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Multispecies entanglement: Human-baboon interactions in Nthongoni, eastern Kenya

Danson Kareri Mwangi

Abstract

This thesis is an ethnographic study of multispecies relations in a post-colonial conservation context. The thesis is based on one year of ethnographic fieldwork and focuses on the creation and management of Tsavo and Chyulu Hills National Parks in Kenya, to explore how the parks have influenced the health and wellbeing of humans and wildlife. I use a multispecies approach, focusing on the entangled lives of humans and baboons as a window onto broader human-wildlife and nature-culture relations. I describe how human-wildlife relations in Nthongoni, eastern Kenya, are constructed by a global conservation agenda that is itself shaped by multiple transnational, national and local political and economic influences. I suggest that contemporary human-baboon relations in Nthongoni cannot be understood separately from these wider influences. The people of Nthongoni were dispossessed from the land they previously shared with wildlife, pushed to the periphery of the parks and alienated both physically and socioeconomically. In spite of this, the lives of humans and baboons remain deeply entangled across the parks' borders. I argue that alienation of people living alongside parks from economic potentials offered by the parks is another form of failed wellbeing. I shift the traditional anthropological paradigm from a focus on 'culture', to attend to the ways in which humans and nonhuman others coproduce life, health and wellbeing for each other. Further, I attend to political power structures that influence human-nonhuman interactions. I describe how the

concept of ‘pristine’ nature involves making wildlife areas uninhabited through exclusion of indigenous people, and re-inhabited with tourists, conservation staff, hoteliers and tour guides. Rather than seeing wildlife areas as nonhuman landscapes, I invite debates on the depth to which ‘nature’ and ‘culture’ are entwined and inseparable. I reveal a human-baboon entanglement that runs beyond everyday interactions and sharing of space, to active participation of baboons in human semiotic lives, sharing of food and water and potential exchange of microbes. Further, by exploring overlap of microbes between humans and baboons, I move beyond ethnographic attention to social interactions and provide microbial evidence for how humans and animals are likely to be entangled in each other’s biological health and wellbeing. I bring human-nonhuman interactions under the lens of both the anthropology of conservation and medical anthropology and make use of a novel methodological combination of social and biological sciences to reimagine health and wellbeing through post-human scholarship.

Multispecies entanglement: Human-baboon interactions in Nthongoni, eastern Kenya

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Thesis submitted for the degree of Doctor of Philosophy

Department of Anthropology

Durham University

United Kingdom

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Table of Contents

List of Tables and Figures

List of Abbreviations

AIDS:	Acquired Immunodeficiency Syndrome
AVMA:	American Veterinary Medical Association
CAS:	Critical Animal Studies
CHV:	Community Health Volunteer
CDC:	Centre for Disease Control
DNA:	Deoxyribonucleic Acid
ENS:	Environmental News Service
HIV:	Human Immunodeficiency Virus
IPR:	Institute of Primate Research
IRC:	Institutional Review Committee
IUCN:	International Union for Conservation of Nature
KEMRI:	Kenya Medical Research Institute
KES:	Kenyan Shilling
KWLSS:	Kenya Wildlife Livestock Syndromic Surveillance
KFS:	Kenya Forest Service
KWS:	Kenya Wildlife Service
NACOSTI:	National Commission for Science, Technology and Innovations
NGO:	Non-Governmental Organisation
NMK:	National Museums of Kenya
SARS:	Severe Acute Respiratory Syndrome
UNEP:	United Nations Environmental Programme
USAID:	United States Agency for International Development

USD:	United States Dollar
WCMC:	World Conservation Monitoring Centre
WHO:	World Health Organisation
WWF:	World Wildlife Fund for Nature
ZDU:	Zoonotic Disease Unit

Working definitions

Alienation:	In this thesis, alienation refers to the multiple forms of marginalisation, both physical and ideological. It includes separation of the local community from their native land, natural resources, economic opportunities and cultural activities and from making decisions over management of the adjoining national parks.
Borderlands:	Borderlands denote the land that adjoins national parks
Bushmeat:	A term that generally refers to wild animal meat. It is part of the diet of most communities bordering forests and other wildlife habitats.
Conservation/Protected areas:	These two terminologies are used synonymously throughout the thesis, to refer to areas that are preserved for wildlife.
Human-wildlife interface:	Describes the point of intersection between humans and wildlife or the area where humans and wild animals overlap
Hunting:	Trapping/chasing and killing wildlife for subsistence. Hunting of any animal not permitted by the state or private owner is often referred to as illegal or extra-legal hunting or poaching. In this thesis, however, I use 'hunters' to refer to local people who trap/chase and kill and butcher wildlife for subsistence use, regardless of how they are labelled by state agencies.

Indigenous people:	I use indigenous when referring to the people that inhabited Tsavo, Chyulu hills and Nthongoni prior to the creation of Tsavo and Chyulu Hills national parks.
Life, health & wellbeing:	In instances where I use these three terms together: life means general existence and interpersonal relationships with people and other nonhumans in the immediate surroundings; health means absence of disease, while wellbeing is more general to include physical and mental fitness as well as social and economic wellness and comfort.
Local people:	I use local people to refer to both the indigenous people (see above) and the people who immigrated to Nthongoni from areas other than Tsavo and Chyulu. These include people who were resettled by the government at independence and those who have bought land in Nthongoni over the years.
Multispecies landscape:	An environment where several organisms including humans interact with nonhumans to shape, create, and form an integral part of one another's environment.
Wildlife:	I use this term to mean wild animals in most cases, but I also use it to refer to all organisms that live in the wild including plants that grow in the wild.

Statement of Copyright

The copyright of this thesis rests with the author. No quotation from it should be published without the author's prior written consent and information derived from it should be acknowledged."

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Chapter 1. Introduction

> Mrs Mutie, a middle-aged mother of four, was grazing her goats when she heard her daughter scream from the homestead. As she hurried to see what was happening, she saw a baboon running away holding a chicken in one of its 'hands'. She shook her herding stick in the air and yelled at the baboon hoping to scare it into dropping the chicken. The baboon entered a nearby bush as she and her daughter pursued it. It then headed to the neighbouring Tsavo National Park and crossed the fence separating Mrs Mutie's farm and the park. Enraged and still hoping the baboon would drop the chicken, Mrs Mutie instructed the daughter to go back and look after the goats, then crawled under the fence and pursued the baboon further into the park, but she soon realised the chase was futile and gave up. As she came back, she picked up some firewood. Just before she crossed the fence back into her farm, two park rangers caught up with her. She complained about the baboon as the rangers questioned her presence inside the park. The rangers told her she needed to make a statement and took her to their station. When they reached the station and she had made her statement, the rangers turned against her and locked her up in a station cell. She was produced in court the following day, charged with trespass and fined KES 12,000 (approx. 120USD). Her husband sold two goats to secure her release.

This account opens a window onto the everyday lives of humans and nonhumans in the human-wildlife interface of Tsavo-West and Chyulu Hills National Parks, Kenya, and forms the basis of this PhD thesis. The thesis focuses on the paradox of a people who have been at the receiving end of interventions to separate them from wildlife, yet their lives remain deeply entangled with the animals living in the parks. The thesis is based on one year of ethnographic fieldwork and focuses on the creation and management of the two National Parks to elucidate the myriad challenges that colonial and postcolonial conservation has caused for both humans and nonhumans. Specifically, it explores how the Parks have affected the health and wellbeing of humans and wildlife. It uses a multispecies approach, focusing on the entangled lives of humans and baboons as a case study to illuminate broader human-wildlife and nature-culture relations. The thesis describes how multispecies relations are constructed and affected by a global

conservation agenda that is shaped by multiple transnational, national and local political and economic influences. I suggest that contemporary human-baboon relations in Nthongoni cannot be understood separately from these wider national and transnational influences. The people of Nthongoni were displaced and dispossessed from the land they previously shared with wildlife, pushed to the periphery of the parks and alienated both physically and socioeconomically. Despite this, humans, baboons and other wildlife continue to co-produce life, health and wellbeing for each other across the park borders. Their uses of wild and cultivated resources continue to overlap, and they constantly encounter each other both in the parks and in people's homesteads, and at watering points, along paths, and in agricultural fields. The thesis centres economic, social and political wellbeing in the health and wellbeing of human and nonhuman others and argues that good conservation and good health both demand attention to a broad conceptualisation of wellbeing that includes the political and economic dimensions.

The setting for this study is Nthongoni, a community in south-eastern part of Kenya. It borders Tsavo West National Park to the South and Chyulu Hills National Park to the North West (Figure 1.1). Administratively, the area falls in Kibwezi, Makueni County. As presented in more detail in Chapter 3 of this thesis, the majority of the people who live in Nthongoni are 'serial evictees' with different histories of evictions. The first group was evicted by the colonial government during the creation of Tsavo National Park in 1948. Amongst this group some members settled in Nthongoni while others settled at the hills of Chyulu. Similarly, a separate group settled in Nthongoni from the central uplands of Kenya, after colonial displacement from what was latter to be referred to as the 'white highlands.' At independence in 1963, more people were settled in Nthongoni and part of Chyulu hills by the Kenyan government (G. W. Muriuki

et al., 2011). Later in 1983, Chyulu Hills was converted into a national park, and the inhabitants who fell within the borders of the park pushed further down the hills or entirely evicted. All these groups constitute what is now Nthongoni.

In this thesis, I refer to the original inhabitants of the national parks as the indigenous people or community. The inhabitants comprise two sub-groups of the Kamba ethnic group: A hunter-gatherer community named the Ngulia and an agro-pastoral Kamba group that practised nomadic pastoralism. The Ngulia lived permanently in Ngulia hills in the heart of what is now Tsavo West National Park, and relied on wild animals for meat, and forests for green vegetables, honey, medicines and other products. The agro-pastoralist group had semi-permanent homes in the foothills of Ngulia and Chyulu hills in what is now Chyulu Hills National Park. They moved with their livestock depending on the season. During the rainy season they drove their livestock down to the plains and relied on the green pasture that flourished there and on water from seasonal rivers. When the season dried and the seasonal rivers vanished, they drove their livestock to the forests on the hills, which had permanent springs and remained relatively green all year round.

