya specifically is held, not under freehold or titled land, but under a 999-year leasehold. See Denney (1972) for an earlier discussion of this practice and of parceled land in Laikipia. At the time of this draft, just following the affirmative referendum vote on 4 August 2010 to the proposed new constitution, there is still much uncertainty as to how that 999-year leasehold and other land tenure policies in Kenya will change at the national or local level; specifically, there will be a shift to a 99-year leasehold for foreigners, but it is unclear as to whether that lease period starts after the constitution has been enacted or at the original beginning of individual leases themselves.

“conserving the area’s land and people.” The foundation created a wildlife conservancy, a community health center and outreach program, and later, in collaboration with the Smithsonian Tropical Research Institute, Princeton University, the Kenya Wildlife Service, and the National Museums of Kenya, the trust established the Mpala Research Centre. The conservancy is not used for purposes of tourism, but instead as a space for conservation and research associated with the research centre. The community health center focuses on the Kenyan employees at Mpala and sometimes members of surrounding group ranches. The research centre has space for over thirty researchers and hosts short-term as well as long-term researchers and projects.³

On the side of ranching operations, Mpala hosts approximately 2100 cattle, 300 sheep, 100 goats, and 150 camels.⁴ Animals are sold for the purposes of meat in markets both in and outside Laikipia and milk is used by Kenyan employees on site. There is a highly regulated system for a weekly “cattle dip”—an insecticide and acaricide used to control ticks, mites, lice, and other pests that is administered from high-power sprays and a large generator run by diesel—for all of Mpala’s animals.

Mpala’s animals are looked after by pastoralists from nearby communities and regions elsewhere around the country; this group includes mostly Maasai, Turkana, and a few Pokot herders. They are all employed as herders by the wildlife foundation. They live and work on Mpala property, tending to livestock on a daily basis in small groups. They do not, however, have any kind of share or ownership in Mpala’s animals, nor can they keep their own animals on Mpala property. Furthermore, ranching operations are controlled almost exclusively by a white Kenyan ranching manager. This style of management, of bringing in herders to act as caretakers rather than owners of livestock, I will argue, has unusual implications for local pastoralists and their livestock, their culture and ecology, and the entire socio-ecological system.

Mpala’s animals are subdivided into 6 *bomas* that are spread out over the landscape. Each *boma* has a “headman” or supervisor, a watchman, 2-7 herders, and sometimes 1-3 temporary employees. Each *boma* typically has a certain subset of livestock: cows with new calves and recently weaned calves (“weeners”), mature cows, mature bulls, bulls ready for market, and various mixes of goats, sheep, and camels, though these groupings are slightly in flux. *Bomas* and their employees are moved around the landscape according to the ranching manager as needed in order to prevent degradation and, sometimes, to take part in or avoid research experiments focusing on vegetation growth or grazing pressures by various animals at Mpala. *Bomas* are constructed in part with traditional *Acacia* branching (“fixed *bomas*”) and in some cases also with newer chain-link fencing that is easily transportable (“mobile *bomas*”). Animals are taken to watering points at either the Ewaso Ng’iro or various manmade dams built on Mpala land. Fixed *bomas* are moved every 6 to 12 months, and mobile *bomas* every two to five months.

³ Predictably, the influences of these actors are complicated, as are their interactions and history, which is abbreviated here. The purpose of this paper is to understand herding practices and knowledge surrounding those practices within the context of this management system, but much more could be said about the local and broader challenges and opportunities of the entire system as a whole and its parts.

⁴ These numbers fluctuate seasonally and yearly, due in part to births and deaths but also due to sales to markets for beef production. These numbers were accurate as of July 2010.

In many cases, herders' families live with them on Mpala's land. Of the total 39 herders employed at Mpala, only 1 was female, who attended to Mpala's sheep. Other females (wives and children of male herders) living in *bomas* were not employed but were responsible for building and maintaining traditional mud/dung/ash shelters and traditional *Acacia* fencing for the *boma* structures, as well as maintaining iron sheet shelters and chain-link fencing for the mobile *bomas*, all newer items provisioned by Mpala. Mpala hosts a primary school for children of employees (herders and other staff members), as well as a small clinic.⁵

The average time of employment for herders at Mpala was 7.3 years; the newest employee had begun work a month prior to this study, and 1 herder had been working since the creation of the cattle ranch for a total of 31 years. The average age of herders was 38.6 years, with the youngest 21 years and the oldest 71 years. Herders were predominantly Turkana and Maasai, and the majority had been herding their own animals or their family's animals before coming to work at Mpala.

Laikipia's "Maasai": Life in the Group Ranches

Just to the northeast of Mpala's border exists a group of Maasai group ranches, two of which were of focus in this study: Ilmotiok and Tiemamut. These ranches are much smaller than Mpala by land area but have a much larger population residing within their boundaries.

The ethnic composition of these communities is fully Maasai. The Maasai as they exist in these group ranches descended from the Laikipiak Maasai who moved into the region in the 1800s (Galaty 1993). The various subgroups that were forming at this time (Mukogodo, Iing'wesi, Mumonyot, Digirri, LeUaso, and Samburu) underwent dozens of forced migrations, relocations and merges with each other, and shifts in subsistence strategies that included hunting, gathering, beekeeping, and herding (Cronk 2004). The Mukogodo, a group of hunter-gatherers and beekeepers, specifically moved into the areas now known as Tiemamut and Ilmotiok. The communities now define themselves as Maasai pastoralists, though they do engage in some beekeeping still as well.⁶

Ilmotiok and Tiemamut are governed by the same chief who resides in Tiemamut, the larger of the two group ranches. Ilmotiok has four villages (Lorubai, Naserian, Ilmotio, and Loshaiiki), as

⁵ Of the herders with children in school (20), however, the majority (15) claimed that their children went to school elsewhere outside Mpala.

⁶ Elders in Ilmotiok and Tiemamut referred to their ancestors as "Mukogodo" or "Mukogodo Maasai." For a complete discussion of the Mukogodo in this area and their transition to Maasai from what many refer to as "Dorobo" (*iltorobo*), literally meaning "people without livestock," see Cronk (2004). For a detailed look into the complexity that is involved in defining "Maasailand" or "Maasai," see Galaty (1993) and Spear (1993). Despite complicated and recent multiethnic interactions of these groups, in this paper I use the term "Maasai" not just as a linguistic definition for Maa-speakers but because that is the way in which individuals and the communities defined themselves to me.

does Tiemamut (Barsaboi, Endonyonapi, Tiemamut, and Loshaiki).⁷ There are approximately 105 households in Ilmotiok and 242 households in Tiemamut.⁸

The major difference in terms of herding strategies between the two communities is that herders in Ilmotiok bring livestock to the Ewaso Ng'iro for water (which forms the northwest border between Mpala and Ilmotiok); in Tiemamut, herders bring livestock to one of several dams located in the community constructed recently by NGO efforts, though people used to walk much further to also take animals to the Ewaso Ng'iro as well.

In terms of conservation and development efforts, both Ilmotiok and Tiemamut have set aside “conservation areas” in their communities. These are areas in which livestock are not to be grazed so that wildlife can access this vegetation. The incentive for Ilmotiok is its nearby ecotourism venture in the form of a tourist lodge called Ol Gaboli. The idea for the lodge began in 2002 in which several groups including Laikipia Wildlife Forum (LWF), the European Union (EU), and the Netherlands Development Organisation (SNV by Dutch acronym) contributed funding and logistical support. It became partly operational in 2006 and is intended to be a female-run business, though it is still in transition and not functioning regularly today due to management complications. The incentive for Tiemamut is funds from African Wildlife Foundation (AWF) that will pay for children of registered group ranch members to attend secondary school if the conservation area is left ungrazed and available for wildlife. The dams used in Tiemamut have also been built with support from NGOs. There are schools in both communities, but no clinics; the closest are in Kimanjo or Ol Donyiro, which are nearly an hour drive or a 3 hour walk away.

Community relations “across the river”

There are mixed feelings about the relations between Mpala and its neighboring communities of Ilmotiok and Tiemamut, and many feel that the Ewaso Ng'iro border does more than just cut an otherwise shared geographical and ecological landscape: there is currently no physical bridge connecting the two spaces, and it is a matter of opinion as to whether this means there is no metaphorical bridge either.

Many group ranch members complain about the vast disparity of lush grazing land available at Mpala versus Ilmotiok and Tiemamut, particularly during the dry season. One member explained that while Mpala offers dry season grazing privileges for a fee, group ranch members feel that it is extremely unaffordable (approximately 200ksh per animal per month), particularly when other private ranches' rates are much cheaper (approximately 10ksh per animal per month).⁹ But

⁷ There are technically two villages called Loshaiki, one in Ilmotiok and one in Tiemamut. They are divided at the border of the two communities by a seasonal river of the same name. This instance is a good example of the ways in which these communities are at once independent and a single unit.

⁸ It is difficult to obtain an accurate census of these communities, and these numbers are uncertain. Elders in Ilmotiok claimed that there were approximately 73 *bomas* for the 105 households in the community; this estimate is unavailable for Tiemamut, but there elders claimed that there were approximately 600 people in the community's 242 households, though only 300 were registered members of the group ranch.

⁹ Interview with the author, 13 July 2010.

another member claimed that “Mpala is friends and neighbors of the community,” further explaining:

They have brought tractors in for water and helped during the drought, have helped with bringing stones and trees, tracking down animals and/or dealing with raiding problems, and money; they have employed more people here, and help with sickness. They know that in the communities water is in the river – we are reliant on no other water source, so they have helped.¹⁰

Although these relations are complicated, differences in management structures are outlined here not to emphasize political complexities or relational development challenges, but to situate institutional presences within the context of shifting land uses, livelihoods, and perceptions. These complexities are noted to clarify that the perceptions outlined next do not exist in a site-specific void where these larger issues, challenges, and opportunities for regional development do not exist; the fact that some employees at Mpala come from the nearby communities is just one reason of many that these spaces and their inhabitants are intertwined. Their entangled stories are presented next.

Pastoralist Perceptions

You know what to say, but you do not know what you might be told.
--Maasai proverb

Many different theoretical approaches and methods have been used to understand African pastoralist societies, drawing from the fields of social and ecological anthropology and from political economy (Borgerhoff Mulder and Sellen 1994). In this study I follow others mentioned previously who have used perceptions of pastoralists to glean information about environmental change. Perhaps most importantly methodologically, I also follow Dyson-Hudson’s (1972) call that to understand herders, one must understand herding.

To understand herding, I too spent a season herding: I conducted fieldwork during the months of May to August 2010 around the ranching operations at Mpala and in the nearby Maasai group ranches of Ilmotiok and Tiemamut. Each day was spent walking with herders to learn of their knowledge, attitudes, and perceptions of their environment and of land use change, as well as of their interactions with livestock, wildlife, and regional management organization.

Daily field inquiries attempted to understand the networks of pastoralist knowledge within the ranches, and how those networks are shifting due to institutional pressures of conservation and development in this region. Informal and formal interviews were conducted with key informants, and a survey tool was used for a total of 79 herders across study sites.

These methods allowed for a simultaneous focal point of individuals and communities. This is in accord with scholars who note that the role of individuals in ecosystem-level analyses within the social sciences have only recently been emphasized (McCabe 2003; Rappaport 1990). Although the ecosystem approach is useful for broad comparisons and for application outside of study

¹⁰ Ilmotiok council member, interview with the author, 13 July 2010.

sites, understanding individuals as adaptive units and as individual decision-makers is important to understanding large-scale behavior and ecosystem function (Butzer 1990). I therefore follow Moran's call (1990) for the integration of multiple models and multiple levels of detail into holistic understanding of individual, social, and ecological interactions within a study site.