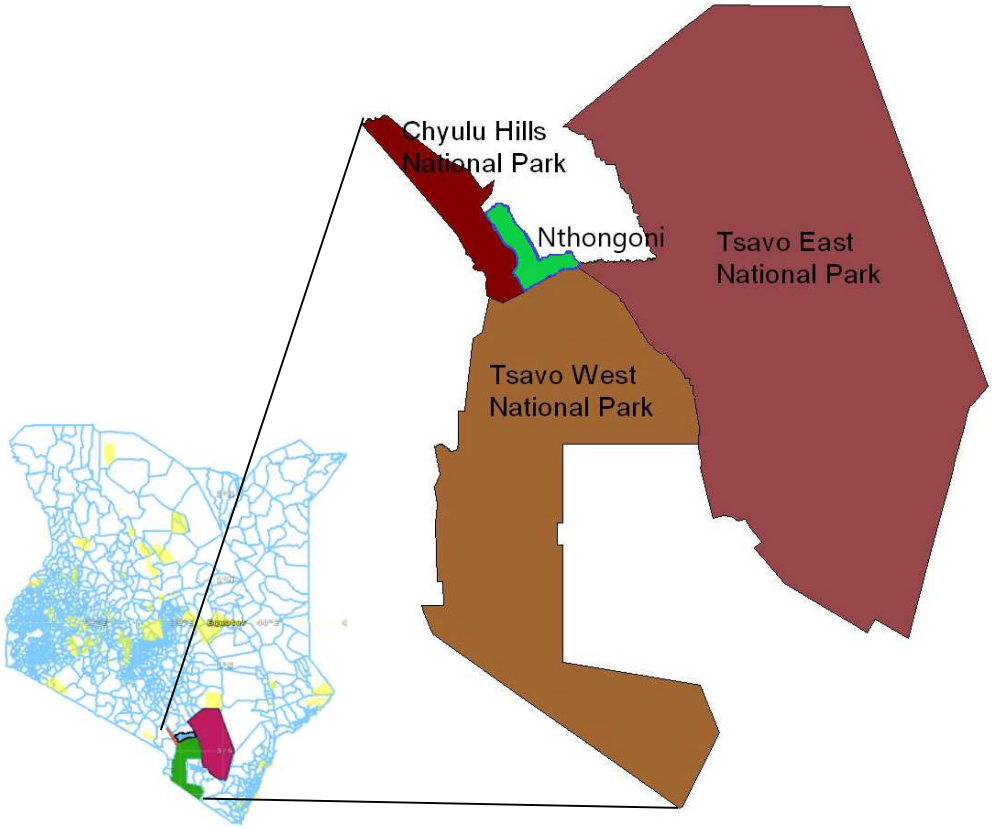

Figure 1.1 Map of Kenya showing Nthongoni and the surrounding National Parks. Sourced (with modification) from KWS (2008).

I situated my study in Nthongoni because of the area's adjacency to national parks: Tsavo West and Chyulu Hills National Parks, and because of people's history of colonial and postcolonial displacement and dispossession. Specifically, I concentrated on the villages that directly bordered the two parks because these were the areas that faced the highest level of human-nonhuman interactions. The study was inspired by my previous research in the area in 2011 and 2013-14. During that time, I recorded intense human-wildlife interactions and high tension between local people and wildlife, and between local people and park managers. Moreover, villagers displayed a constant fear of being evicted by the government if they criticised the

government, a fear based on the fact that despite some of them having been resettled by the government, they have never been issued with ownership documents for the land they occupy. This prompted me to want to know more about the area, and the life, health and wellbeing of people and the wildlife that the people continued to interact with.

To understand human-nonhuman interactions in Nthongoni, my thesis uses ethnographic approaches and shifts from the traditional anthropological paradigm that focused on culture to attend to the ways in which humans and nonhuman others coproduce life, health and wellbeing for each other. Further, it attends to colonial, transnational, and global and local political power structures that influence human-nonhuman interactions. I describe how the concept of 'pristine' nature or 'wilderness' leads to processes by which areas that were previously occupied by humans are made uninhabited through the exclusion of people, and re-inhabited with other people in the form of tourists, conservation staff and people working in the hospitality industry such as hoteliers and tour guides. Rather than seeing wildlife areas as nonhuman landscapes, this thesis uses human-baboon relations as a case study to invite debates on the depth to which 'natural world' and 'cultural world' are entwined and inseparable. The study reveals a human-baboon entanglement that runs beyond everyday interactions and sharing of space, to active participation of baboons in human semiotic lives, sharing of food and water and a possible exchange of microbes. Further, by exploring possible overlap of microbes between humans and baboons, the study moves beyond ethnographic attention to symbolism, ideologies and social interactions and provides evidence for similar gastrointestinal parasites in humans and baboons. This draws our attention to how humans and nonhumans are entangled not only in terms of their social lives but also in terms of their biological health and wellbeing. The study brings human-

nonhuman interactions under the lens of both the anthropology of conservation and medical anthropology and makes use of a methodological combination of social and biological sciences including microbial analysis to reimagine health and wellbeing through a post-human scholarship. In order to conceptualise these complexities, we need to look at some key dimensions of multispecies relations in the anthropological literature. These include multispecies relations in colonial and postcolonial contexts, including the influence of political power play; multispecies relations in conservation; and multispecies relations and the implications for human-animal health and wellbeing. I turn to this literature in the next section.

1.1 Power and politics of conservation in multispecies contexts

Much anthropological scholarship has attended to how colonialism shaped landscapes through displacement of indigenous inhabitants, land accumulation and control, and suppression of local peoples (Spence, 1999; Wolfe, 1999; Bruyneel, 2000; Lasgorceix and Kothari, 2009; Brown, 2013; Coulthard, 2014). Most of these works leaned towards the effects of colonialism on humans. However, there is a growing anthropological interest to examine the ways in which other-than-human species are entangled in colonial and post-colonial conservation initiatives (Haraway, 1989; Mullin, 1999; Tamara, 1999; Riley and Fuentes, 2011; Bixler, 2013; Malone *et al.*, 2014; Thinga, Jones and Jones, 2017). These contributions push us to think critically and creatively about the spaces and contexts in which colonialism implanted and enforced its logics of dispossession, displacement, control and subjugation of not only humans but also of nonhuman others sharing these spaces with humans (Vaccaro, Beltran and Paquet, 2013) and the implications for the present.

In order to understand the legacies of colonial dispossession, displacement and control that continue to influence contemporary conservation in places like Nthongoni for humans and nonhuman species, I borrow insights both from the anthropology of conservation and multispecies ethnography. In particular, I take insights from works on three broad areas: dispossession and displacement that illuminate the imprints of colonialism on conservation and the implication of the colonial legacies for multispecies relations (Haraway, 1989; Spence, 1999; Lowe, 2006; West, Igoe and Brockington, 2006; Dunlap and Fairhead, 2014; Bocarejo and Ojeda, 2016); theoretical elaborations of multinaturalism and perspectivism that although specific to the Amerindians, are useful in helping us rethink how humans and nonhuman others including plants and spirits actively participate in shaping one another's life (Viveiros de Castro, 1998, 2012; Giles-Vernick and Rupp, 2006; Kohn, 2007; Tsing, 2012); explorations of contemporary economies of conservation, particularly through commercialization of protected areas, that allow us to examine how care and protection of 'charismatic' or endangered species is emerging as a new form of neo-colonial or neoliberal conservation (Van Doreen, 2014; Lorimer, 2015; Bocci, 2017; Parreñas, 2018).

Most conservation endeavours particularly in developing countries were initiated alongside colonialism and modern conservation interventions continue to borrow from what have been termed 'fortress' forms of conservation practices that were initiated and fostered during the colonial era. Fortress conservation envisioned the creation of a 'pristine wilderness' that was free of any form of human habitation (Spence, 1999, p. 85). The exclusion of humans from protected or conservation areas frequently meant the exclusion of indigenous inhabitants of these areas, but such exclusions did not extend to other interested parties such as tourists or

conservationists themselves, who were on the contrary encouraged to enter these 'pristine' spaces. Fortress conservation set up a particular way of seeing indigenous peoples as 'ignorant', 'primitive', 'under-developed' and 'economically irrational' (Torri, 2011 p. 62). It established a legacy of exclusions that included depriving indigenous people from rights of access to resources that remains at the heart of contemporary conservation initiatives in places like Nthongoni.

Conversion of land into protected areas was enacted alongside colonial dispossession, relocation and the transformation of land into commercial estates. As Vaccaro, Beltran and Paquet (2013) observe, claims about the importance of preserving heritage and sites of global significance were used by colonial administrations to validate the dispossession and displacement of the local inhabitants. This legacy has implications both for multispecies interactions and for the health and wellbeing of the different human and animal communities that continue to be affected by these forms of governmentality.

Anthropologists have contended that governments use protected areas as a way of expanding state control and state bureaucracies. Brockington, Duffy and Igoe, (2010) and Lowe, (2006), for instance, see parks as avenues for implementation of governmentality to control and contain indigenous communities. In order to remove land from local jurisdictions and assert their control, the state constructs the image that cultural and natural landscapes are collective heritage that need protection for the good of the nation. The idea of collective heritage and the implied need for best available conservation skills serve to provide legitimacy to the state's claim to a monopoly on conservation areas. Eventually, the transformation of a natural area into a

collective asset and part of public heritage quickly attracts the attention of economic interests that in turn, redefine natural heritage as valuable tourist destinations that are capable of generating revenue (Vaccaro, Beltran and Paquet, 2013). In this way, the economic benefits of tourism are preserved whilst the state can disqualify other forms of economic wellbeing of its citizens as of less value than 'higher' conservation ideals.

Like many other careers established through and alongside colonialism, conservation was set as a domain that required scientific expertise (Mitchell, 2002). This 'rule of experts' engrained and reinforced narratives that local people could not be responsible for conserving environments, whilst conservationists were viewed as experts whose role was to defend the natural world against harmful impacts, which sometimes included the actions of local people. As a consequence, across a range of ethnographic contexts, there is evidence that local people see conservation as a site of 'experts' dominance and thus isolated from them (Saberwal and Rangarajan, 2002). In Chapter 4 of this thesis, I describe this form of expertise and scientific dominance in Nthongoni, in conservation and related enterprises in the tourism sector.

Lowe's study published in 2006 offers a good example of anthropological studies that demonstrate not only the 'rule of experts' but also the ways in which power inequalities are manifest in conservation interventions, and the global influence of hemispheric North on conservation initiatives in the South. The study narrates how Indonesian scientists in Togean Islands championed for the change of conservation status of the Togean macaque from a 'newform' to an 'endemic species', in a strategic effort to attract international recognition, validate the conservation of the macaque and attract funding for it. Scott (1998) also documented

concrete cases of misuse of the power of science by state and state agencies and showed how various political authorities manipulated professional associations and learned societies to legitimise various projects. This in part, illustrates the role of anthropology in exploring how power and economic interests infiltrate scientific interventions in conservation. Haraway (1989) has argued that most of the facts that Western scientific elites championed about nature and reality were in fact western constructs that enabled the justification and provided the means to enforce the power of the elites over the oppressed: mainly the colonized third-world people, women, and the working class.

As elsewhere, residents of Nthongoni have experienced the imposition of conservation as a form of oppression where the use of force did not stop with the conversion of landscapes into protected areas but continues to be a feature of their everyday life adjoining national parks. Anthropological studies have showed that postcolonial conservation and management of wildlife areas has continued to perpetrate forms of structural violence where people and wildlife are subjected to force, manipulation and imposition by the government or conservation authorities (Bocarejo and Ojeda, 2016). The same notions of heritage protection that were used to set up conservation areas in the colonial era are used to deploy power and in most instances force, to keep local people out of national parks, and to deny them access to forest resources (Duffy, 2014). For example, in a study conducted in Colombia's Tayrona National Natural Park, Bocarejo and Ojeda, (2016) showed how conservation authorities labelled the local people as environmental predators and illegal occupants. The community's presence in the park was regarded as an unlucky phenomenon, and an ongoing war on drugs and the claim that the people were a threat to tourism were used by the government as justification for prohibiting the local

people from accessing the park. This led to political and material erasure of the community and an erosion of their livelihood strategies. This situation demonstrates the role of anthropology in illuminating how state power and politics determine who owns land, who lives within it and who is made illegitimate.

Such forms of military and paramilitary power used in creation of colonial states and accompanying colonial and postcolonial conservation areas have been blamed for strained relations between people and conservation areas, including between people and wildlife and people and conservation authorities (Dunlap and Fairhead, 2014; Cavanagh, Vedeld and Trædal, 2015). People who were evicted from, live in or next to conservation areas, therefore, have often associated conservation with colonialism, military force, brutality and authority, and thus developed a negative attitude towards it. Conservation initiatives such as anti-poaching have also increasingly used military approaches that often employ violence against the hunters thus infringing on human rights (Alcorn, 2008; Dunlap and Fairhead, 2014).

Debates on militarised conservation have shifted from discussions on forced dispossession and violence to focus on the ways in which conservation serves to stratify local people along socioeconomic lines. For example, local people who have traditionally subsisted on hunting are within conservation circles, labelled as poachers. Any hunting of an animal that is not permitted by the state or private owner is defined as poaching, and the law does not discriminate local people who have survived on hunting and gathering (Duffy, 2014). Studies have showed that in conservation areas where some forms of hunting are legalised, the rights to hunt tend to entail terms and conditions that are unfavourable to local people. These terms and conditions

perpetually discriminate the local people, making them unable to benefit from hunting rights. For example, Duffy (2014) observes that the fee and conditions set for one to qualify for a trophy or sport hunting licence are such that only elites can afford the licence. Most people who have been dispossessed by protected areas live in abject poverty and therefore cannot afford to pay for such a licence or to meet the conditions that are attached to it. Eventually, the local people end up as 'illegal' hunters and gatherers otherwise referred to as poachers. Alternatively, they seek casual terms to work for the elites in order to eke out a living. This situation sets a hegemonic relationship in which business owners benefit from the labour of people who are restricted from hunting as a means of subsistence, local people seek solace from the casual labour offered by business owners, while the elites enjoy the prestige of hunting (Marcus, 2007).

Conservation areas may also present themselves as spaces that enact global inequalities between tourists and local people in cases where international tourists access the park while locals cannot. For instance, in a study conducted by Haslerig (2000), in three of the most popular national parks in Tanzania, 93% of local people had never visited a park. The local people attributed this to lack of finances to pay for the entrance charges. Alongside disparities between tourists and local people, conservation areas may also perpetuate economic inequalities between the local people and the elites who own or are employed by conservation and or tourism sectors. Although not in these exact terms, Campbell (2005) has discussed how partial and unreliable tourism is, in distributing benefits from protected areas to local communities. Gupta (2013) has also highlighted how local people see rural livelihoods as unattractive and un-remunerative in comparison to the few employment opportunities offered by wildlife-based tourism. She argues that tourism investments tend to eclipse the possibility of other types of land-use that could

diversify local economies and provide income generating opportunities to promote rural development. By obscuring these possibilities, tourism, instead of boosting rural economies, becomes a tool through which socioeconomic inequalities and poverty are entrenched.

Anthropological literature has suggested that some aspects of unfavourable human-wildlife relations are a result of conflicts of interests between conservation managers and local inhabitants, and thus a human-human conflict. Using hunting as a window into the wider colonial intrusions on traditional lifestyles of indigenous people, Escobar (1996), for example, saw a ban on hunting as part of the development enterprise that extended neo-colonial, imperialist legacy to areas of traditional practices, that generated unnecessary conflicts with the local people. Brockington (2002) argues that constraining access to resources in protected areas curtails traditional household and livelihood patterns of indigenous communities. Yet, pro-development anthropologists see conservation organisations as working against the development of the indigenous people. Sikor and Stahl (2011) for example see creation and enforcement of protected areas as a way of denying the local people the opportunity to exploit natural resources and enjoy the privileges that come with industrial development and modernity.

During the World Parks Congress in Durban in 2003, there was a strong and diverse protest against the disruptions that conservation causes to society and livelihoods (Brockington and Igoe, 2006). This is a good illustration of the emerging role of anthropology in not only identifying and critiquing how conservation shapes local lives and landscapes, but also opening these issues up for debate at both local and international conservation fora.

Anthropological literature also shows conservation as an avenue through which big nongovernmental organisations raise funds. Brockington and Igoe (2006) observe that conservation has for many years enjoyed the moral high ground of saving the planet, rescuing species from extinction, and taking a stand against the rapacious consumption of resources by one virulent species. As the authors put it, the 'global good guys' image is not only important for conservationists' own self-perception, but also essential in their fund-raising appeals (Brockington and Igoe, 2006 pg 425).

Debate is gaining momentum over how conservation NGOs have transformed over the years and the forces that underpin this transformation. Larsen (2016, pg 22), for example, categorises conservation NGOs into three groups: The 'Good', the 'Ugly' and the 'Dirty Harry's'. He presents the Good NGOs as the moral guardians of the environment whose identities and activities are framed as a matter of moral duty and grassroots' intervention. The Ugly NGOs are those that turn big and ugly, distancing themselves from the local people and siding with power. The Dirty Harry's partner with the state and private sector and claim this is necessary to secure real-life change. Brosius et al. (1999), has also described how the government penetrated the work of NGOs in Malaysia, such that the NGOs retreated from their core mandate to implement the agenda of the government. These accounts are useful in enabling us to understand the influence national and transnational powers have on conservation. Larsen (2016) concludes that most NGO-led conservation initiatives, functions and activities have inherently turned political. Anthropologists also focus on the influence NGOs have in shaping global biodiversity conservation policy, and practice (Larsen and Dan, 2018). These insights raise critical questions about the independence and freedom of conservation organisations. The insights are also

important in understanding how power and politics influence conservation decisions that might be unfavourable to local people and/or unpopular to conservation but are nevertheless reached and supported by conservation agencies. In the particular case of Nthongoni, the insights are useful in illuminating colonial legacies of dispossession, violent evictions and socioeconomic alienation, and the postcolonial power and politics that currently underlie multispecies interactions. I illustrate this further in chapter 3 and 4 of this thesis.

1.2 Conservation beyond the human: multispecies approaches

Although there is sufficient literature focusing on the impacts of colonial and postcolonial conservation on humans, nonhuman others have also suffered, and this is an emerging focus in anthropology that my study takes up. Studying a multispecies interface requires a simultaneous scrutiny and interrogation of multiple axes in the lives of the different organisms across the different levels of the interactions (Robinson and Remis, 2018). My thesis draws on *multispecies ethnography*: an approach proposed by Kirksey and Helmreich, (2010) to highlight the myriad nonhuman organisms that have often appeared on the margins of anthropology either as food for people, as symbols or just as part of the landscape.

Multispecies ethnography emerged from the realisation that although there have been a growing anthropological focus on human-nonhuman relations, most of the studies have had an anthropocentric bias (Franklin and White, 2001), and animals themselves have not featured as objects of inquiry. In instances when animals played up in anthropological studies, it was often as mirrors to allow humans to think about, talk about, and classify themselves and others

(Margo, 2012). Conversely, anthropological studies that espoused a focus on animals tended to emphasise animism and skew the debate towards animal-rights activism (Wilkie, 2015).

In an attempt to strike a balance and to elucidate this biocentrism and anthropocentrism duality, my thesis uses humans and baboons as a case study, to foster a hybridisation that considers both human and nonhuman accounts of multispecies relations. Moreover, although the thesis attends to the embeddedness of the intertwined, mutually causal processes and relationships of both humans and nonhumans (Singer 2014), and recognises nonhuman behaviours, agencies and experiences (Wilkie, 2015), I theorise that the multispecies encounters that I attend to in Nthongoni are largely configured by colonial, transnational, and global and local political power structures. The thesis, therefore, attends to not only how humanity and animality are produced and transformed through multispecies relationships, but also how political dimensions and structures of power influence these processes for humans and animals alike (Haraway, 2008; Fuentes, 2010; Kirksey and Helmreich, 2010; Helmreich, 2014).

A multispecies lens is a vital anthropological tool for producing knowledge that recognises nonhumans not merely as objects of human concern or as generic moving bodies, but also as individual acting subjects who inhabit a world that is meaningfully and mutually shaped and shared with humans (Faier and Rofel, 2014). This knowledge offers a vantage point to interrogate and re-examine human-animal or nature-culture duality, a philosophy that suggests a separation between humans and nature and often forms the basis for conservation thinking (Fairet, 2012). Nature culture dualism is criticised as inadequate in contemporary anthropological discourses on and about conservation (Neumann, 1996, 1998; Coelho de Souza,

2014) and therefore a multispecies approach is crucial in producing new kinds of biological and social anthropologies (Haraway 2008, Kirksey & Helmreich 2010).