The perceptions outlined next attempt to display the variations and patterns of both individual and community-level analyses across similar ecological and dissimilar social landscapes. By analyzing perceptions of land use change, tolerance of wildlife, differences in attitudes shaped by gender and age, and memories of landscape, we can see how different governance strategies in pastoralist landscapes encourage, complicate, or dilute complexity, and what the outcomes of those strategies may mean in the near and far future.

Land Use and Livelihoods

Interviews with key informants at Mpala included the present and past ranching manager and assistant managers, long-term researchers studying livestock-wildlife interactions, and supervisors of each *boma*; key informants in the group ranches included present and past chiefs, councilmen, schoolteachers, managers of Ol Gaboli, and research assistants. Survey respondents included 39 herders at Mpala and 40 herders in the group ranches for a total of 79 respondents. This represented all herders at Mpala (38 male and 1 female) and a sample of herders in the group ranches (20 in Ilmotiok, 10 male and 10 female; 20 in Tiemamut, 10 male and 10 female). Females were included as respondents and considered herders in the group ranches because they claimed to in many cases take primary responsibility for livestock at the household level in terms of care and/or decision-making. Further, Dyson-Hudson (1972) notes that it is important to take a balanced approach for analyzing how both men and women understand their roles and the labor inputs of animal husbandry and other economic ventures.

These mixed methods were used to elucidate open-ended narratives of history and change, as well as to create a means for comparison across case study sites.

What has changed?

To a very simple and purposefully vague question of “what has changed since you have been here?” all but nine respondents at Mpala commented immediately and most emphatically on what I am calling changes at the institutional level (the other nine claimed there had been no changes). I refer to these changes as institutional to mean changes in management by authority; changes that Mpala herders have very little or no control over, and instead experience for better or for worse as bystanders. Answers relating to institutional change from the vast majority of herders ranged from responses directly related to employer-employee relations, infrastructure such as water delivery, or ways that people were managed as employees.

None of these herders responded at first about the land, livestock, or wildlife: the issues that one could expect to be most pressing on herders' minds. Asking the same question of pastoralists in nearby group ranches revealed these latter points—of concerns more ecological in nature—to be the most pressing issues of concern.

Specifically, herdsmen at Mpala pointed to employee benefits, salaries, and overtimes as the “change” they have experienced: “Nowadays we are paid overtime, at first we were not paid these,” and “Pension: we are getting our payments when we leave the job, at first we weren’t.”¹¹ They pointed to the provision of uniform items or other supplies: “There are some changes, especially in the equipment when we are herding, like raincoats.” They noted changes in the philosophy of employees working as individuals or as teams: “On the side of management there are some changes, because nowadays we are working as a team; at first we were keeping ourselves apart from others.” Some discussed shelters as part of the living-working arrangement that is life at Mpala, specifically referring to provisions of iron sheets for housing rather than traditional mud/dung/ash *bomas*: “In terms of places of living, it has changed, though not to the best standard, because sometimes you leave your food inside and when it rains you meet that all of them have been destroyed by rain.”¹²

Most pressing on herdsmen’s minds was the issue of water—but water from artificial sources, and within the context of human, not livestock, consumption and use. One herdsmen who had been working at Mpala for fourteen years explained:

Availability of water and means of supply have changed because at first we did not have enough water like today; you see nowadays areas like the borehole, but at first we were taking water from the river and there was nobody to bring water to us, we were just using it by ourselves. That’s one of the changes we have experienced. Only that, there is no other change.¹³

The herdsmen who had been working at Mpala for the longest time period of any, for thirty years, echoed this point:

The settled areas have changed; at long past we were staying outside, and the way we get water nowadays is good because nowadays tractors bring water; at first we were going to fetch water ourselves. Those are the changes that have come.¹⁴

The propensity toward focusing on the institutional presence of Mpala first and foremost was similar on the side of management. When asked, “What is the biggest challenge of managing cattle at Mpala?” the answer that the assistant ranching manager gave had only little to do with cattle directly: “When you are managing people, there is a big problem. Some people [herders] come in shouting, something like that, so you will [have to] be talking with them without using force.” Another employee who works closely with the assistant manager echoed this claim from his own observations of manager-employee relations:

It is hard to find a language in order to cope with people because you are dealing with people in different minds, you see, especially when the people who are herdsmen come,

¹¹ This change is in accord with labor laws passed in Kenya in 2007 that require overtime compensation.

¹² Interviews with the author, June-July 2010.

¹³ Interview with the author, 17 June 2010.

¹⁴ Interview with the author, 17 June 2010.

you know he is the manager and he is the one who deals with them outside. Now that's one problem of the management of the livestock, especially here, because people are many and from so many different places, and to outrule them it becomes a bit hard because of different minds.¹⁵

Again, the focus—"that's one problem of the management of the livestock"—is in fact not really about the livestock itself, but about the *people* herding the livestock. This is not to point out that employer-employee relations or work ethics differ in any way in this context from any other system, but simply to point out that the issues most pressing on people's minds at Mpala in terms of challenges for herding are quite wrapped into the political structure and organization of the consortium. From the herder's perspective, the success of livestock is not the focus of herding at Mpala. Herding is work; herding is a job; herding involves governance and rules and salaries and water provisions.

In the group ranches, however, the story is different; herders did in fact discuss the land, livestock, wildlife, and water. In fact, 35 of the 40 surveyed did indicate most prominently changes in landscape (6), changes in rainfall patterns or droughts (19), changes in livestock productivity (8) or disease (3), or human health associated with changes in these factors (7). The remaining 5 surveyed commented on livelihood shifts related to the ways in which people are not and cannot depend on livestock as much as they could in the past. Table 1, below, illustrates these responses and the differences between herders in the communal group ranches and the private ranch.

Table 1. Management issues and resources perceived to have changed by survey respondents: "what has changed since you have been here?" (n=79)¹⁶

1a. Ilmotiok and Tiemamut group ranches (n=40)

Most important changes stated which include land, livestock, and wildlife (35 total):

Changes in rainfall patterns or droughts (19 responses)

"Drought is coming all the time; it didn't use to come at such high rates."

Changes in livestock productivity (8 responses)

"Drought never before caused the death of goats, but now they die even in minor droughts."

Changes in human health related to land/livestock productivity (7 responses)

"We have changed our feeding habits. There is not enough milk—we used to take much more."

Changes in landscape (6 responses)

"Some trees have disappeared, some are coming to fill open spaces; bees are disappearing too."

Changes in livestock disease (3 responses)

"We are seeing them increasing over time."

Most important changes stated which do not include land, livestock, and wildlife (5 total):

Changes in livelihoods and conservation employment (5 responses)

"People do not depend on livestock as much, but instead on other means of employment."

¹⁵ Interview with the author, 8 July 2010.

¹⁶ Interviews with the author, May-August 2010.

1b. Mpala Ranch (n=39)

No change (9 total)**Most important changes stated which include land, livestock, and wildlife (0 total)****Most important changes stated which *do not* include land, livestock, and wildlife (30 total)**

Changes in management of employees (15 responses)

“It’s more fair in terms of management than in the past.”

Changes in management of water (10 responses)

“The only change we have experienced because we get water brought in now.”

Changes in management of livestock (8 responses)

“On the side of management, they have decreased the number of cattle per person.”

Changes in management of wildlife (2 responses)

“On the side of management, they have brought researchers who come to study livestock and wildlife.”

These responses reflect the concerns of governance in each system and the perception of labor as either employment (Mpala Ranch, where perceptions of change never prominently centered on land, livestock, or wildlife) or as a livelihood (Ilmotiok and Tiemamut group ranches, where the majority of primary perceptions of change did center on these factors).

Of all the possibilities of prominent change mentioned by herders, wildlife factored into responses least. But wildlife was still an important topic of discussion for many reasons, which I explore in the next section.

Tolerance of Wildlife

Many scholars have shown that looking at wildlife tolerance levels, particularly of pastoralists, is a valuable method of informing policy (Gadd 2005; Wambuguh 2007), and this technique fits within the analytic of perceptions as well.

It is important to remember that while Kenya supports some of the most substantial concentrations of wildlife species in all of Africa, over 70% of the nation’s wildlife lives outside protected areas in human-occupied land during all or part of the year (Ottichilo et al. 2000; Okello 2005). Laikipia is one example of an important locale for this wildlife.

Most of these areas are experiencing trends of increasing conflict between human populations and wildlife conservation efforts. Several assessments in Kenya, for example, have shown that 75-90% of herders in various regions have reported problems with loss of resources near protected areas, predation, or even personal injury (Campbell et al. 2003; Norton-Griffiths 1996). Many regions in Kenya are facing rising resource overlap and an increased prevalence of human-wildlife conflicts among pastoralists in wildlife dispersal corridors (Campbell et al. 2000). Pastoralists frequently incur direct wildlife-related costs due to livestock predation as well as indirect costs due to land degradation from overgrazing.

Still, however, tourism accounts for 12% of Kenya's gross domestic product, and conservation through ecotourism and other development projects is on the rise (Akama 1999). Mpala and its neighbors of Ilmotiok and Tiemamut offer different examples of these efforts, efforts that are recognized elsewhere in Kenya and Africa at large, and teasing out the complexity of pastoralist perceptions of wildlife offers insight into the interplay of conservation and development on a broader scale.

Old and new histories converge: “Lions have the hard time of it”

In the group ranches specifically, discussions of wildlife were intimately tied with discussions of livestock. Group ranch members emphatically pointed to the importance of livestock keeping. “It is in our veins,” one past council member in Ilmotiok told me, continuing, “Keeping livestock: it is so much a part of what we do. We can't keep adding animals and overgrazing because we are slowly killing ourselves. I am trying to teach the community of conservation.”¹⁷

The idea that the community need to be taught conservation—even as stated by a member of the community—is an interesting one. This group member spoke of historical relationships with wildlife, mentioning Maasai boys becoming warriors (*ilmurrani*) and killing lions; he claimed there need to be new ways to think about these rites of passage. Goldman (2003), Parkipuny (1989), and other scholars point to the fact that even without invoking romantic, historical notions of Maasai living and caring for wildlife, Maasai have in fact been more tolerant of wildlife than other ethnic groups. That relationship, some would argue, has changed due to an onset of policy regulations for community land holdings.

One herder explained to me, for instance:

Nowadays the wild animals have increased in number because there is no poaching going around and they don't fear people, you can even intermingle with them because they are very free with people nowadays, that is the difference from right now to the past.¹⁸

But in other cases there is still a lapse at the citizen-state level. A group ranch member pointed toward the new constitution as a potential site for change: “We either need compensation or we want to own elephants like we own our cattle. I want to be able to sell two elephants in the same way I sell my cattle, if there is going to be no compensation; it is the same idea.” Here we see this individual invoking notions of profit and the idea of making a business out of wildlife. But the fundamental issues, not of the least including safety, still remains a forefront.

This individual, in fact, left me with haunting words: “Be careful out here: *we don't give compensation.*”¹⁹

¹⁷ Past Ilmotiok council member, interview with the author, 16 July 2010.

¹⁸ Interview with the author, 17 June 2010.

¹⁹ Interview with the author, 16 July 2010.

Wildlife, benefits, and employment: A disconnect of purpose

Interestingly, in terms of wildlife specifically, herders at Mpala most often said that there are benefits to having wildlife at Mpala, though nearly none of them said that they individually benefit from wildlife presence, and none said that they benefited by being employed by a wildlife research centre. On the other hand, the Maasai in nearby group ranches, who happen to have ecotourism lodges, were more likely to say that there are no benefits to wildlife even though they are directly receiving income from wildlife tourism in this area. It seems in both communities there is a disconnect between making claims of wildlife-related benefits and actually recognizing the source or intention of those benefits, or at least in recognizing one's connection to social infrastructure for wildlife and potential benefits.

It seems that the conservation and development agendas here creates a range of attitudes of socioeconomic transformation. It seems that in some ways community members are bribed into conservation amidst a socio-ecological system, or at least into believing what the purpose of that system is or is not. Despite claims for benefits even at Mpala, 37 of 39 herders (and 37 of 39 herders in the group ranches as well) claimed that wildlife were causing problems, citing the danger to humans and livestock, among others.

Does gender matter?

It is furthermore apparent that not just herders but particularly female herders do not believe that the conservancies in their communities are actually benefiting them. A few female herders were quick to point out the fact that some changes have included educational funding for their children, but no one mentioned directly that the presence of wildlife in the conservancy is what funds that education.

It is the same disconnect between benefits and attitudes of benefits at Mpala. What does this lapse in knowledge and communication do to herding? To wildlife conservation efforts? To maximizing ecological efficiency and sustainability? It is difficult to know from the present case study, but in thinking of the long-term management of land parcels in Laikipia and in any landscape in which private, public, and communal lands are strung together, it seems it should require more attention than it has been given.

A market for tolerance

Clearly, the opportunity for employment at Mpala is a draw for many would-be herders, and this opportunity is difficult to criticize; this is not the point of this paper. Instead, it is important to understand shifts in perceptions of pastoralists based on their institutional pressures and challenges. Tolerance of wildlife by pastoralists at Mpala is reflective of the fact that herders do not own livestock and there is a different conception of personal danger involved in a job as a livelihood rather than a livelihood itself. Tolerance in the group ranches is reflective of their challenges of poverty, danger, and limited access to resources amidst incentives for conservation. In each case, there is a market for conservation, a market for development; a market for labor, a market for a new livelihood; and with these changes, a response in the form of changing perceptions.

Particularly interesting were answers given to the question, “What is the best way to deal with wildlife problems?” At Mpala, 15 herders were asked this question, and 11 responded by discussing either implicitly or explicitly (and, often with the English word) the idea of a “park.” “It would be better,” one herder explained, “if there was a park with wildlife on one side, livestock on the other.”²⁰ Others claimed that nothing could be done. In the group ranches, 16 of the 24 herders asked gave the same answers.

These herders’ lives are wrapped up into systems requiring the integration of humans, livestock, and wildlife, all as a coupled human-natural system. Their perceptions of those aspects of the system are changing, but there is still the insistence from within that there be separation; even as livelihoods are becoming more and more wrapped up into the integrated system that conservation and development agendas are trying to create in this landscape.

A New “Ecology”

A ranching administrator justified the Mpala model, explaining, “[We are] trying to show the pastoralists, show the world, that both can be done. Before everything was separated in parks, but there isn’t enough land now.”²¹ The “both” here refers to conservation and ranching. If there “isn’t enough land now,” then what is happening to the landscape and this system?

What is happening is the origination and development of a new kind of “ecology,” one that joins culture and policy and labor and ecology, too. Rather than make this another tale of mobility lost and challenges faced in pastoralist landscapes, it is important to point out that the conservation and development experiment that is Laikipia is one where conservation labor is clearly a driver for changes in livelihoods and, as I have shown, in perceptions of land use change.

Herders at Mpala who think about the land and their relationship with it think about iron sheets, raincoats, metal fences, and boreholes; these concerns are focal points at first look seem a strong diversion from their neighbors who follow new but arguably more ‘traditional’ grazing schemes and speak of vegetation, rivers, and ticks. But the transition is not one to a loss of ecological knowledge by any means. Fences and boreholes are just a *new* kind of ecology, and individuals at Mpala are just as in tune with their ecology as their neighbors are with concerns of *Acacia* branches and rivers.

It seems that this ecology is creating a new manner of discourse, what Hajer (1995) defines as “a specific ensemble of ideas, concepts and categorizations that is produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities.” The new ecologies emerging of livelihood transition and through perceptions are new “story-lines” that create meaning and encourage action (Hannigan 2006). They direct ideas about how accounts of the past exist, how realities are shaped, and what opportunities can

²⁰ Interview with the author, 30 June 2010.

²¹ Interview with the author, 4 June 2010.

be taken to be possible in the future. In Laikipia, these realities are important ones, both for biodiversity conservation and for human development needs and desires.

Conclusion

The daily path never ends.
--Maasai proverb

While I have taken a case study approach, I have tried to outline complexities that are shared in a similar ecosystem, as well as major differences that are essential to understanding livelihood transitions in this landscape. The intention is not produce a model prescription for what to do or what not to do, but to highlight the challenges that are inevitably produced when conservationists transform landscapes—whether those conservationists are white or black Kenyans, local youth or global NGO officials. The systems discussed here are unique in their own right, but the challenges they face of trying to couple conservation and development with land use and livelihood changes are certainly not.

Goldman (2003) explains that although it is easy to see conservationists could embrace local knowledge of ecology in a given landscape, this would require that those in power acknowledge this knowledge and its value. It is particularly useful to consider these complexities of power and knowledge and a new kind of ecology in Laikipia, as Mpala is recognized as a centerpiece and model of the district-wide Laikipia Wildlife Forum (LWF), an organization intended to conserve its ecosystem and improve the livelihoods of its people. The implications of this management system that creates new ideals of human-wildlife-livestock interactions are difficult to know. The uncertainty of social stability for such a system is unclear at best, particularly in a system facing increasing environmental variability, an inexact change in land tenure policy, and the constant challenges of financial security amidst local, regional, and global economic hardships. Before extending this model elsewhere, perhaps a look beyond traditional ecology into the new ‘ecology’ of the region is required. Perhaps the insights of local individuals, transitioning community members, and elders should be voiced; perhaps their stories should be told, and perhaps we should listen.

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Part Two

Labor as a Moving Market: A New Mobility in Laikipia, Kenya

Abstract

This study focuses on central Kenya's Laikipia District, a region increasingly noted for its high levels of wildlife diversity and density. It is a unique region, however, in that its conservation and development efforts exist in a district with no protected areas and in a mosaic of private non-African large-scale ranching operations interspersed with African communally owned group ranches. I outline the governance strategies of two different conservation regimes of important neighboring stakeholder parcels in Laikipia, Mpala and Ilmotiok/Tiemamut, and how these regimes are driving livelihood transitions of pastoralists. Specifically, I outline the ways in which herders are shifting from being animal owners to animal caretakers due to the privatization of pastoral labor, and the ways in which this shift is apparent through decision-making institutions evident in these study sites. I also touch on the cultural ramifications of these shifts and other conservation drivers in order to show that herd mobility, a strategy recognized as crucial to pastoral success, is being replaced in this region in favor of a new type of mobility based on labor and employment.

Introduction

Scholars of Sahelian economies are increasingly finding evidence for new markets for pastoralism as well as pastoral movements in Africa (Adriansen 2006; Bassett 2009; Bassett and Turner 2007; Turner 2009). Some of these transitions include wealthy pastoral families acquiring herding labor, individuals seeking employment as hired herders, or pastoralists transitioning to other economic ventures such as agropastoralism in rural areas or business ventures in areas closer to urban centres, among others. Many of these transitions are the result of new land policies (Turner and Hiernaux 2008; Fabusoro et al. 2008; Bassett 2009), new institutions emerging from increasing instances of individuals employed as herders (Turner 2009; Turner 1999), or the need for pastoral adaptation to changing landscapes or ecological conditions (Nielsen 2010; Galvin 2009).

These transitions directly change the ways in which traditional knowledge is shared, used, and understood, as well as power relations due to varying decision-making patterns. Moreover, transitions in these land use systems often come into conflict with the traditional foundation of pastoral societies: mobility. Herd mobility is the strategy of pastoral communities across the world to adapt to vegetation, water, and disease fluctuations in environments characterized by spatial and temporal variability (Bassett 2009). In high-risk semi-arid rangelands, where the majority of African pastoralists reside, mobile pastoralism offers an efficient and conservative system of production. Herd mobility as a livelihood strategy is supported by ecologists as well as social scientists who study the adaptability of common property systems (Bassett 2009). But the influx of policies or informal regulations that prevent mobility, as well as markets that create

incentives for non-mobile livelihoods, threaten to rearrange this arguably sustainable historical tradition (Gadd 2005; Parkipuny 1989).

This new era of economizing the act of pastoralism has been recognized in West African nations of Burkina Faso (Nielsen 2010), Mali (Turner 2009), Côte d'Ivoire (Bassett 2009), Nigeria (Fabusoro et al. 2008), and Senegal (Adriansen 2006), but there is little scholarly attention to this process defined as such in East Africa. The reason for this may be that studies devoted to transitioning pastoral land use systems in East Africa often focus more significantly on tourism-driven conservation and development. Pastoralists are studied here with reference to changing ecologies and changing narratives of conservation agendas rather than as economies of themselves. Here I respond to this norm by uniting these arguably more common narratives of the influence of conservation on East African pastoral societies with the narratives of privatizing pastoral economies studied in West African societies.

In this paper I outline two case studies of pastoral communities in central Kenya to discuss the privatization and commercialization of traditional knowledge and environmental labor for conservation purposes, and I hypothesize on the ecological consequences and social outcomes of this privatization. I use a political ecology approach to understand decision-making strategies in these pastoral systems as it is transitioning through new economies. In these landscapes an opportunistic use of resources has been created not focused on mobility but instead on labor availability. New economies created through labor flows of employers, employees, and animals have created a shift from animal ownership to one of animal caretaking, and I discuss the implications for these shifts in this ecosystem. In doing so I take an institutional approach to analyze new decision-making strategies and new livelihoods through shifting governance strategies. Specifically, I follow Agrawal and Gibson's lead (1999) to engage with institutions rather than communities to understand how resources are managed in and across my study sites.

Following the lead of Bassett (2009), I engage with literature on territorial-based approaches to conservation and development agendas. Specifically, I follow his call to demonstrate within my study sites "how the spaces and scales of development and environmental conservation programs often fail to match the 'action spaces' of humans and other species." I outline the hierarchies of power and associated systems of knowledge- and non-knowledge-based decision-making strategies that conservation and development agendas have created in central Kenya to show how they are transforming landscapes and societies. Using evidence that pastoral mobility and herd productivity are dependent on one another, I explore the implications for a system that ironically creates new ecologies through moving economies while preventing physical movement of the things that make up those economies.

Background

This study centers on the Laikipia District of central Kenya, an area increasingly studied as one of the most crucial areas for biodiversity conservation in Kenya (Gadd 2005). Wildlife densities in this region rank second only to the world-renown Serengeti-Mara ecosystem of southern Kenya, and large mammal diversity in Laikipia is higher than in any other region in Kenya (Gadd 2005). Laikipia is unique, however, in that there are no protected areas; wildlife is entirely

sustained by communal and private landowners. Humans, wildlife, and livestock share land and resources in large-scale commercial ranches as well as in small-scale community group ranches.

The ethnic and land use makeup of Laikipia is diverse in origin. The district was a centerpiece of British colonial expansion, sought after as a site for cattle ranching and agriculture possibilities around the turn of the twentieth century (Morgan 1963). The development of this frontier for British pioneers coincided with colonial restriction of local resource control and forced sedentarization of indigenous communities into group ranches (Campbell et al. 2000). Due to this complex history, the current residents of the district include British expatriates and first, second, or third-generation white Kenyan settlers as well as Laikipiak (later referred to as Mukogodo) Maasai, Pokot, Samburu, and Turkana communities in comparatively small communally owned group ranches. Large-scale ranching by non-Africans in fact makes up 50 to 70 percent of the district, while African ownership makes up only 7.8 percent (Wambuguh 2007).

The first case study focuses on one parcel of land in the Laikipia District, large both by relative area and by perceived importance by Kenyan stakeholders and conservationists. It is known as the Mpala Research Centre and Ranch, managed as a multi-purpose consortium that includes a wildlife conservancy, a research centre with strong institutional ties to American universities, a third-generation expatriate cattle ranching operation, and a nonprofit nongovernmental organization (NGO) interested in community development projects. Mpala's history, too, is an interwoven narrative of these different actors and partnerships working in the same landscape to different ends.