To be able to generate these kinds of knowledge, multispecies approach shifts from its theoretical underpinnings and metamorphosises into a methodological tool. As a methodological tool, the approach embraces *multispecies ethnography* that uses prolonged and engaged fieldwork to illuminate multispecies entanglements (Haraway, 2008). *Multispecies ethnography* engages both cultural anthropology and biological anthropology, and uses practices and objects drawn from art, ecology and biology to ethnographically investigate and subsequently illuminate the entwined intersections of nature and culture (Kirksey and Helmreich, 2010).

Much anthropological scholarship has employed multispecies approaches and *multispecies ethnography* to explore human-nonhuman entanglements. Some examples of these scholarships that are of relevance to this thesis falls into three categories: those that have discussed subjectivity and agency of nonhuman organisms whose lives are entangled with humans (Haraway, 2003; Giles-Vernick and Rupp, 2006; Lorimer, 2007; Haraway, 2008; Pinho and Ellis, 2009; Fuentes, 2010; Paxson, 2012; Van Dooren, 2014; Lorimer, 2016b, 2017); those focussing on semiosis and personhood including transspecies communication between humans and nonhuman others, between the living and the dead and among people, animals and spirits (Viveiros de Castro, 1998, 2012; Kohn, 2007, 2013; Knight, 2012; Galaty, 2014; Tønnessen and Tüür, 2014; Rieth, Lima and Kosby, 2016), and those attending to structural power and material conditions that underpin or influence multispecies entanglements (Mullin, 1999; Neumann,

2001, 2002; Lowe, 2006; Riley, 2007; Tako-eta, 2008; Parreñas, 2012a, 2018; Bocci, 2017). This last category is of particular interest for this study as it offers insights relevant in exploring landscapes and human-animal encounters that are rooted in colonial and postcolonial legacies.

While *multispecies ethnography* is adequate for studies on human-nonhuman interaction, there are other approaches that combine with *multispecies ethnography*, to allow for a more refined focus. Haraway (2016), for example, has proposed zooethnography as an approach to focus on what she terms as animal anthropology. *Zooethnography* aims to study particular animals that live with humans or that humans are deeply engaged with. Like *multispecies ethnography*, it also borrows from Eduardo Kohn's (2007) concept of an 'anthropology of life,' an inquiry that seeks to investigate the integration, engagement and interface of humans and other nonhuman species. Both also recognise animals as moral subjects and agents of their own existence and of their relations with humans (Franklin and White, 2001; Wilkie, 2015). However, the two diverge insofar as differentiation of animal's agency is concerned. While *zooethnography* is focused on animals as individual agents, *multispecies ethnography* often focuses on animals as a group or a species (Candea, 2010; Parreñas, 2012a). Nonetheless, both *multispecies ethnography* and *zooethnography* face similar empirical, theoretical and methodological challenges in terms of the feasibility of conducting an ethnography of animals (Faier and Rofel, 2014; Wilkie, 2015).

To contend with the challenges inherent in conducting an ethnography of baboons, this study derives theoretical, epistemological and methodological insights from *ethnoprimatology*, an approach that sees humans and other primates in integrated and shared ecological and social spaces as deeply entwined. I use these ethnoprimatological insights to extend the attention to

the role baboons play as active and reactive agents in the formation of social relationships with humans in Nthongoni. *Ethnoprimatology* borrows diverse field techniques from primatology to study aspects of primates' ecology and behaviour (Cormier, 2003; Mcgrew, 2007). Together with insights from sociocultural anthropology and anthrozoology, they provide an approach that is crucial in generating an engaged and robust ethnography of human-baboon entanglement.

Although, social anthropologists have occasionally focused on human-nonhuman primates relations since the 1950's (Corby and Theunissen, 1995; Mullin, 1999; Hill, 2000, 2002) and on the role animals play in people's symbols, folklore and myth (Levi-strauss, 1962; Shanklin, 1985; Ingold, 1988), socio-cultural anthropology have recently combined with multispecies lens and natural cultural criticism, to contribute methodological and theoretical infrastructure to *ethnoprimatology,* to merge ethnographic engagement with primate studies. In these endeavours, the distinction between the 'cultural world of humans' and the 'natural world of nonhuman primates' is discarded, and multispecies entanglements become central aspects of the shared ecologies (Malone *et al.*, 2014).

Ethnoprimatology includes in its focus, anthropogenic aspects, including social, economic, and political histories and contexts as core components of inquiry into the lives of other primates and their interfaces with humans (Fuentes 2006; Fuentes & Hockings 2010; Fuentes & Wolfe 2002; Riley 2006, 2007; Sponsel 1997). It affirms the role of humans as primates and of other primates as coparticipants in shaping social and ecological space and recognises mutual roles in both ecological and cultural interconnections. This is despite primatology's fixation that studying primates in 'natural' ecosystems gives higher-quality and more credible knowledge

than studying primates in ecosystems that are shared with humans (Fuentes, 2012). As Fuentes further observes, there are few ecosystems, if any, where humans have not had an impact. In fact, primatology has come to appreciate *ethnoprimatology's* theoretical contributions derived from studying primates in ecosystems shared by humans. Such studies have illustrated the ecological significance of humans as active participants in shaping primate behaviour and morphology, and affecting primate population sizes and densities, both negatively and positively (Fuentes 2006). A good example is Robert Sapolsky and Lisa Share's documentation of an outbreak of bovine tuberculosis (TB) that wiped out the dominant and highly aggressive male baboons from a group, resulting in a completely different social organisation and behaviour in the group (Sapolsky, 2001; Sapolsky and Share, 2004). The outbreak had originated from consumption of infected meat that had been dumped in an open garbage pit of a tourist hotel at the study site. Since dominant male baboons were the most aggressive, they were the most affected (Sapolsky, 2001).

Ethnoprimatology's focus on social and cultural dimensions of human-nonhuman primates interactions including the role and place of nonhuman primates in local mythology, folklore, and religion, serves to distance the subdiscipline from primatology. Primatology centres its focus on behavioural ecology, competition and human-nonhuman primates' conflict as its dominant rubric (Fuentes and Hockings, 2010; Fuentes, 2012). This sets *ethnoprimatology* as a useful tool for integrating subsets of anthropological practice and assessing the mutual ecologies, evolutionary histories, and social lives at the interface of humans and other primates (Malone *et al.*, 2014).

A key contribution of this thesis is that it uses ethnoprimatology as a tool for understanding the co-production of shared ecologies in contexts of colonial and postcolonial conservationism, and human-baboon entanglement across park borders. Lugones (2010) suggests that wildlife in protected areas ought to be regarded as colonial subjects for being subjected to constraints on its freedom to traverse the environment outside the parks. Through creation of protected areas, a good number of which are fenced, and colonial and postcolonial conversion of the land adjoining protected areas to permanent agriculture, animals have increasingly experienced restricted movement and their dispersal areas or migratory corridors has been interfered with. Permanent agriculture also puts wildlife in conflict with humans cohabiting their ecologies or living in the adjoining lands, as wildlife strays outside of protected areas to forage on crops (KWS, 2008). In *Decolonizing extinction*, Parreñas, (2018) argues that what appears as liberation for rehabilitated orangutans such as the free mobility in the wildlife center, may on a deeper level be less liberating than it seems, for the wildlife is still constrained within the center. This opens us to the thought that efforts to liberate or to conserve might serve to extend colonial legacies to wildlife and in the process subject wildlife to colonial and postcolonial oppression.

Anthropological work has also analysed instances where local political interests have employed colonial imprints to cripple conservation efforts. This helps us to understand how narratives of past ills may be manipulated by those in power to drive their personal interests or political agenda. Larsen, (2016) observes that governments in the global south have often hidden behind notions of imperialism to shoot down conservation interventions that are not favourable or of interest to them. They portray such interventions as extension of imperialism and a demeanor of an independent government. For example, when an international NGO protested against

logging in Sarawak, Malaysian Prime Minister regarded the campaign as eco-imperialism, claiming that the north was still subjecting the country to imperial pressures despite the country having achieved its sovereignty (Brosius, 1999).

The creation of national parks has often borrowed from the protectionist approach used by the Yellowstone National Park, established in the USA in 1872 (Spence, 1999). The approach adopts a nature/culture duality that fosters for a separation of humans and wildlife. In the case of Yellowstone, the indigenous American Indians had to be removed from their land to create a 'pristine' environment. As Spence (1999 p.4) puts it, 'uninhabited wilderness had to be created before it existed'. New types of boundaries were then established between Indians and wildlife that had previously shared the same environments for many years.

The decision to remove the native Indian people from the land was made without their knowledge and consent. After their removal, the government obscured the history of their occupancy to create the impression that the land had never been occupied. This scenario set a precedent for the global conservation movement that was adopted as a model for conservation by many nations throughout the world, for many years to come (Litke, 1998; Wang, Lassoie and Curtis, 2006; West and Brockington, 2006; De Pourcq *et al.*, 2017). The scenario calls for our attention to the ways in which nonhuman landscapes are deconstructed and reconstructed. It also opens us to the multiple facets of multispecies interactions that resulted from the conservation areas that the model helped to create.

Despite the separation that the protectionist approach envisioned between people and wild life, the lives of most people living in close proximity to conservation areas remain entangled with the wildlife in these areas: either physically (Brockington, 2002; Walpole *et al.*, 2003; Woodroffe, Thirgood and Rabinowitz, 2005), materially (Golden *et al.*, 2011; Vedeld *et al.*, 2012; Lindsey *et al.*, 2013) or semiotically (Giles-Vernick and Rupp, 2006; Galaty, 2014; Kohn, Descola and France, 2014). This begs the question whether it is practically possible or even desirable to separate humans from other than human species in shared ecological systems.