After being passed through a series of private landholders during the colonial period, the landscape now known as Mpala was reorganized by a British expatriate family for the purpose of commercial cattle ranching in 1969. In 1989 the Mpala Wildlife Foundation was created with the intention of “conserving the land, its wildlife, and its people.” The foundation created a wildlife conservancy and later, in collaboration with the Smithsonian Tropical Research Institute, Princeton University, the Kenya Wildlife Service, and the National Museums of Kenya, soon the Mpala Research Centre. The landscape is thus intended to be a space not for tourism but for conservation and ecology research, and the centre hosts short-term and long-term researchers and projects on topics ranging from territorial behavior in ungulates to relationships of mutualism between ants and *Acacia* species to micronutrient dispersion in soil types across landscape-wide rainfall gradients.

As a commercial ranching enterprise, Mpala also hosts approximately 2100 cattle, 300 sheep, 100 goats, and 150 camels. Animals are sold for meat in markets in and outside Laikipia. There is a highly regimented system for a weekly “cattle dip”—an insecticide and acaricide used to control ticks, mites, lice, and other pests that is administered from high-power sprays and a large generator run by diesel—for all of Mpala's animals. Livestock are looked after by pastoralists from nearby communities and regions elsewhere around the country; this group includes mostly Maasai, Turkana, and a few Pokot herders. They are all employed as herders by the wildlife foundation. They live and work on Mpala property, tend to livestock on a daily basis in small groups but do not have any kind of share or ownership in Mpala's animals, nor can they keep their own animals on Mpala property. In theory, ranching operations are controlled exclusively

by a ranching manager, a second-generation Kenyan from a family of British expatriate ranchers. This style of management, of bringing in herders to act as caretakers rather than owners of livestock, I will argue, has unusual implications for local pastoralists and their livestock, their culture and ecology, and the entire socio-ecological system.

The second case study focuses on two communities just to the northeast of Mpala's border, Ilmotiok and Tiemamut. These are Maasai group ranches, and much smaller than Mpala by land area, but have a much larger population residing within their boundaries. Ilmotiok and Tiemamut are governed by the same chief who resides in Tiemamut, the larger of the two group ranches. Ilmotiok has four villages (Lorubai, Naserian, Ilmotio, and Loshaiiki), as does Tiemamut (Barsaboi, Endonyonapi, Tiemamut, and Loshaiiki). There are approximately 105 households in Ilmotiok and 242 households in Tiemamut.

Pastoralists here own cattle, sheep, goats, and in some cases, camels. In both communities, individuals are transitioning to owning more sheep and goats than cattle due to recent droughts. The major difference in terms of herding strategies between the two communities is that herders in Ilmotiok bring livestock to the Ewaso Ng'iro for water (the river that forms the northwest border between Mpala and Ilmotiok); in Tiemamut, herders bring livestock to one of several dams located in the community constructed recently by NGO efforts, though people used to walk much further to also take animals to the Ewaso Ng'iro as well.

In terms of conservation and development efforts, both Ilmotiok and Tiemamut have set aside "conservation areas" in their communities. These are areas in which livestock are not to be grazed so that wildlife can access this vegetation. The incentive for this area in Ilmotiok is its nearby ecotourism venture, a tourist lodge called Ol Gaboli. The idea for the lodge began in 2002 when several groups including Laikipia Wildlife Forum (LWF), the European Union (EU), and the Netherlands Development Organisation (SNV by Dutch acronym) contributed funding and logistical support to the initiative. It became partly operational in 2006 and is intended to be a female-run business, though it is still in transition and not functioning regularly today due to management complications. The incentive for Tiemamut is funds from African Wildlife Foundation (AWF) that will pay for children of registered group ranch members to attend secondary school if the conservation area is left ungrazed and available for wildlife. The dams used in Tiemamut have also been built with support from NGOs.

Many individuals from these communities are transitioning from being pastoralists to being employees of these conservation and development efforts. Though this is a transition from pastoralism to a different form of employment, the shift to a new livelihood marketed as a conservation strategy in these communities is not dissimilar from the transition at Mpala. I explain these transitions next in greater detail, as well as the shifts in governance causing and caused by new livelihoods in this region.

But first it is necessary to address the relationship between community members at Mpala and in the group ranches, as well as that of conservation administrators. There are mixed feelings about the relations between Mpala and its neighboring communities of Ilmotiok and Tiemamut, and many feel that the Ewaso Ng'iro border does more than just cut an otherwise shared geographical and ecological landscape: there is currently no physical bridge connecting the two

spaces, and it is a matter of opinion as to whether this means there is no metaphorical bridge either. The relations of those “across the river,” a local reference to this divide, are complicated, and I note this only to situate institutional presences within the context of shifting livelihoods in a region with both local and regional challenges.

Transient Labor in a Private Landscape

Mobility for pastoralists and livestock exist only in the sense of a highly regulated, but informal, microcosm of an ecological system at Mpala. First, to speak to the structure of what I will call a pseudo-pastoral community, Mpala’s animals are subdivided into 6 *bomas* that are spread out over the landscape. Each *boma* has a “headman” or supervisor, a watchman, 2-7 herders, and sometimes 1-3 temporary employees. Each *boma* typically has a certain subset of livestock: cows with new calves and recently weaned calves (“weeners”), mature cows, mature bulls, bulls ready for market, and various mixes of goats, sheep, and camels, though these groupings are slightly in flux. *Bomas* and their employees are moved around the landscape according to the ranching manager as needed in order to prevent degradation and, sometimes, to take part in or avoid research experiments focusing on vegetation growth or grazing pressures by various animals at Mpala. *Bomas* are constructed in part with traditional *Acacia* branching (“fixed *bomas*”) and in some cases also with newer chain-link fencing that is easily transportable (“mobile *bomas*”). Animals are taken to watering points at either the Ewaso Ng’iro or various manmade dams built on Mpala land. Fixed *bomas* are moved every 6 to 12 months, and mobile *bomas* every two to five months.

All of these details, however, exist with no real management plan from either the Mpala administration, or from the herders themselves, but for different reasons. The ranching manager makes decisions based on “experience alone,” and claims that “the land needs no active management.”²² The herders are in theory subject to following these decisions and, as I will argue later, usually have no real incentive to disagree with or actively refute management. They are livestock caretakers and employed herders, but they are not pastoralists in the traditional sense.

Turner (2009) writes on the shift in livestock ownership to external investors within FulBe herding communities and in other Sahelian economies. The idea of “professional herders” here is an act of security as opposed to other economic ventures for wealthy investors. Migrating herders are becoming the institution that links labor to livestock capital, an institution that is important to the future of livestock and ecological economies in the Sahel. Turner (2009) has discussed capitalistic shifts of livestock-based investments and the privatization of pastoral economies in West Africa; this shift, I argue, may factor more prominently in the future in Kenya particularly and perhaps in East Africa based on the weight of stakeholders in the Laikipia region.

Scholars have shown that many factors weight into decision-making strategies in pastoral communities, including individual characteristics of households, ecological heterogeneity, above

²² Interview with the author, 3 June 2010.

ground biomass, and seasonality (Butt 2010; Butt et al. 2009; Bassett and Turner 2007). But none of these factors are evident, or applicable, to the artificially managed landscape that is Mpala. Herders do not have autonomy to make decisions over the ways in which resources are used.

I argue that this is important due to the way in which this landscape is managed, and the discourse that surrounds its management by conservation actors. Mpala has been sanctioned by conservationists in Kenya as a model for wildlife preservation as well as human development projects based on its claims to create a living natural-human experiment. It forms the backbone of the Laikipia Wildlife Forum (LWF), an organization attempting to mitigate challenges and create connections between individual landowners and communities of Laikipia's diverse parcels. The stakes for this model are high: we know that wildlife diversity is great and that density is abundant, making conservation a top priority here. We also know that this system is being transformed in a way that has not been analyzed by scholars and policymakers in the same way that other conservation hotspots elsewhere, particularly in Kenya and East Africa, have been, due to the unique nature of Laikipia's nearly unparalleled biodiversity existing in a region with no formally protected areas. Scholars have written of pastoral transitions, challenges, and opportunities in areas near protected areas in Kenya (Butt 2011; Ntiati 2001), but little has been written on Laikipia specifically (Gadd 2005; Wambugh 2007). It is necessary that more social science research be devoted to understand the economics, politics, and cultural ecology of this region before it is deemed the primacy of integrated conservation and development agendas in Laikipia or elsewhere.

These agendas are powerful, and recognized as so in their management schemes. To put this in perspective, Robbins (2004) writes on the connection between power, forms of discourse, and environmental management:

If accounts about people like herders or farmers or things like cattle or trees are conditioned and stabilized by social structures of power, the problem is not only understanding how social and environmental conditions change over time, or how they become undesirable, or how they can be changed. The problem is also understanding how scientific accounts, government documents, and local stories about those same social and environmental conditions are formed and made powerful by state institutions, media companies, experts, and families. How do specific ideas about nature and society limit and direct what is taken to be true and possible?

Conservationists in Laikipia are re-writing the landscape by creating economies out of labor, in a way that may or may not be understood to be sustainable. Herd mobility is not an essential factor of livestock productivity in this landscape. Instead, the driver for this productivity is assumed to be human mobility, in the form of individuals moving and working.

Knowledge: The New Exchange Network in Laikipia

This labor-based mobility is multi-faceted. Individuals from all over Kenya seek employment at Mpala, for example, and new employees are often gained by word of mouth from current

employees. Temporary herders are commonly employed during livestock peak seasons only until droughts return or animals are sold and they are no longer needed; some temporary herders return in following years for more short season work. Family members among employees are common, but the social organization of employees does not reflect any type of relationship among herders.

In fact, there is an interesting phenomenon of social transience at Mpala. Herders are sometimes moved with “their” cattle to a different *boma*, or to a newly relocated *boma*; herders are sometimes moved from one *boma* to another without formal reasons; and *bomas* themselves are relocated with a day’s notice, usually with no significant input from the herders themselves. Unlike traditional pastoral communities which move households and livestock and often entire communities, here individuals are moved more often.

Furthermore, Mpala Research Centre is well equipped in terms of security for wildlife-related dangers with a plethora of radios, cell phones, staffed gates, and *askari* (guards) stationed all over its landscape. Other parts of Kenya are seeing rising increases in the number of cell phones being used as well as increasing access to service, but Mpala stands out as an exceptionally well connected landscape with easy access to charging facilities at the research centre, streams of research-related vehicles, and supply lorries. The security in this landscape of disaster relief and control of the unknown is completely different than in most communities. Does this aid in people doing their job well, or is this just a different conceptualization of what the job or the act of pastoralism itself entails?

Herding groups at Mpala, for example, each have a “headman” who is in effect in charge of the temporary *boma*, its employees, and its livestock (though again, only as a role of caretaker, as the headman has no more ownership in the livestock than any of the herders do). Each morning and evening he is expected to report via radio to the ranching manager and to keep in touch with the other headmen scattered over the landscape to report upon encountered wildlife, weather conditions, special visitors to Mpala, or other issues that may arise. This system is clearly an entirely different basis for information sharing, as other landscapes without instant access to communication are forced to rely on individuals making decisions in timely ways.

The influx of external goods and services into Mpala creates a different sense of labor and a different tone of daily work. Due to Mpala’s extensive load of visitors, security measures in the form of *askari*, cell phones, radios, vehicles, and other technologies scatter the landscape and daily workings of the ranch. Herders, too, are influenced by these technologies, whether directly or indirectly. Cell phones, for example, make it easy to avoid conflicts with wildlife on any given day: a quick phone or radio call can prevent a dangerous encounter of elephants or buffalo, and can prevent half a day’s work of gathering dispersed cattle. Control of the unknown is entirely different than in communities without these luxuries.

Spear (1993) notes that historically in Maasai pastoral communities the only real insurance herders can take to combat potential threats is to participate in “complex exchange networks” that widen risk by distributing cattle among widely dispersed stock partners and that maintain access to wet and dry season pastures. These exchange networks traditionally defined social

relations, as they were tied up in age-set relations within one's community and within age-set groups of other communities.

Thinking about this claim that herders participate in “complex exchange networks” to widen risk and distribute cattle, we can see that the type of security infrastructure and communication availability at Mpala essentially have created a new type of network. This is a new act of pastoralism, and a different conceptualization of pastoralism as a livelihood, as a job, and as a purpose in supporting—or impeding—conservation.

In a managed landscape like Mpala, there is no need (or possibility) of the exchange networks as Spear discusses: mobility does not exist in the traditional sense, and neither do social relations. Instead, technological devices aid and impede communication and in effect create new exchange networks for pastoralists. They change the ways in which herders talk to one another, to management authority, and to outsiders visiting the landscape. And, more importantly, they change the ways in which herders cannot talk to one another, as those “across the river” certainly do not have access to the same material exchanges or the knowledge that lies therein.

How might existence and extent of knowledge change through generations at Mpala? Asking this question does not evoke a call for judgment, an implication for questions of cultural authenticity, or a need for assessment of traditional ecological knowledge. It instead simply seeks a way to understand the long-term consequences of a highly managed social system.

At Mpala, there is little to no need for advanced tracking techniques, decision-making skills for herd stocking and de-stocking, or strategies of mobility for daily or seasonal existence. It could be argued that herders too are less invested in livestock rearing and caretaking at Mpala because they have no ownership of that livestock. Put another way—if a potential wildlife conflict exists in the group ranches, a herder is much more likely to put himself at risk to avoid predation or injury to his livestock if that is his sole source of income and subsistence. We can view this relationship two ways. It is clearly an advantage to avoid danger. It is also perhaps a disadvantage to an already vulnerable landscape and future resources for that herder if the landscape is not used to its maximal efficiency.

This complexity was in fact recognized by another private commercial ranch in Laikipia called Ol Pejeta, one that also employs herders in a manner not dissimilar from Mpala. Experiencing increasing human-wildlife conflicts, ranching managers here created an incentive program to offer shares in animals to employees based on months of herding success; i.e., no animals lost to predation by wildlife. Herders thus have an incentive to perform tasks to the best of their ability in a way that is different from what some herders at Mpala described to me as passive work.

While some herders turn over the employee position quickly at Mpala, others have been working on the land for 30 years and have seen their children and grandchildren born at Mpala. It is difficult to know the long-term effects of such knowledge transitions, but perhaps more interesting is the question of familial relationships and the idea of kinship. For herders, Mpala is at once work and home, and a liminal sense of home for their wives and children.

This liminality exists in terms of the way in which knowledge too is spread among herders and to the conservation administration. In many cases of natural resource management, development claims to find indigenous knowledge useful, but actually it is the scientific expertise driving that development and ultimately defining and therefore *making* indigenous knowledge (Agrawal 2002). Scientific knowledge through the lens of development creates an identity for the idea of indigenous knowledge and those that hold such knowledge.

We see this liminality in the employer-employee relationship at Mpala, but also in the ways conservation priorities are created through development agencies targeting efforts on ecological needs of the landscape. I explain this next with regard to the group ranches and their challenges and opportunities brought by privatized labor and development.

Shifting Livelihoods and Institutions in Communal Lands

The forces of development at Mpala are different as compared, for example, to the ecotourism lodges or cultural *manyattas*²³ that many of the Maasai group ranches like Ilmotiok and Tiemamut have. Even for a cultural *manyatta* that exists within the boundaries of a community, it is quite different to walk down the road to a place of employment for work and later return “home” as compared to moving onto a landscape sanctioned for both work and “home” as it is at Mpala. The idea of kinship changes in a landscape where livestock are categorized for profit and where supervisors and watchmen trade positions with other employees who speak different languages.

In the group ranches, the conception of “home” is in fact strengthened by the conservation efforts there, or at least by their theoretical goals. While the tourism lodge in Ilmotiok is not fully functioning, it still provides a space of empowerment for women and familial connections through work and progress. The efforts here create a sense of community ambition, a goal that individual scouts and lodge managers can share with youth attending school via funds from conservation areas. Pastoralism as a livelihood is no longer an organic one, but one that is privatized, and with that come in some ways the privatization of other parts of life, too.

But what exactly is that sense of community ambition? Here I recognize that the role of the community is often neglected or entirely ignored in conservation and natural resource management initiatives, and it is often more informative to look at the institutions that exist in and between communities to understand the role of power in political and ecological knowledge (Agrawal and Gibson 1999).

In Ilmotiok and Tiemamut, herders are encouraged to set aside “conservation areas” for preservation of wildlife grazing area. There is a loss to immediate grazing potential for livestock, but an incentive for other gains, be those money for education or the possibility of money coming into the community via tourists visiting the group ranches’ wildlife attracted by such grazing. There is no argument that immediate gains from those funds are appealing. But when

²³ A *manyatta* is a Maasai community made of several homes enclosed by a fence; “cultural” denotes a *manyatta* built and used only or mostly for tourism purposes.

subsistence strategies may be challenged due to external pressures of conservation priorities—i.e., when funds for future education usurp grazing potential in the present—individuals and communities are faced with difficult institutional challenges and have difficult decisions to make.

In a way not so dissimilar to the means in which Mpala's regulatory management supersedes traditional decision-making strategies, these external actors in the group ranches too offer incentives and possibilities for livelihood transitions that shape both the group ranch landscapes and social structure. *Bomas* were relocated; prime grazing areas were lost. Surely, these communities were not forced into creating the conservation areas, but the short-term gains from external incentives were hard to pass. What role do group ranch members play in maintaining local resources and creating the rules to manage those resources?

Several prominent scholars have written on the gap between conservation administrators and local resource users. An example is the discussion on discourse of deforestation in West Africa and the ways in which discourse perspectives produce analytical dichotomies of state and village, scientific and local knowledge (Leach and Fairhead 2000; Fairhead and Leach 1996). Substituting discourse of deforestation for discourse of wildlife conservation in the semi-arid savannah ecosystem, and the external actors of conservation administrators at Mpala and the group ranches of Laikipia, we see a similar pattern. These actors do function on a micro-scale in the ways that the state would because individuals in both locations are in fact expected to follow all of the conservation administration's policies and regulations.

Many processes of natural resource management remain top-down and enforce an artificial divide between local and scientific knowledges (Agrawal 1995). This divide is inefficient, as it decouples natural and human processes, despite conservation schemes' insistence on involving local communities. In Laikipia, this divide exists too, which is particularly troublesome in that more than many other regions in Kenya or East Africa, many stakeholders here pride their work on true integration of natural and human systems based on the claim that only in Laikipia can humans and wildlife exist in undivided, boundary-less landscapes.

It is important to not neglect the influence and crucial effect of colonialism into this landscape, perhaps more than any other in Kenya due to its historical origins as a British frontier for ranching pioneers. Following the tenets of colonialism as stated by Adams and Mulligan (2003), it is easy to see how conservation developed with colonialism in this landscape. They argue that control of people was derived through (1) the expansion of scientific and technological knowledge, (2) a capitalist economy, (3) a hierarchical organization, and (4) legal systems to encourage accountability and predictability of behavior and action.

To the first point, I argue elsewhere that the technological influx carried by conservation and development agendas into Laikipia is driving sociocultural livelihood changes, but the expansion of scientific knowledge as a means of control is also apparent in the way that the landscape is managed by external conservation authorities with little to no input from indigenous Kenyans, even those with pastoral histories. To the second claim, it is clear that in Laikipia the conservation economy is one of a capitalist economy. Conservation is driven by the act of employment and by employer-employee relations, an action that creates policy by virtue of labor

and practice and of financial incentives. This same employer-employee relationship founded within the realm of natural resource management does in fact create the third tenet claimed by Adams and Mulligan, that of a hierarchical organization. This hierarchy creates new power relations and pushes knowledge translation and exchange into different patterns than might exist in a more traditional pastoral setting. Finally, the legal systems exist by conservation administrators first with regard to national standards on labor settings but more importantly by the informal ‘legal systems’ existing within the microcosms that are these parcels of Laikipia.

Furthermore, the decisions surrounding all of these foundations rely on only one realm of the conservation world: ecology. Mpala’s existence as a world-renown ecology research facility, as well as the influence of the particular NGOs present in the Maasai group ranches, mean that despite these stakeholders’ claims to integrate socio-ecological systems for management purposes, and to conserve “the land, its wildlife, and its people,” decisions in most cases are made on the basis of ecology alone. The supremacy of ecology in a region intended to be one of a living coupled natural-human system experiment, and moreover the sole reliance on ecology for instructing the way in which that experiment is run, is faulty.

The conservation workings of Mpala and the group ranches are akin to what Bassett calls territorial-based approaches to conservation and development (2009). In Laikipia land is privatized, either literally by ranching and conservation consortium industries like Mpala, or increasingly being privatized in the figurative sense by conservation and development agendas that too change the landscape and draw boundaries for traditional pastoral activity and new employment opportunity. Whether that new opportunity is sustainable in Laikipia and elsewhere remains to be seen.

To this end, I re-articulate Nadasdy’s call (2003) for a more thorough assessment of natural resource co-management between governments and indigenous peoples, where in this case an assessment of co-management lacking between community members and conservation administrators. And I agree with Agrawal’s indication (2005) that how people relate to and understand new knowledges about the environment change institutions and politics, and those changes which are very important to ecological practices do need further exploration and analysis, particularly in a landscape so important to biodiversity conservation.

Conclusion

Considerations to the issue of livelihood transitions driven by conservation and development agendas have come from the fields of geography and political ecology, sociology, anthropology and behavioral ecology, among others. Literature on this subject from different disciplinary contexts and different frameworks has been considered here to explore how different approaches can clarify and explain issues of justice in the Laikipia region, particularly the implications for institutions and changing norms of mobility in central Kenya’s pastoral ecosystems.

There is a Maasai proverb which says, “*Meeta enkiteng’ olopeny*,” or, “The cow has no owner.” In this we recognize the idea that in traditional pastoral society, cattle are exchanged so often amidst exchange networks and during seasonal fluxes that the idea of individual ownership

ceases to make much sense. But the conservation efforts of central Laikipia are rearranging these networks, creating new types of knowledge, patterns of mobility, and practices of pastoralism. They are relying on a history of ecology laced with colonial interventions without evidence as to the social outcomes of such ecologies in this landscape. While there is merit in some cases to ecologically-driven conservation, in this paper I have tried to show that there is a need for socially-driven conservation in conjunction in order to truly understand the workings of this landscape and its potential as a coupled natural-human system.

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Part Three

Tradition in Transition: New Technologies of Conservation in Laikipia, Kenya

Abstract

This paper explores the emergence of and cultural issues surrounding a new tradition of pastoralism in central Kenya, one that places technology into conservation-driven privatization and commercialization of environmental knowledge and labor. It draws on fieldwork completed from May to August 2010, including research conducted among pastoralists in Laikipia, Kenya, at the Mpala Research Centre and the nearby Maasai communities of Ilmotiok and Tiemamut. Through interviews and surveys, I found that conservation and development agendas in this region are contributing to a new wave of livelihood shifts for local pastoralists in which individuals are transitioning from being animal owners to animal “caretakers” employed by powerful conservation groups. I have argued elsewhere that this transition creates significantly different outcomes than those seen in what are considered to be traditionally managed landscapes. These outcomes include shifts in the sharing of indigenous knowledge, decision-making strategies, and associated environmental justice complexities of a new kind of labor-based rather than landscape-based mobility, one that includes technologies nonexistent or rarely existent in traditional landscapes. This paper specifically explores the theme of technology and transition closely, namely with regard to the changes brought to the experience of pastoralism with the influx of technology. Technologies considered include pastoralists using cell phones, radios, and vehicles, as well as metal chain fences for *bomas* to replace traditional *Acacia* branch cattle corrals. These resources are considered to understand the ways in which technology is creating a new ecology and ultimately asks whether or not this new ecology is a sustainable one.