Anthropologists interested in these forms of human-nonhuman interactions have considered such areas of entanglement as multispecies landscapes and have proceeded to use a multispecies lens to explore how the different organisms including humans interact with each other to shape and create the landscape for each other (Parathian *et al.*, 2018). In this regard, all the species in the interaction not just humans, are active participants and an integral part of one another's environment (Kirksey and Helmreich, 2010; Baynes-Rock, 2013; Wilkie, 2015). Prior to development of these notions, most anthropological studies on human-animal relations including those about domestication and hunter-gatherer communities had been blamed for being overly anthropocentric, assuming humans as the only active participants in the relations (Ingold, 2000). However, multispecies debates have provided insights for shifting the focus to explore the different ways through which animals actively participate in coproducing life for themselves and for people.

In *Visions of Apes,* Giles-Vernick and Rupp, (2006) narrate stories of human-nonhuman primate relations amongst the Bangando population of Southern Cameroon. The authors present

historical accounts of how monkeys, Chimps and Gorillas were said to have rescued members of the Bangando community from attacks by the rival Ndzimou peoples. Residents narrated how the primates warned them about approaching attackers, directed them on where to hide and helped them to find the quickest routes to navigate through the forest. These events made the community adopt the primates as their clan totem. Subsequently, they refrained from eating or harming the primates. Riley and Priston (2010), observed a similarly mutual relationship between Lindu people of Tonkean Island in Indonesia and macaque monkeys. The indigenous Lindu people, considered macaques as guardians of their traditional law known as *adat.* The folklore resulted in a taboo against causing harm to the macaques. These stories demonstrate mutual relations between humans and primates that blurred nature-culture or human-animal lines and may, as a result, have long-term implications for human-animal relations and conservation more generally. In the specific case of Lindu, the folklores and the subsequent respect afforded the macaques tolerance from humans despite the macaque's destructive behavior. However, the folklore was held by the indigenous people and migrants to the area did not hold similar values for the macaques. The migrants therefore often killed the macaques whenever they were involved in a conflict. This is important in exploring how migration, dispossession, displacements and resettlement in new areas constructs different forms of multispecies relations.

1.2.1 Prioritised species

Multispecies approaches have also offered traction to anthropological studies of human relations with animals that Lorimer (2015) terms 'charismatic species'. In conservation spheres, charismatic species are defined as large animal species with symbolic value: either beautiful,

impressive, or endangered, or with a widespread popular appeal (Margo, 2012; Albert, Luque and Courchamp, 2018). In Lorimer's usage, however, charismatic species include corncrakes (*Crex crex*), a light-brown bird about the same size as a pigeon (Lorimer, 2007), that although endangered and thus of popular conservation appeal, does not fit in the category of large animals. The term is synonymous with the notion of 'flagship species' and is often used by environmental activists to achieve specific conservation goals.

The term charisma was borrowed from Latin where it meant a divine or exceptional power, talent or quality that is conferred to an individual (Ducarme, Luque and Courchamp, 2013). It was thus intended to designate only humans, and so far no new definition has been added for its use about animals (Ducarme, Luque and Courchamp, 2013). Although use of charismatic species is problematic in so far as it labels some animals as exceptional and sort of separable from other less charismatic ones, I theorise that the growing use of charisma to designate animals, inadvertently redraws our attention to the conceptual boundaries between humans and animals.

Although charismatic animals are defined as impressive and appealing, not all charismatic encounters are desirable. People often brand an animal as either charismatic or problematic depending on the kind of interactions they have with the animal. For example, crop foraging elephants in Sri-Lanka are detested by farmers but at the same time seen and treated preferentially by tour guides and tourists (Lorimer, 2015). This implies that charisma in animals might mean a different thing to different people or to the same people at different times, depending on the interactions the people have with the animal in question. This has implications

on how people treat or react to the animal and further determines the relationship they keep with the animal.

The undesirable encounters of crop foraging elephants with farmers in Sri-Lanka are largely shaped by a shift from hunting and gathering to permanent agriculture(Lorimer, 2007; Lamarque *et al.*, 2009). The form of agriculture that farmers espouse is characterised by cultivation of crops that are attractive to wild animals, often bringing the animals closer to humans. However, although the conflict is blamed on farmers, the shift to agriculture is largely influenced by a colonial phenomenon that encultures local people to sedentary agricultural practices. Human animal interactions are therefore likely to be influenced by change in social economic activities that is perpetually shaped by a colonial legacy.

Charismatic species are heavily advertised in animal documentaries, and wilderness and human absence in these spaces is paramount (Lorimer, 2015). This is likely to have unfavourable implications on local human inhabitants in the form seen in Tsavo West and Chyulu Hills National Parks where my fieldwork took place. In such areas, conservationists or park managers try to clear or keep the inhabitants off the conservation areas, in an effort to authenticate their 'wilderness'. Moreover, marketing materials for tourism and wildlife areas are populated with evocative and promissory images of charismatic species. This often motivate wildlife managers to go to great lengths to ensure abundant populations of charismatic species are available to watch in the wild or at least in the spaces in which they might be viewed (Lorimer, 2007, 2016a).

Current marketing in the tourism industry revolves around the Big-Five game animals: the elephants, rhinoceros, lion, leopard and the buffalo (KWS, 2008; Di Minin, Leader-Williams and Bradshaw, 2016; Lorimer, 2016a). This term was coined by the colonial big game hunters and refers to the five most difficult animals in Africa to hunt on foot but is now also widely used by tour operators. For these animals to appeal to the paying tourists and the public, they have to be packaged in a charismatic way. Analysing the use of such terms and the influence charismatic animals have had on both tourism and conservation is helpful in identifying the significance of colonial legacy that I discussed earlier in this section.

The concept of charismatic species is problematic in so far as it idealises and virtualises some species over others and thus create a sort of class struggle between prestigious endangered species and the abundant species that is castoff since it is not significant in conservation terms (Ducarme, Luque and Courchamp, 2013). In Galapagos Islands in Ecuador, for example, a project to protect the endemic Galapagos tortoises led to mass killing of goats in what has come to be regarded as the world's largest mammal eradication (Bocci, 2017). Apparently, goats were first introduced by pirates in the seventeenth century as a source of food, but their population had increased over the years to the extent that they had denuded most of the vegetation and contributed to starvation of the tortoises. A multisectoral multimillion-dollar Global Environment Facility grant was launched to help in eradicating the goats. The project involved the United Nations Development Program, the Charles Darwin Foundation, the country's Ministry of Agriculture, the Galapagos National Park and the Galapagos local government. Thirty-eight hunters were recruited locally and weapons, veterinarians, hunting dogs, helicopters, and pilots were sourced from all over the world. Together, they formed the most

sophisticated and deadliest eradication assemblage ever attempted. Within a span of five years, more than two hundred thousand goats had been killed.

Understanding which animals are prioritised and which are not is crucial for helping explain power relations within the conservation arena and in understanding the issues that underly some of the patterns that emerge in multispecies encounters. The Galapagos case above presents several issues that are of interest to anthropology. Firstly, it invites debates about the role of global conservation politics in determining which species lives and which are eliminated. Secondly, the elevation of Galapagos tortoise as a charismatic species led to its preferential treatment over the goats and thus needing protection from the goats. This provides insights into the contentious nature of anthropogenic interference with other-than-human species in shared ecologies which happened at two levels. Firstly, at the level of introducing the goat to the island, and secondly at the level of eliminating the goats in order to save the tortoises. Thirdly, by elevating one species as a charismatic species, there are chances of neglecting other species in the shared ecosystem and hence allowing the non-charismatic species to be decimated. In conservation spheres, charismatic species are often used in fundraising for conservation of protected areas (Lorimer, 2007; Margo, 2012; Ducarme, Luque and Courchamp, 2013), hence a species that is not considered as charismatic is likely to be neglected.

Most farmers and conservation managers in Kenya (Mwangi *et al.*, 2016) and elsewhere (Lamarque *et al.*, 2009), generally consider baboon; a species of specific interest in the current study, as a pest and a problem animal. It is therefore not regarded as charismatic in terms of conservation and as I illustrate in Chapter 4, 5 and 6 of this thesis, this has important implications

for human-baboon encounters and relations in Nthongoni. As such, my study provides a narrative that draws us to think about human encounters with uncharismatic species.

1.2.2 Multispecies interdependence

Anthropological studies have paid attention to the energy, effort, time and risk that goes towards providing care to prioritised animals. Parreñas, for example, has extensively studied the work of care for rehabilitation of Orangutans in Sarawak, Malaysia (Parreñas, 2012; 2018). As highlighted earlier in this chapter, her work is centred on how international volunteers, mostly British women pay thousands of dollars to travel to Malaysia and provide hard labour in a rehabilitation centre for Orangutans. She attributes the motivation that drives these volunteers to appreciate such hard labour and take up the risks associated with the work including that of being attacked by the Orangutans to affect: a sensational feeling that is produced through a spontaneous moment of multispecies encounter (Parreñas, 2012). For the local subcontracted animal keepers, however, Parreñas attributes the motivation to postcolonial inequalities characterised by lack of other opportunities, lack of an education and the post-industrial desires for a meaningful job, a regular source of income and amenities such as housing. This work calls our attention to multispecies interdependencies and challenges notions of firmly bounded categories between humans and nonhuman species and between global North and South. In addition, it contributes to debates about the implications of colonial tropes of violence and benevolence.

Alongside other works by anthropologists such as Lorimer, (2007; 2015); Tsing (2012) and Van Dooren (2014), and conservation biologists such as Ducarme, Luque and Courchamp (2013),

Parreñas' work opens new debates on human management of other species and the role of 'experts' in manipulating the biology and ecology of other species. In an effort to rehabilitate and rekindle the numbers of Orangutans, infant orangutans were separated from their mothers within a few months of its birth (Parreñas, 2018). The keepers argued that the mother having lived in captivity for a long time would not be in a position to teach the infant how to live in the wild. The keepers claimed that they were in a better chance to impart jungle skills than the infant's mother. These accounts are important in helping us understand the ecologies and circumstances under which multispecies encounters occur and the role 'experts' play in shaping these encounters.

Parreñas also highlights about forced copulation where a female is temporarily confined with a male until conception is achieved. This, she argues, is tantamount to perpetuating rape on female Orangutans, although she is quick to cite some biologists that have referenced Orangutans as a species that is inclined to use forced copulation in the wild as a reproductive strategy (Parreñas, 2018). 'Experts' management of charismatic species may extend beyond species to touch on manipulation of the environment inhabited by the species, which as shown later in this thesis, might have implications for other species and humans sharing the same environment.

Anthropologists have paid interests to anthropogenic impacts on multispecies both proximate and across geographical distance. In *Flight ways,* for example, Van Dooren (2014) pays thoughtful attention to the painstaking efforts of individual Black-footed (*Phoebastria nigripes*) and Laysan (*Phoebastria immutabilis*) albatrosses, that are threatened by plastic debris across the oceans; scavenging Indian vultures that are essential for sanitizing and health-promoting

service but are now dying off as a result of poisoning from carcasses of cattle treated with an anti-inflammatory drug; and a tiny population of Little Penguins (*Eudyptula minor*) that is struggling to persist and nest despite formidable anthropogenic obstacles and threats. These stories are crucial for provoking our thoughts about our interconnectedness and interdependence with other species and how our activities are likely to affect other species in both our immediate environment and afar.

Two other stories in Van Doreen's book are of specific interest to my study since apart from offering deep insights about multispecies interdependence, they are crucial too in illuminating the logics that humans use to develop certain relations with other species. One of the stories is about conservation of Whooping Crane (*Grus americana*) in North America. Here, the conservation program entails intensive captive breeding of the cranes that coaxes them to reproduce. Humans take up the role of surrogate parents that must instil lost or deficient reproductive and migratory behaviour in individual cranes. The story brings us back to the costs of endangered species recovery discussed above: effort, time, and personal commitment, and to discussions surrounding affectionate encounters, in this case between the cranes and the surrogate human parents. Van Doreen, however, moves a step further to interrogate the ethics of intensive breeding where individual birds are used in species recovery. The other story offers the account of a Hawaiian Crow (*Corvus hawaiiensis*) that is shown to mourn the loss of its mate. Van Doreen argues that mourning is set in the context of human exceptionalism, which asserts that humans are the only species that can recognise the connection between life and death and thus the only one that can truly mourn. In this regard, grief becomes a medium through which humans set themselves apart from nonhuman species. However, Van Doreen uses this

story to hypothetically demonstrate that nonhuman species are affected by the loss of their mates. By doing this he invites our thoughts to the possibility of learning to mourn with crows for the many loses of life and diversity that have taken place within our shared ecologies. Moreover, mourning of the crow serves to illustrate that the philosophical constructs that sets humans apart from nature are at the core of species extinction. This opens debate on the interactions and relationships between humans and nonhuman animals and uses mourning of a crow to symbolise consequences of species extinction not only for the species but for our well-being too.

1.2.3 Semiotics: Multispecies relations beyond the species

In order to understand multispecies relations more deeply, some anthropologists have further narrowed down to specific sites of entanglement and what these sites mean for understandings of humanity and animality. Eduardo Viveiros de Castro and Eduardo Kohn, for example, have moved beyond entanglements at the physical and material level to ethnographically study the semiotic realms of Amerindians' entanglement with their environment. The two argue that humans, animals and plants are not the only ones that are involved in constructing and influencing each other's life and wellbeing, but that spirits are equally involved (Viveiros de Castro, 1998; Kohn, 2013). Eduardo Kohn argues that animals, plants and spirits are immersed together with humans in a socio-cosmic medium where each being: plants and spirits included, continuously constructs and shapes the life of the other. He further posits that the human species is a symbolic species and much of its communication is done through symbols and signs (Kohn 2013). Exploring symbols and spirits is therefore helpful in understanding the role both humans and nonhuman others including spirits, play in influencing how and why the other organisms

they interact with have evolved as a species over time and to illuminate how human and nonhuman lives and worlds mutually emerge through multispecies relationships (Viveiros de Castro, 1998).

Eduardo Kohn explores 'transspecies communication' through analysis of how the Runa people in Ecuador develop modes of communicating with their dogs (Kohn 2013). Although his study does not demonstrate actual change in animal behaviour or perception as a result of their communication with humans, he uses the Runa people's interpretation to infer that their dogs interpreted and understood human signs. This form of communication or the modalities of humans deciphering and understanding animal communication serves to blur the boundaries between humans and animals and as Faier and Rofel, (2014) puts it, instantiates the differences among them.

Animals are not the only nonhuman organisms that are able to communicate with humans or other nonhuman agents. In *How forests think*, Kohn (2013), has explored communication between the Amerindians and their forests and trees. Likewise, Tsing (2012) has attended to human, forest and mushrooms encounters, tracking dependencies between different kinds of beings and landscapes in matsutake worlds and how matsutake consumers craft their lives and identities through their engagements with the mushrooms. In my study I demonstrate how farmers in Nthongoni craft meaningful communication with baboons through symbols and on rare occasions decoding and understanding baboon language.

Exploring the entanglement of animals in the spiritual and other semiotic realms of humans is crucial for understanding how humans and nonhuman species coproduce life and wellbeing for each other, It also illuminates the role of these semiotic components in blurring boundaries between humans and nonhumans species. As Mullin (1999) observes, there are instances where humans and nonhuman lives are entwined in a seamless cosmos: Instances when humans are thought capable of reincarnating into animals and vice versa, animals thought of as people or as capable of portraying personhood, animals considered as mediators between the living and the dead or gods and people and thus bringing messages of life, death, social order customs and practices, or when tricksters are thought to be able to manifest themselves in either human or animal form. Notably, semiotic values are community or area specific and thus are crucial in helping us understand how humans and nonhumans co-produce life and wellbeing in these specific communities or areas (Galaty, 2014).

1.3 Multispecies relations and the implications for human-animal health and wellbeing

Whereas humans and animals have shared intimate affinities that are beneficial to the health and wellbeing of each other (Giles-Vernick and Rupp, 2006; Haraway, 2008; Fuentes, 2010; Kirksey and Helmreich, 2010; Galaty, 2014), their close interactions have also produced opportunities for unfavourable health outcomes such as injuries, disability and fatality (Kioko, Kiringe and Omondi, 2006; Lamarque *et al.*, 2009; Makindi *et al.*, 2014), exchange of zoonotic diseases (Greger, 2007; Dixon, Dar and Heymann, 2014; Muehlenbein, 2016), and damage to habitats, crop and property that may compromise the health and wellbeing of each other (Fairet, 2012; Mwangi *et al.*, 2016). Other consequences may include hidden impacts such as emotional stress,

fear and restricted mobility (Lamarque *et al.*, 2009; Barua, Bhagwat and Jadhav, 2013). In this section, I discuss anthropological literature on some of the ways in which human and nonhuman others are implicated in each other's health and well-being. I also attend to some of the strategies that people use to avert negative health and wellbeing consequences of the encounters between them and nonhuman others. I give specific attention to the One Health agenda that fosters interdisciplinary collaboration to address human-animal health.

Humans and animals co-constitute one another and are involved in many companionate ways that produce health. Within domestic spheres, for example, the use of animal products and animals themselves as sources of food means that nonhuman animals are crucial for constructing human health and wellbeing (Franklin and White, 2001; Rock, Mykhalovskiy and Schlich, 2007). Likewise, food and folk medicine for hunter-gatherer communities are often inseparable and are accessed and collected together from the forest (Golden *et al.*, 2011; Jost Robinson and Remis, 2014; Freeman and Anderies, 2015). On their part, people house, provision, protect and take care of animals either as livestock (Herrero *et al.*, 2013) as pets or companion species (Haraway, 2003; Hurn, 2012) or as zoo animals (Parreñas, 2012b). Crop foraging can also be regarded as another form of inadvertent provisioning for wild animals. All these forms of sharing of food and space are an essential part of humans becoming human with nonhuman others, and animals becoming animal with humans (Haraway, 2008; Brown and Nading, 2019). This illuminates the entwined interdependencies of humans and nonhuman others in constructing health and wellbeing for one another. As Singer (2014) posits, humans – and nonhumans alike – come to be what they are as a species through interactions with, and genetic and other responses to the challenges and opportunities presented by other life forms.

While entanglement between humans and animals is celebrated for the benefits it provides, some dimensions of the interaction are detrimental to the health and wellbeing of both. One area that has received overwhelming attention is cross transmission of diseases between humans and animals. Until recently, much of this attention was anthropocentric, viewing animals as carriers of pathogens that can cause disease to humans (Rock *et al.*, 2009; Rock, 2017). Little attention was paid to humans as causes of ill health in animals. This has changed over the years with studies increasingly demonstrating the role humans play in transmitting diseases to animals (Muehlenbein, 2016) or causing anthropogenic change to landscape, that contributes to emergence of diseases or to deterioration of animals' health and wellbeing (Nathan D. Wolfe *et al.*, 2005; Barrett and Osofsky, 2013). Nonetheless, the idea that animals can cause diseases to humans has troubled human-animal sociality as those offering interventions often see separation of humans from animals as the ultimate solution (Singer, 2014; Brown and Nading, 2019). Understanding how such ideas and subsequent solutions are reached is important in helping us discern how discourses about health are formed and how interventions such as quarantine or killing of animals perceived as a threat to health come to be implemented. Moreover, the possibility of parasites crossing between humans and animals provides a platform to challenge notions of nature-culture separation and the ideas of humans and nonhuman animals being biologically different from each other.

Multispecies interactions have also had implication on food and nutrition which subsequently affects health and wellbeing. Crop foraging by animals, for example, may compromise food availability for humans, resulting to malnutrition (Ogra, 2008; Mc Guinness, 2016; Ndava and Nyika, 2019). It may also destroy economies for people and compromise their ability to meet

requirements for health and wellbeing (Barua, Bhagwat and Jadhav, 2013; Mwangi *et al.*, 2016). People tend to retaliate for the destruction animals cause to food and property and in the process kill or maim the animals. Retaliation can also result to aggression from animals causing injuries or death in humans (Tako-eta, 2008; Lamarque *et al.*, 2009).