Introduction

Pastoralism is the major livelihood system in East African arid and semi-arid lands, which make up over 60% of the region’s land area (Bourn and Blench 1999). The relationships of pastoralists and their livestock to land, to wildlife, and to other communities are of much interest to both natural and social scientists regarding use of, access to, and control over scarce environmental resources in shared rangelands. These relationships have been transitioning throughout history based on internal and external pressures; dynamic changes in this landscape have become more apparent since the colonial period and even more so due to recent trends of decentralizing natural resource governance in the last three decades (Larson and Soto 2008).

In Kenya specifically, this dynamism is multi-part. With the exodus of official British colonial forces, the resulting inequalities and pressures from the foundations of governance set by that very force, the influx of new governmental conservation schemes of protected areas beginning in the middle of the twentieth century, and the recent trends toward global and local conservation and development programs, there have been major changes. These changes are apparent in livelihood strategies, decision-making processes, and sociocultural traditions of pastoralists on community and individual levels.

Several scholars have analyzed shifts in pastoralism in central Kenya indirectly, in terms of changing ecological dynamics of rangelands (Young 1995; Georgiadis et al. I. 2007; Georgiadis et al. II. 2007). Only a few have explored the cultural implications of these changes (Cronk 2004; Gadd 2005; Wambuguh 2007). And many have also explored the challenges inherent to conservation and development agendas all over Africa in terms of both theory and practice, particularly the ways in which those efforts often create friction with community needs and interests (Sandker et al. 2009).

But these approaches rarely characterize at once the means in which conservation and development agendas are directly driving both environmental and livelihood changes in central Kenya. This paper attempts to do that using the concept of technology as a connecting framework for transition. I argue that the analysis of technology in this landscape is a useful way to unite various approaches of conservation and development literature where scholars and practitioners are trying to (1) identify local knowledge and local technologies or empower their prevalence for long-term resource sustainability and/or (2) add technological devices to a landscape or encourage new behaviors associated with theoretical technologies for conservation purposes.

In this paper I follow Susan Leigh Star's call to use the concept of 'infrastructure' as a useful analytic beginning with her claim that infrastructures are not neutral assemblages but are instead imbued with values and 'ethical principles' (1999). Infrastructures, or as I will also refer to them as technological systems, are not only composed of and dependent upon the multiple systems required to maintain their coherence, but they are also multiply meaningful for individuals and for everyday life. Within the larger framework of science and technology studies (STS), this analytic offers a connecting bridge between ecological and social dimensions of change. I use the Laikipia District as the center of this story and focus on technological infrastructures to understand the multi-faceted implications of conservation-driven transitions in pastoral landscapes. The region's unique and complicated governance structures and increasing importance to conservation biologists, as well as its rich history of both pastoral communities and British colonial expansion, make it a unique place of inquiry for technologies in human, animal, and land relations.

Conservation in Central Kenya: Drivers of Technological Change

The Laikipia District, situated in central Kenya's Great Rift Valley, is commonly being acknowledged as one of the most crucial areas for biodiversity conservation in Kenya. Wildlife densities in this region rank second only to the world-renown Serengeti-Mara ecosystem of southern Kenya, and large mammal diversity in Laikipia is higher than in any other region in Kenya (Gadd 2005). Laikipia is unique, however, in that there are no protected areas; wildlife is entirely sustained by communal and private landowners. Humans, wildlife, and livestock share land and resources in large-scale commercial ranches as well as in small-scale community group ranches.

Laikipia was a centerpiece of British colonial expansion, sought after as a site for cattle ranching and agriculture possibilities around the turn of the twentieth century and in following decades (Morgan 1963). The influence of this time period in which Laikipia was recognized as a frontier for British pioneers is still quite visible today. To that end, the main inhabitants of the district include British expatriates and first, second, or third-generation white Kenyan settlers as well as Laikipiak (later referred to as Mukogodo) Maasai, Pokot, Samburu, and Turkana communities. Although Laikipia is gaining popularity as a tourist destination and an economic resource for Kenya, the jigsaw of power relations, resource disparities, and individual desires for land use profit amidst these different communities makes the district a complicated mosaic of wildlife-tolerant and wildlife-intolerant parcels (Gadd 2005). The fact that there is no official regional policy for managing wildlife in this landscape further complicates any conservation efforts attempted amidst locally managed parcels of land that share wildlife moving daily and migrating seasonally.

One important stakeholder in Laikipia is the Mpala Research Centre, a well-known research facility situated on 48,000 acres of semi-arid savannah near Mount Kenya. Mpala is a multi-purpose consortium managed partly as a wildlife conservancy, partly as a research centre with strong institutional ties to researchers in universities in the United States and elsewhere, partly as a third-generation expatriate cattle ranching operation, and partly as a nonprofit NGO interested in community development projects in nearby Maasai communities.

After being passed through a series of private landholders during the colonial period, the landscape now known as Mpala was reorganized by a British expatriate family for the purpose of commercial cattle ranching in 1969. In 1989 the Mpala Wildlife Foundation was created with the intention of “conserving the land, its wildlife, and its people.” The foundation created a wildlife conservancy and later, in collaboration with the Smithsonian Tropical Research Institute, Princeton University, the Kenya Wildlife Service, and the National Museums of Kenya, soon the Mpala Research Centre. The landscape is thus intended to be a space not for tourism but for conservation and ecology research, and the centre hosts short-term and long-term researchers and projects on topics ranging from territorial behavior in ungulates to relationships of mutualism between ants and *Acacia* species to micronutrient dispersion in soil types across landscape-wide rainfall gradients.

As a commercial ranching enterprise, Mpala also hosts approximately 2100 cattle, 300 sheep, 100 goats, and 150 camels. Animals are sold for meat in markets in and outside Laikipia. There is a highly regimented system for a weekly “cattle dip”—an insecticide and acaricide used to control ticks, mites, lice, and other pests that is administered from high-power sprays and a large generator run by diesel—for all of Mpala’s animals.

Mpala’s animals are looked after by pastoralists from nearby communities and regions elsewhere around the country; this group includes mostly Maasai, Turkana, and a few Pokot herders. They are all employed as herders by the wildlife foundation. They live and work on Mpala property, tending to livestock on a daily basis in small groups. They do not, however, have any kind of share or ownership in Mpala’s animals, nor can they keep their own animals on Mpala property. Furthermore, ranching operations are controlled almost exclusively by a ranching manager, a second-generation Kenyan from a family of British expatriate ranchers.

The comparatively large budget and profit margin of Mpala and similar private ranches in the region allow for the use of technology in a way that is not seen in other parcels of Laikipia or Kenya where financial resources are more scarce. Here, herders are given radios by management authorities to aid in daily and seasonal decision-making; radios give warning of dangerous wildlife nearby; some herders, like many other Kenyans elsewhere, have personal cell phones but have difficulty finding infrastructure for charging those phones even though an extensive electrical grid exists for researchers nearby; some use vehicles for transportation or moving injured livestock; and expensive, easily transportable metal fences are used to rotate cattle pastures more frequently than in nearby Maasai group ranches to try to control environmental degradation.

This style of management and technological development is in deep contrast to Mpala's neighbors, Ilmotiok and Tiemamut, but that is not to say technology does not exist there either. These Maasai group ranches are of a much smaller land area but a much larger population. Members of these communities are predominately pastoralists, keeping low numbers of cattle, sheep, and goats in small kin-oriented *boma* groups. Some group ranch members are also involved in supporting "conservation areas" set aside by the communities as areas in which livestock are not to be grazed so that wildlife can access this vegetation. Ilmotiok utilizes this conservation area as a place for its tourist lodge called Ol Gaboli, and Tiemamut as part of an incentive to keep land for wildlife so that African Wildlife Foundation (AWF) in exchange pays for children of group ranch members to attend secondary school. Tiemamut also enjoys the benefit of several dams built with support from NGOs; members of Ilmotiok use the Ewaso N'giro, the local river, for personal consumption and for livestock.

The group ranches do not have the resources, financial or otherwise, to adopt technology in the scope of landscape-wide additions to the ecosystem to increase security in the way that Mpala does. The clear discrepancies in management of land, animals, and people are particularly complicated because many of Mpala's employees in fact come from the nearby communities. The style of management of bringing in herders to act as caretakers rather than owners of livestock has unusual implications for local pastoralists and their livestock, their culture and ecology, and the entire socio-ecological system. The influx of technology into this system and, in fact, as the entire foundation that the Mpala is based on, suggests many questions as to its widespread influence, implications, and effects: Is knowledge shared differently among pastoralists at Mpala as compared to in traditional pastoral communities due to the use of technology? Does the ease of communication brought by technology aid or transcend traditional decision-making practices? Does it increase efficiency or change the quality of work, or does it just create a different conceptualization of labor and the act of pastoralism itself? How does technology drive environmental narratives of land use change in this landscape? How does it aid in attempts to privatize pastoralism, and what are the consequences of those attempts? These are some of the major complexities I attempt to disaggregate and explore in this paper.

New Technologies in a Conservation Landscape

In this section I outline the various technologies adopted by pastoralists in central Kenya as a result of, or in spite of, conservation and development agendas in the region. These observations, insights, and anecdotes are a result of 79 household interviews at Mpala and in the Maasai group ranches of Ilmotiok and Tiemamut, as well as numerous informal interviews and conversations in both areas. These analyses are part of a larger project that is attempting to understand networks of pastoral knowledge within the various ranches and how those networks are shifting due to institutional and governance pressures of conservation and development; specifically, how these pressures are driving livelihood transitions and, as a consequence, perceptions of land use change. Here I outline the ways in which technology—both material technological devices or infrastructures and immaterial ideas of technological modernity—have infiltrated into conservation landscapes and are driving livelihood shifts in pastoral communities.

Cell phones

A visit to a market in the nearby Isiolo District in July 2010 created a visual representation of tradition in transition. Upon arriving at the market, I met sights typical of bustling African commerce centers: large crowds of people, cattle, goats, donkeys loaded with supplies, men lined up in rows smoking and crafting pipes, women organizing sacks of vegetables and beans, beautiful bright cloths and clothing stacked as far as one can see, and tarps of assorted dishware and other objects. There were Maasai in traditional *shukas*; Samburu warriors (*ilmurrani*) decorated with ochre paint; Maasai men and women in business clothes; Maasai men and women in t-shirts and jeans. I watched a Maasai friend approach an elderly man in traditional Maasai clothing and sift through his collection of worn pots, dishes, and cups to find a cell phone charger. They only exchanged two words: “Motorola?” to which the owner of the goods shook his head, answering “Safaricom,” and then pointed down the way to another man in business clothes with a similar collection of household artifacts so my friend could try his luck there.²⁴ The conversation seemed no different than any other request for vegetables or cloths exchanged for decades in this landscape. Like many other communities in the developing world, rural pastoralists of central Kenya are truly in a transition of accessing and adopting new technologies while also strictly holding on to traditional customs and traditions.

In the western world, cell phones are a form of exchange, of communication: voices carry thoughts audibly during real-time conversations and recorded messages, thoughts are transported visually through written text messages, and ideas flow in a multitude of ways through electronic space now via internet-capable cell phones. Cell phones in Kenya accomplish these goals too, albeit sometimes of a different caliber of high-speed and functionality options, but they do something more.