Since emergence of *ethnoprimatology*, interests in ethnoprimatological studies on the health of humans and nonhuman primates have increased dramatically. Such studies have focused on diverse scopes on transmission of disease between humans and nonhuman primates (Chapman *et al.*, 2006; Rwego *et al.*, 2008; Mbora and McPeek, 2009; Ghai *et al.*, 2014; Muehlenbein, 2016, 2017; Narat *et al.*, 2018) including a focus on the interplay between pathogens and behaviour, and the ways anthropogenic disturbance shapes the interplay (Gillespie, Chapman and Greiner, 2005; Altizer *et al.*, 2006; Hodder and Chapman, 2012). The impact of access to human food (e.g., provisioning and crop foraging) on primate population demographics and activity patterns is well documented (Fuentes, 2010; Riley and Priston, 2010; Riley and Fuentes, 2011; Riley, 2013; Zak, 2016). Researchers have also explored impacts of human food on primate–parasite interactions (Chapman *et al.*, 2006; Weyher, Ross and Semple, 2006) and primate social organization and behaviour. These are all critical in understanding how entanglements between humans and nonhuman primates influence their health and wellbeing.

In a study conducted by Sapolsky and Share (2004), for example, an outbreak of bovine tuberculosis (TB) that was detected in baboons was found to have originated from infected meat that was dumped in an open garbage pit, in a nearby tourist lodge. The majority of the baboons that were affected were males, particular the highest ranked and most aggressive ones since they

were often the first to feed from the garbage pit. The death of the dominant males resulted in a different social structure within the baboon troop with long-lasting effects on the troops social behaviour and biology. My study builds on insights from these studies to move beyond ethnographic attention to human-baboon interactions at the social level and examine how the two species might be entangled in each other's biological health and wellbeing.

1.3.1 One Health agenda:

To address the health challenges that arise from the entwined interaction of humans and animals, new approaches such as One Health has emerged. One Health is an intervention that endeavours to harness interdisciplinary collaboration of physicians, veterinarians, environmentalists, anthropologists, economists and sociologists to address health problems (van Helden, van Helden and Hoal, 2013). Its global orientation has enabled it to galvanise substantial international resources and attention in the recent past and it is gaining traction in many developing countries. However, critics of the agenda observe that One Health tends to undervalue the diverse ways in which animals are implicated in human health (Rock *et al.*, 2014; Rock, 2017; Brown and Nading, 2019). As a result, the majority of One Health projects focus on animals as carriers of diseases and thus dangerous to human health, rather than as companions species or as species that we co-share the environment with (Rock, 2017). Moreover, most One Health projects have focused on health at the intersections of humans and livestock or domestic animals (Zinsstag *et al.*, 2011, 2015). My thesis uses a multispecies approach and shifts the focus to humans and wildlife, with people, baboon and gastrointestinal parasites as the key species in the multispecies focus.

Although One Health is pegged on interdisciplinary collaboration and is interested in the entangled relations between humans and nonhumans, there are serious challenges in its implementation (Gibbs, 2014; Degeling *et al.*, 2015; Nyariki *et al.*, 2017). Majority of the professionals interpret and apply the concept differently to serve their own specific needs. For example, medical doctors tend to focus mainly on the hazards to which animals expose humans and not those that humans pose to animals and the environment (Alder and Easton, 2005; Kahn, Clouser and Richt, 2009). Likewise, veterinarians tend to focus on the risks wildlife poses to domestic animals (Daszak et al. 2000), while conservationists focus mostly on disease risks posed to wildlife, and the influence of humans on the environment (Gortázar *et al.*, 2007; Hughes and Macdonald, 2013; Buttke, Decker and Wild, 2015).

While anthropologists are interested in the entangled relations envisaged by One Health, there are ontological differences in terms of the approach. One Health is a public health approach and thus tends to focus on contamination and transmission of pathogens while anthropology is concerned with understanding and unravelling the social, cultural and politico-economic conditions that configure such contamination and pathogen-transmission (Hinchliffe 2015). Observing the social contexts is important for understanding the circumstances under which human-nonhuman species encounters occurs and how disease exchange happens. As Brown and Kelly (2014) observe, blaming zoonotic diseases on interactions alone is an ingredient for diverting attention from the locally contingent material proximities that lead to outbreaks. This study borrows from these insights to illuminate how One Health agenda is structured and implemented in Kenya and at the study site. In Chapter 6, I illustrate what One Health constitutes

in Nthongoni and in Kenya more generally, the politics playing out in its implementation, and the involvement of different practitioners.

1.4 Research objectives

This study sought to address the following objectives:

1. Examine forms of human-baboon interaction in Nthongoni.
2. Explore how cultural, socioeconomic, political and structural settings configure human-baboon entanglement and disease risks, and affect human, baboon and environmental wellbeing.
3. Investigate how community members and stakeholders in the health, veterinary and conservation spheres respond, either separately or collaboratively, to concerns of human, animal and environmental wellbeing in the area.
4. Test for potential pathogen exchange between humans and baboons through analysis of faecal samples.

1.5 Summary of chapters

Following this introductory chapter, Chapter 2 provides details of the study site and discusses the specific methods that I used to conduct this research and analyse the data. The chapter describes the ethnographic approach and the qualitative methods used for the social component of the research, and the quantitative methods used to attend to the biological component of the study. Throughout the thesis, I use raw data quotes as illustrations, to present the opinions and voices of the people I interacted with, interviewed and or observed. I use quotation marks for

short quotes that are included inside the text. Long quotes with over 40 words are all indented. All the quotations are followed by a pseudonym denoting the research participant and where appropriate, the occupation of the participant.

In Chapter 3, I describe the establishment of Tsavo and Chyulu National Parks and the historical development of the national parks' movement. I demonstrate how colonial legacies and postcolonial states and institutions influence multispecies interactions, and the way humans interact with wildlife and the environment more generally. In the second part, I describe how the creation of Tsavo West and Chyulu Hills National parks resulted in the displacement and alienation of local people; the political trajectories that underpinned this displacement and alienation; and the ways in which these have impacted on the lives of people, wildlife and the environment. I specifically focus on Tsavo West rather than Tsavo East because although the two parks were combined when they were initially established, the people of Nthongoni are direct neighbours of Tsavo West and Chyulu Hills but not of Tsavo East National Park. Part three highlights the current situation of Tsavo West and Chyulu National Parks and the activities that take place in them. In the conclusion to this chapter, I argue that conservation ideologies and strategies have had more to do with imperial and state control over resources than with conserving nature and biodiversity. I also highlight the role of anthropology in illuminating the complexities inherent in determining who benefits and who suffers from conservation, whose story is upheld and whose is ignored.

Chapter 4 uses the concept of alienation to describe the physical separation of the people of Nthongoni from natural resources. It focuses on skewed power relations between local

inhabitants and conservation agencies, and the many forms of *alienation* of the local people. I present the diverse economic activities that local people engage in, including cultivation, livestock keeping, hunting and woodcrafts, and discuss livelihood opportunities and challenges that living next to the parks provide for the people. I explore the violence and conflict connected to, and the power relations and governmentality that the process of creating the park wielded and discuss how anthropology can help in understanding the ways in which protected areas reconstruct economies, space, place, and people.

Chapter 5 is divided into four sections. The first two sections address the personification of baboons, beginning with evidence of *mumo's* personification and going on to illustrate the many levels at which he influences the social worlds of the people of Nthongoni. *Mumo* is an elderly lone baboon but to the people of Nthongoni, he is not simply a baboon: his stature transcends that of ordinary baboons to adjoin people's ancestral and spiritual realms. These semiotic entanglements serve to demonstrate the interfaces other than physical contact that humans share with nonhuman others. Section three carries on the discussion on personhood but through the varied perspectives of seeing, thinking about and living alongside ordinary baboons, other than *mumo.* Finally, I conclude the chapter by highlighting its contribution to anthropological debates around the 'nature-culture' dualism: the separation of humans and nature, and the question of what happens to human life and wildlife when their separation and alienation is enforced. I also underscore the insights the complex 'nature-culture' narratives can offer to conservation of wildlife and nature more generally.

In Chapter 6, I focus on how humans and wildlife interact to constitute and construct health for each other and for their shared environment in Nthongoni. I pay specific attention to people and baboons, to examine the multiple levels at which the two species share environments and the elements in it that constitute health: food, air, water and microbiota. This entanglement is despite colonial and postcolonial efforts to separate human life from wildlife. I illuminate the opportunities human-baboon interactions afford for disease exchange and for other health implications for people, baboons and the environment, both positive and negative. Lastly, I examine how the One Health agenda is playing out in Kenya and at the study site.

Considering the role phylogenetic resemblance of humans and baboons might play in facilitating disease exchange, and the opportunities geographic overlap provides for them to share infectious agents, Chapter 7 presents the prevalence of and potential for exchange of gastrointestinal parasites in humans and baboons in Nthongoni. Being at the human-wildlife interface of Tsavo West and Chyulu Hills National Parks, Nthongoni experiences a high level of interaction between humans and baboons. An investigation of parasite prevalence was therefore critical, to provide an index of population health and to establish the role of humans and baboons in determining the health of the other and of their shared environment. The chapter presents results on the helminths and protozoa that were isolated from human and baboon faecal samples.

Chapter 8, the last chapter, is the overall conclusion of the thesis and the recommendations for future research.

Chapter 2. Methods

This thesis draws on 13 months of ethnographic fieldwork in Nthongoni, a remote rural area in eastern Kenya. The fieldwork, from September 2017 to September 2018, focused on human-baboon interactions and the potential for disease exchange between the two species. This is in light of a global conservation agenda that is complicated by local, national and international political and economic influences. I explored the intersections between humans, baboon and their shared environments, and examined how each is implicated in the social life, health and wellbeing of the other. I paid attention to the ways that people come into contact with baboons and how these encounters are embedded in political, social and economic life. Studying human-baboon interactions was identified as a useful case study to think about human-wildlife relations more generally.

This chapter describes the research approach and the methods I used to address these objectives. Firstly, I provide the rationale for choosing a mixed method strategy. I then provide details of sampling for both social and biological components of the study, and on the processes of data gathering and analysis. Lastly, I reflect on the ethical and other dilemmas that I faced in the process of carrying out the research, with the aim of informing future similar projects.