In rural pastoral landscapes, cell phones are an exchange commodity themselves. Electrical infrastructure is limited in central Kenya, and often only existing in small cities on the grid, large towns where car batteries and other generators have been transformed into cell phone charging stations, or in a completely different realm: seemingly unlimited energy potential in tourist

²⁴ Observation by the author, 13 July 2010.

lodges or private commercial ranches. We see this situation played out in Laikipia. Kenyans employed at Mpala as herders take every opportunity they can to catch rides on the centre's lorries to reach the main research facilities most frequently for access to cell phone charging stations. Herders ask other Mpala employees who do have more frequent access to the research centre facilities—research assistants and drivers, for example—to take their phones to the laboratory facilities for charging. And when phone ‘credit’ is needed, herders make deals with drivers and other employees to purchase ‘minutes’ for them in the nearby city of Nanyuki, a couple hours’ drive away, knowing that they may not see this credit or their actual phones again for days or a week at a time.

Cell phones become a source of social exchange, and not just for communication. They become objects handled in social interactions, points of bargaining, items sought after in physical parts (like the Motorola charger). They become immaterial ideas bound up in these social exchanges and serve as justification for future favors, for exchanges of *khat*, for trade in clothing or food or jobs.

I discuss next the role of radio technology in the conservationist landscape. Both radios and cell phones do even more: they too manage the landscape, its people, and its ecology. At Mpala, some herders use their cell phones daily to communicate with ranching staff and managers. But cell phones offer something that radios do not: communication off the grid, and in silence from listening managers’ ears.

Radios

Livestock at Mpala are divided across the landscape into six groups, each headed by a *boma* supervisor. The supervisor is a herder too but responsible for ensuring that the other herders in the group are where they should be, that the animals are healthy, and that the group is following the daily instructions of the ranching manager. The latter process is almost entirely done by radio check-ins. Supervisors and sometimes other herders are constantly tuned into their radios; it is not uncommon to see herders wandering the landscape with livestock, wearing traditional *shukas*, and carrying or fixing a radio to their clothing.

Like cell phones, radio technology offers a way of simplifying communication at Mpala. Besides checking in with the ranching manager several times during the day, herders know that radios (and cell phones) act as early warning systems for potentially dangerous situations. This has two major effects: (1) in many cases it actually prevents dangerous encounters with wildlife and (2) it allows herders to ‘relax’ to a certain extent just from the fact that they know this warning system exists. It is not that herders are not vigilant; it is just that Mpala’s landscape is so secure with so many watchful eyes and radios that herders know they are likely to get a call when, for example, a herd of elephants are heading to the same river where they are currently watering livestock.

The use of radios by Mpala is even more expansive beyond just herders; due to the large number of foreign and often high-profile researchers working at the research centre and in the field, there is an entire task force of *askari* (guards) with a plethora of radios to ensure the safety of each and every visitor. There are two dozen code names for each security personnel member, ranching administrator, and *boma* headmen that are memorized by herders and other Mpala employees to

call one another over the radio. Herders use the radio code names (i.e. “Mambo 1,” “Mambo 5,” etc.) of their superiors in daily conversation with others and sometimes face-to-face with those individuals. Radio technology thus makes its way into the ways in which individuals recognize one another and share information, even off the clock and outside of labor-based conversations. Radios create a new network of communication and a meeting space for individuals spread out over 48,000 acres.

Mobile bomas

Mpala, like some of the other private ranches in Laikipia, utilizes mixed methods of corralling livestock. In part herders build traditional *Acacia* branch *bomas* in large round compounds or in smaller units for division of animals by age, sex, or species—referred to by staff as “fixed *bomas*.” Increasingly, however, the ranching manager at Mpala is introducing “mobile *bomas*” into the landscape. These are chain-link metal fence structures that arrive in 10-30 sheets, horizontal, and vertical poles. They can be disassembled and reassembled in the same day. The *bomas* are expensive, but the ranching manager is increasing use because, he says simply, “it reduces trampling.”²⁵

Bomas have been traditionally relocated seasonally, yearly, or otherwise depending on vegetation available, rainfall, and health of the herds. This process is important to preventing permanent degradation and allowing the landscape to recover; but this process must be matched with the costs associated with moving households and, specifically, rebuilding *Acacia* branch *bomas*, which is a time-intensive and labor-intensive process. In theory, mobile *bomas*, as these private landowners in Kenya refer to them, lessen the difficulties and labor costs associated with relocating. They also should prevent accelerated loss of woody species and support understory vegetation regrowth faster and more frequently since it is easier to relocate more often.

Herders offered their candid opinions on the matter. There were advantages: “It is good for protection from wild animals like hyenas entering;” “It is strong, stronger to hold a lot of cattle too, than the other one;” “It doesn’t have a lot of labor by going to cut branches to put at the entrance;” or simply, “It’s movable.” There were a few disadvantages mentioned: “It can be eaten by rust so easily;” “If it is badly erected, it can fall over on people or livestock;” and “It is very windy for the animals.” But for the most part, advantages were named only, or herders did not have strong feelings on that matter: “[Besides requiring less labor,] all other things it is okay, just like the other *boma*, there is no advantage or disadvantage in my experience.”²⁶

On this topic, 38 of the total 39 herders at Mpala said that Mpala should increase the number of mobile *bomas* relative to fixed ones. This makes sense, particularly when analyzing their responses. The majority supported their claim with the fact that mobile *bomas* protect livestock better than fixed ones or that they are easily transportable; these responses have to do with making jobs easier and less time-consuming. Only two of these respondents mentioned anything about the fact that this new technology prevents land degradation, which is the reason they are employed at Mpala in the first place—to “reduce trampling.”

²⁵ Interview with the author, 11 June 2010.

²⁶ Interviews with the author, June-July 2010.

While the mobile *boma* is a time-saving addition to the pastoral landscape, it is not something accessible by all rural people. Commercial ranches like Mpala are the only groups that can feasibly afford to purchase and maintain them; members of the nearby Maasai community group ranches that had never been to Mpala or the other large private ranches had never heard of them. So on one hand they are not being recognized for their original intention of preventing land degradation, regardless of other benefits, and on the other hand, they are not feasible in most landscapes anyway.

A long-time Kenyan staff member at Mpala expressed a common opinion on the matter, pointing first to a traditional fixed *boma*, “That is Africa . . .” and second to a mobile *boma* “. . . that is *mzungu*,” he explained in English as a matter of fact during a drive across the landscape.²⁷

Cattle dip

In order to prevent diseases in livestock at Mpala, there is an elaborate management system known as ‘cattle dipping.’ All 2100 animals are ‘dipped,’ or treated for ticks, lice, and other small pests, once every week at one of two locations at Mpala.²⁸ Each dip area has an elaborate wood and wire fencing labyrinth: animals are first herded into a holding pen and then pushed through one by one into a narrow walkway that dips down through with a pooled chemical bath so their feet are treated; then they are pushed through a cement wall aisle with sprays coming from above and the two sides, and the spray entirely soaks the animals; after they exit this structure, they are made to stand in another small temporary holding pen with a sloping cement floor to drip off so that the wastes travel back into the a lower area of chemicals in the spray room; this liquid is eventually piped out into a nearby fenced in square that essentially makes a natural ‘pool’ of diluted chemicals. A nearby metal water tank feeds into the cattle dip via more underground pipelines, and there is a large, loud diesel machine that is responsible for pumping water in to mix with chemicals and for providing force for the sprays. The machine must be manually started by hand through the turning of wheels before it is in motion enough to start the spray system; once that is started, there are no pauses, so animals must be constantly in queue to minimize water, chemical, or fuel loss.

Herders support this practice. They claimed that this elaborate chemical bath is a security system for knowing that the animals are unlikely to be infected with ticks and related diseases. One herder commented:

Nowadays it has changed much because at first the cows used to die just like that because there were not even people to identify the diseases which were attacking the animals. Nowadays it's good because they can see even how the diseases have changed, the ones that were attacking cows at first they are not identified nowadays.²⁹

²⁷ *Mzungu* (pl. *wazungu*) is Swahili for European, or as it is used more broadly, white person. Conversation with the author, 11 June 2010.

²⁸ At Mpala, the chemical used is amitraz, sold under the commercial name of Bovitraz EC.

²⁹ Interview with the author, 17 June 2010.

There is this sense in the herders' community at Mpala of technical expertise that comes with the use of this system. General tick-borne diseases can typically be ruled out due to the consistency of the cattle dip, and other experts are brought in for more unusual issues.

The list of infrastructure and technologies apparent in this system is long: fences, cement floors and walls, power spray pumps, diesel machines, and the chemicals themselves. This is in direct contrast to the Maasai group ranches bordering Mpala where absolutely no chemicals are used. They are not affordable here, but more importantly, they are not accessible. Here, people worry of diseases, they are concerned about ticks and other small pests, and they do often lose livestock due to disease.

Vehicles and roads

Herders at Mpala also have the luxury of accessing vehicles for their own purposes and for the livestock. It becomes easy, for example, to obtain supplies from town when there are vehicles with researchers moving across the landscape or collecting supplies from Nanyuki almost daily. It becomes easier to charge cell phones, and employees are required to find ways to charge radios as needed at the main research centre or ranch management office. It becomes easy to bring injured or sick livestock to different areas or to obtain care, let alone to export animals for market. This situation is not unique to Mpala but common to the commercial ranches all over Laikipia.

And the situation is a stark contrast to the nearly unused roads in the nearby group ranches, where one or two vehicles pass by from Mpala once every one to two weeks. At this point, there actually is no connecting road from Mpala to the group ranches; one must drive down and up steep river embankments and actually through the Ewaso N'giro to reach either side. Much of the year this is possible, but during the rainy seasons it often is not.

Much has been written by STS scholars regarding roadways and the technologies they bring, as well as the technologies roads are themselves. In this next section I draw from some of these scholars to show what roads, in conjunction with some of the other types of infrastructure in central Kenya, are doing in Laikipia.

Traditional “Technology”: Knowledge and Information Networks

The road and its vehicle are technologies in this landscape that not only open possibilities of access to resources but also to people and information. Weiss (1993) explains this best:

Roads simply facilitate mobility, marketing, and the (often uncontrolled) circulation of people and things in the African context. They typify an order of transformation that involves money and commodities by allowing for the movement and transmutation of value across the landscape.

For Mpala, this value is the spread of knowledge through research, and the information flows between Kenyan research assistants and international ecology researchers. Roads and fancy

landrovers bring in new knowledge to Mpala's Kenyan inhabitants; they carry researchers and ideas through the landscape via traditional knowledge of time and space lent by native assistants' navigational skills; and the same roads and vehicles are a vessel for the export of scientific knowledge, of numbers and figures and graphs in the reports and data with which researchers leave.

Here roads therefore “embody people's conflicted, changing, and contextually disparate understanding of modernity” (Masquelier 2003). Each entry into this complicated landscape, a physically and socially juxtaposed landscape of different trends in technological use, factors differently in the imagination of each user. Researchers see the landscape change differently than native Kenyans, even as they may watch the same technological structures be built and maintained.

The outside world is therefore reworked and reshaped in local and foreign memories (Cole 1998; Masquelier 2003). This is the outside world of Kenya broadly, but also the outside world of Mpala: driving a few miles outside the border of Mpala, and far beyond the borders of Laikipia's Maasailand, one experiences the familiar shift from dirt paths to paved tarmac roads. The shift is at once material and yet immaterial in its meaning. The road is a physical link to outside centers of commerce, like Nanyuki, but also a metaphorical transition in its essence that creates a boundary between rural and urban communities in central Kenya. There is what Masquelier (2002) calls a sense of “permanent instability” in such transitions from unpaved to paved roads, and particularly in the types of technologies flowing along the roadways. New people, new ideas, and new technologies are constantly in flux in this region, creating exchanges and changing networks.

These networks are at once new and a remnant of an old practice. Traditionally, risks of loss for pastoralists are greatly increased by unpredictable and harsh semi-arid conditions. Spear (1993) notes that in traditional pastoral communities, the only real insurance a herder can take in order to combat these potential threats is to participate in “complex exchange networks” that widen his risk by distributing his cattle among widely dispersed stock partners and that maintain access to wet and dry season pastures. The option to scatter herds among different stock partners ties directly to the need for pastoralists to mitigate the amount and intensity of labor in relation to the size of their herd. Small herds cannot sustain most families, but larger herds might require too much management for limited available family labor. As herders acquire more cattle, they have to either also acquire more labor from outside the family or place some cattle in the care of others; as herders lose cattle, they have to work for others or perhaps borrow cattle from others (Spear 1993).

This relationship of herd size and labor availability framed within the context of mobility challenges and opportunities is the foundation upon which historical social institutions were built in traditional Kenyan pastoral communities. These institutions broadened social relationships and facilitated exchange of information and identity. Maasai clans, for example, were extended across different territories in order to embrace potential agnates who could be of mutual assistance in these terms. The concept of descent was widened to include all Maasai men within a certain age range over a large region, a grouping that became known as a familial “age-set.”

Strong connections among members of an age-set facilitated the fostering of cohesion for the family herding unit and loyalty to community pastoral values (Spear 1993).

What we see in central Kenya is the use of cell phones and radios to facilitate new technological “exchange networks,” and new social networks amidst that technology. The herders who communicate using radios and continue to use radio nicknames when offline are one example. Another is that new forms of the ‘age-set’ are formed by the division of *bomas* by labor and animals at Mpala. These groups are arguably superficial, but function with the same purpose as an age-set in this landscape. Another example is the knowledge a herder has that vehicles and chemicals exist to add security to a landscape and its unpredictability. These factors of the modern setting in Laikipia facilitate different livelihoods and different economies, which I explore next.

Economies of Technology and Change

The fast influx of mobile phones, radios, and vehicles is clearly not just a phenomenon of central Kenya, or of pastoralists at large. Certain technologies like these are exploding in developing countries in a way that often outpaces other more broadly defined infrastructural development (represented by, for example, the difficulty in locating or accessing charging stations). Cell phones in particular are pointed to for this narrative: In 2000, 1 in 50 Africans had access to a mobile phone; by 2008, that number had shifted to 1 in 3 (de Bruijn et al. 2009).

A Maasai group ranch member explained to me the interest in and practical use of cell phones in the region, offering the example that a person can easily get on the phone daily to ask someone in town what the current price of charcoal in Nanyuki is before deciding if he will go to great lengths to walk (or catch a ride on a passing vehicle) to buy or sell his supply.³⁰ Here the cell phone is an intermediary of markets and exchange: had the person in question spent much energy and time going to town without knowing the market price, he may have been forced by necessity to, for example, sell his supply at a lower price or purchase charcoal at a higher price.

This example is not unique to Laikipia. Brinkman et al. (2009) discuss the economic possibilities for traders and artisans attracting new customers via cell phones. An example can be found in the group ranches of Ilmotiok and Tiemamut where Maasai women use cell phones to communicate to one another when making weekly trips to far-away markets for foodstuffs, cloths, or beading supplies. These supplies can then be used in the ecotourism enterprise there to be made into souvenirs for tourists to purchase. Business partnerships, even unofficial ones, are easily formed and maintained via the use of cell phones. There is in fact a “mobile phone culture” beginning to dominate these landscapes, one that is wrapped up in economies of change (Brinkman et al. 2009).

In terms of technologies more broadly, Roitman (1990; 2005) discusses how infrastructural technologies encourage the mobility and trade of goods and services. Specifically, these technologies move items and people to engage in trade. Roitman argues that markets act as

³⁰ Conversation with the author, 16 July 2010.

interesting political spaces where formal and informal economies meet, often associated with the influx of technology into specific landscapes. Management regimes based on creating and using infrastructural technologies in Laikipia do create this type of political space where formal administrative economies meet informal employee economies built via social networks and exchanges. Radios create political spaces for labor-based decisions, and roads create economic spaces for transport of supplies for tourism.

Communication, Security, and Control

There is another economy that some of these technologies facilitate, particularly in Laikipia: the research economy. The influx of technology into this landscape not only opens up possibilities for scientific inquiry but, at Mpala for example, entirely enables it. The complex entity that is Mpala—part cattle ranch, part wildlife conservancy, part Kenyan village, part conservation-oriented research facility for foreign visitors—only exists because of the technology that pervades its landscape and its yearly, daily, and minute-to-minute operations.

Although increasing attention is paid to what Horst and Miller (2006) call an “anthropology of communication,” little has been written on the interactions between researchers and the communities they study in terms of technologies used to mediate research. To address this void, Pelckmans (2009) discusses the implications of phone-mediated research. From the researcher’s perspective, she argues, there is an added feeling of safety and empowerment that comes with cell phone prevalence. She continues to say that from the communities and subjects’ perspectives, there is the potential for communication beyond set timelines and increased communication possibilities when desired, which create different kinds of relationships than those built solely on fixed researcher-subject interaction time.

Research at Mpala exists because of cell phones, radios, and security figures moving quickly across the landscape in landcruisers and lorries. Herders exist as they do here—with mobile *bomas*, with water delivered once weekly, with little worry of livestock diseases thanks to a highly regulated and technical weekly ‘cattle dip’ of a chemical bath—because of the security and communication ease built into control over this multi-use landscape.

Many scholars have discussed the ways in which we can describe the role that both humans and nonhumans play within their networks that they form together physically, socially, and theoretically, and how we can construct what a technology does within that framework (Latour 1989, 1992; Akrieh 1992; Star and Griesemer 1989). In the pastoral landscape driven by new conservation and development agendas of Laikipia, we can see that objects that are at once ‘everyday’ for wealthy expatriate ranch owners (cell phones, radios) and tourists or researchers (roads, vehicles) gain new sociological and cultural meanings as progressive technologies when adopted for communication purposes of local communities.

Star and Griesemer offer a helpful analysis of the use of objects, particularly for when use of “marginal people,” those who inhabit multiple social worlds and how those worlds are constructed. They write:

The strategies employed by marginal people to manage their identities—passing, trying to shift into a single world, oscillating—provide a provocative source of metaphors for understanding objects with multiple memberships. Can we find similar strategies among those creating or managing joint objects across social world boundaries?

Consider, for example, the “marginal people” of Maasai group ranch members from Ilmotiok employed as temporary herders at Mpala, and consider the use of the mobile *boma* in the Mpala landscape. We know that Mpala employees recognize the benefits of the object itself as well as its immaterial benefits (reduced labor and risk); we know that Mpala administrators recognize its benefits in terms of “reducing tramping;” and we know that while perhaps a useful technology, it is not sustainable or accessible in a landscape not driven by profit like a commercial ranching enterprise. And we know that even if herders consider the venture useful, the *boma* itself is “*mzungu*.” The mobile *boma* is in fact an object with multiple memberships and multiple meanings. It is in fact not a neutral assemblage (Star 1999), but constructed physically by multiple actors and maintained socially by multiple perceptions, attitudes, and behaviors.

Cultural Transitions: New Perceptions and Decision-Making Strategies

Continuing this idea, I argue that knowledge is in fact shared differently at Mpala than in other communities due to its infrastructure and technological systems. Herders at Mpala do a different job than they do at home, just across the river, in their own group ranches with their own livestock. Part of this is due to the fact that animal caretaking has less incentive in dangerous landscapes than does animal owning. Part of this is to do with the fact that mobility does not exist to any degree at Mpala like it does in more traditional grazing schemes of pastoral communities—neither in practice nor in autonomy of community decisions and social networks built around such decisions.

In this landscape, pastoralism is a job: perhaps most telling is that the herders at Mpala, like the other employees (drivers, research assistants, and security personnel) are required to wear a plastic nametag. The back of the card lists their full name and names of family members residing with them at Mpala. The front of the card displays their photographs and title in block letters: “HERDSMAN.”

That piece of plastic alone does more than the metal fences for cattle corrals or the radios that employees must use to check in with every day. It in fact conceptualizes the act of pastoralism as a job, a job of many in a landscape, a job that is like a driver’s job or a security guard’s job. Pastoralism is no longer a way of life; it is a form of employment, a type of labor, and a means of engaging with the landscape that has little to do with traditional pastoralism.

This discussion is not intended to place judgment on the adoption of new technologies into pastoral landscapes, nor to impose values onto cultural transitions associated with those adoptions. It is instead attempting to use these technologies as a way of understanding livelihood transitions and future challenges and opportunities in these landscapes. I recognize that becoming a “HERDSMAN” offers economic opportunity in a harsh landscape. But there are important implications that should be explored in reference to the changing requirements of

conservation and development in places like Laikipia, and there may be serious sociocultural and political effects of a system structured around those nametags. And when this system is being looked to as a model for conservation in Laikipia and perhaps elsewhere in Kenya, it is important to tease out what those effects may be.

It is difficult to separate a question of sustainability over these trends of environmental change from ecological and social perspectives with a question of value of those changes or the drivers of change As Cronon (1992) explains:

We want to know whether environmental change is good or bad, and that question can only be answered by referring to our own sense of right and wrong . . . historical narratives, even those about the nonhuman world, remain focused on a human struggle over values.

The complexities of technological innovation, new management regimes of conservation, and traditions of pastoralism are complicated ones, and in fact are value-laden. It is important, however, to deconstruct what the new ecology that this system is creating is doing both to the environment and to the social infrastructure of Laikipia. To start, are these mixed management strategies sustainable? Though the answer to that question may be unknown at this point, it is an important one to explore further. We can see that these systems are creating new ecologies out of landscapes with very different histories than their current land use patterns. These ecologies are new ways of defining human-environment interactions, but it is unclear as to how traditional and scientific knowledge are matched, if at all, and what governance strategies that invoke technology do or do not trump traditional knowledge systems in this landscape. Amidst such uncertainty, however, there are certain changes: both conservation and pastoralism will continue to redefine themselves, as will conservationists and pastoralists, in the modern era. Technology, it seems, will be an integral player in that defining process.

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Conclusion

Knowledge in and Beyond Laikipia

Memut elukunya nabo eng'eno.

(One head cannot contain all knowledge.)

--Maasai proverb

As many answers as I have attempted to find, explain, and present in this series of papers, there are an infinite number of questions to follow. The complexity of this study site and its themes are at once challenging, fascinating, and troublesome. But showing that the system is complex is not enough. I have instead attempted to give an overview of a natural-human system in transition, of a landscape caught between natural and social science, between conservation and development. I have attempted to explain the diversity of individuals, of their needs and desires; and also of the community and organizational-level institutions and economic, political, and cultural pressures driving change, progress, and setbacks in this landscape. And I have tried to meld a history ripe with colonial influence with a present narrative of transnational input on local and global scales.

What results is, I hope, evidence for the appeal of this system, and of Laikipia, not just for its magnificent megafauna, or its diverse and interesting communities, but for its challenges and opportunities, as well as evidence for the need of more social science-oriented research in this landscape. Despite its recognition in the conservation world, there is knowledge missing here: knowledge among individuals and in historical community traditions that have much to teach development administrators, as well as the rest of the world.

The questions implicit and explicit in this document are ones that I hope to explore with more precision, depth, and breadth as a doctoral student in geography next year and beyond. I hope that this work has laid a foundation for me to work across the disciplines and the divides of human and natural systems. I hope too that the narratives, analyses, and answers expressed in this document will raise questions and promote discussion.

Again, I thank those that have influenced, supported, critiqued, or added to the thoughts in this document. Any errors or misrepresentations here are mine alone.

Epwo mbaa poking inkitinot.

(Everything has an end.)

--Maasai proverb