2.1 Methodological approach

This study adopted a mixed methods approach, complementing primary qualitative fieldwork with a quantitative biological component. The qualitative component used ethnographic approaches such as participant observation, formal and informal in-depth interviews and general conversations. Over the 13 months of my fieldwork, I was hosted by four different families,

which afforded me the opportunity to immerse myself in the everyday lives of the families, their neighbours and other village members. I accompanied family members when they went to fetch water from the river, wells or boreholes (whichever was available in that particular village), went ploughing with them, shepherded their livestock, fetched fuelwood, burned charcoal, and made bricks for construction, among other household chores. By the time I was finishing my fieldwork, I felt I had become a part of the functioning of the villages and an intrinsic part of the lives of people of Nthongoni. This was crucial in facilitating a first-hand experience of the people's life, and a deep understanding and interpretation of the meanings they have for their everyday life, actions and experiences (Creswell, 2007). Participating in their daily lives allowed me to see what they actually did, not just what they said they did or how they talked about it. It also gave me an opportunity to see and experience the many forms of people's interactions with baboons and other wildlife; a situation or context that is difficult to discern from a simple interview or a questionnaire survey.

For a study that sought to illuminate social actions and their subtleties (Creswell, 2007), the ethnographic approach was crucial in identifying the complex interactions of factors in the history and social lives of the people of Nthongoni, and in generating a rich understanding of the local, national and international political, economic and social influence. The ethnographic study employed multiple qualitative methods with members of the local community, and key stakeholders in the health and conservation sectors. By using the approach, I was able to build rapport and gain the trust and confidence of the community, which was necessary for gathering authentic information, particularly about complex and sensitive issues such as hunting, otherwise regarded as poaching (Higginbotham, Albrecht and Connor 2001). The approach

enabled me to understand the socio-cultural, politico-economic and ecological situations that shape human, baboon and environment entanglements, and health.

Equally, a mixed methods design was useful for helping triangulate and complement the data gathered from each of the qualitative and the quantitative approaches, and thus enriching understanding of the research topic (Creswell, 2014). For example, while the qualitative findings illustrated the forms of contact, the complex factors behind these contacts and how these may provide opportunities for disease exchange between humans and baboons, the biological component that entailed collection and analysis of faecal samples from people and baboons, provided evidence of the gastrointestinal parasites that are likely to be shared by the two species as a result of their contact. In this regard, the mixed method approach provided additional information and a complementarity that would have been difficult to achieve from a mono-method approach.

Although I used a mixed method approach, the qualitative component was dominant. I relied on a qualitative inductive approach that sought to gather information and construct knowledge rather than to test an existing theory (Morse, 2005; Tariq and Woodman, 2013). At the same time, I was cognisant that biological approaches and data would enrich my research, therefore, I embedded a biological component in the dominant qualitative design. The overall sampling strategy was concurrent mixed methods (Tariq and Woodman, 2013), whereby I conducted the quantitative part of the study in concurrence with, and as a subset of, the predominantly ethnographic study. I collected baboon faecal samples opportunistically as I observed baboons and their intersections with humans. Likewise, while living in the community under study and

conducting participant observation, I recruited candidates and asked them to donate stool samples for gastrointestinal parasites' examination. I supplied the families or the individuals that consented to participate with sample containers and collected these the following day. The procedure that followed and the specific methods for the biological component of this study are explained in more details in Chapter 7. Although I integrated the qualitative and quantitative methods during data collection and to draw conclusions, I present the data analysis and results separately owing to the different nature of the results.

2.2 Research authorisation and permits

Before beginning this research, I applied for and secured research approval from the Durham University's Anthropology Department's Ethics and Data Protection Subcommittee on the ethical issues that relate to involvement of human's in social related research, and the University's Life Sciences Ethical Review Process Committee, for audit on potential effects such as pain, suffering, distress or lasting harm to baboons. In Kenya, I applied for and was issued with a research permit from the National Commission for Science, Technology and Innovations (NACOSTI). I also secured research authorisation from the County Government of Makueni, the Subcounty of Kibwezi and the area Chief, Nthongoni Location. The Kenya Wildlife Service (KWS) gave me a letter of authorisation to work with wildlife, access KWS premises and interview its staff.

2.3 Feasibility and access

The choice of research methods is heavily influenced by feasibility, researcher's skills and experience and time constraints (Morse, 2005; Tariq and Woodman, 2013). My background in

Environmental Health, a bioscience-oriented programme and my postgraduate training in Health Social Sciences were critical skills in positioning and enabling me to undertake this mixed method study. Significantly, for over ten years prior to starting my PhD, I worked as a research scientist at the Institute of Primate Research in Kenya, in a department that espoused both biological and social approaches in conducting Ecological, Conservation and Disease related research. The supervision and methodological training that I was offered at the Department of Anthropology, Durham University, and my participation in the vibrant group meetings of staff and students working at the biological and social interface of health and wellbeing and primatology, augmented my knowledge, research skills and experiences.

Further, this research built on surveys I had conducted at the study site earlier in 2011, and feedback workshops I had held with residents of Nthongoni in 2013 and with stakeholders in the conservation and health sectors in the area in 2014. The experience enabled me to gain access to the area and build rapport quickly during the current research, saving me time and the difficulty associated with accessing unfamiliar territories and new communities. The people inhabiting the area speak Kamba and Swahili languages, both of which I understand and speak with relative ease. This promised easier and more effective communication. I started by visiting old acquaintances who introduced me to new ones. One such acquaintance, Mr. Nzugu (pseudonym) hosted me for the initial three months of my fieldwork. His home was ideal for breaking the ground in my research as it was situated deep in Nthongoni, on the slopes of Chyulu Hills. Moreover, Nzugu was a village elder and was thus well known and respected in the entire village. His farm directly bordered Chyulu National Park, and there was no fence separating it and the Park. He had left a small forest corridor to serve as a buffer zone between the Park and

his homestead. In spite of this, wildlife and in particular baboons, still crossed freely into his farm and back into the Park.

Nzugu's homestead is typical of the majority of homesteads in Nthongoni. I therefore use it as a representative of the other three homes that I stayed in during my research. It was necessary to move around homes so as to be close to research participants, both humans and baboons, at each particular time. Most part of Nthongoni are hilly and road infrastructure in non-existent. Moreover, villages are far from each other and hence it was necessary to each time find a host that was within or near the village I was researching about at that particular time.

A homestead is commonly known as *musyi* in the local Kamba language, and it is an icon that allows those that are familiar with the Kamba culture to identify many aspects of the family at a glance. Just by looking at the number of houses and where they stand within the compound, one is able to deduce how many wives the owner of the homestead has, how many of his sons are married and how many are circumcised but not married. Married sons, for example, build their multiple roomed-houses either outside the homestead or at the furthest corner of the homestead while unmarried ones normally build one-roomed house within the compound. Nzugu's homestead had two big mud-walled houses and a small one-roomed house. One of the big houses belonged to Nzugu and was divided into four rooms: a kitchen that doubles as dining and sitting room, and three bedrooms. He was a widower and shared his house with his two daughters. The other big house belonged to Nzugu's son, who was married and had two children. The one-roomed house belonged to the youngest son, who was unmarried and lived in a city, away from home. It was this last house that Nzugu offered me as my new abode for the three

months that I stayed with his family. I shared the kitchen: cooking, eating and sitting together with the family but retired to the one-roomed house for the night.

Nzugu's homestead was surrounded by a perimeter wall made of stones placed one on top of the other. This wall also served as an enclosure for his cattle and goats at night and for chickens and goat kids during the day. At night, the chickens and goat kids were housed in a small compartment inside Nzugu's house to protect them from small carnivores such as mongoose and serval cats. Nzugu also kept two dogs which he said alerted him in case his livestock was attacked at night by animals such as leopards and hyenas and sometimes lions. During the day the cattle and goats were taken out for grazing while the chicken and goat kids roamed freely in the enclosed compound. However, there had to be someone in the compound all the time to watch over the chicken and goat kids and stop baboons, mongoose and or other animals from attacking them.

Staying with Nzugu's family, and indeed the three other families that I stayed with during my fieldwork, I was keen not to intrude on the flow of their household chores or activities. However, I participated in their everyday activities which allowed me to immerse myself fully in the community and study their experience as an insider. I dressed and behaved casually as much as possible when in the villages to avoid making participants feel nervous about the research or my presence. However, I dressed and behaved formally when I visited, talked to or interviewed top management officials of corporations such as the Kenya Wildlife Service, conservation NGOs and government officials in the health sector. This was a pertinent strategy for gaining trust and confidence and creating a degree of acceptance from the different types of research participants.

Baboons are commonplace in Nthongoni, so it was easy to gain access to them and to strike up conversations about them. Early in my research, I realised that people were fascinated, and perhaps a little flabbergasted, that anybody would be interested in knowing about baboons or their interactions with humans. Mentioning it was often received with an awkward laughter. As time went by, I figured out that this was a good starting point to strike up interesting conversations: People were eager to tell me about the many mischievous things that baboons did to them; others wanted to know whether I was planning to take the baboons away; while others wanted to know whether I would follow up on their delayed compensation claims from the Kenya Wildlife Service. Some people were keen to know if it was true that baboons were a cure for AIDS.

2.4 Sampling and sample size

I used a concurrent mixed strategy for sampling for qualitative and quantitative data. I used purposive sampling to identify 12 villages that bordered either Tsavo or Chyulu National Parks. From these villages, I included all the homesteads that were within 1 km of either of the parks' borderline as potential candidates of my research, because this region has the most multispecies interactions. Using households as units of analysis, I approached the heads of the households and asked them to participate in the study. I then recruited households that consented to participate. I conducted in-depth interviews with elderly people who I presumed to have in-depth knowledge and history about the study site. I studied the general population through unobtrusive participant observation in their day-to-day life, and consulted household heads (men and women), whenever I needed further insights or clarification. I observed children on their way to or from school, while fetching water, grazing animals, playing or in their other daily

activities. I made a concerted effort to include households that were representative of all social statuses; rich and poor (judging by Nthongoni standards), with and without formal education, young and old, among others.

Sampling for formal interviews with the Kenya Wildlife Service officials, medical, veterinary and public health personnel, and conservation NGOs was both purposive and convenient. I selected the sectors based on their role in addressing issues of conservation, human wildlife conflict, zoonotic infections and the One Health agenda. Within the organisations I aimed to interview the top management officials but in instances where the senior managers were not available or it was not convenient to do so, I interviewed their deputies or other senior officials not directly in charge. In one of the parks for example, the Senior Warden was busy on the many occasions that I visited. He eventually told the community services manager to attend my interview.

Recruitment of human participants for the biocomponent of the study followed convenient sampling. While most participants were comfortable with the ethnographic part of the study, a good number was not comfortable with donating faecal samples for analysis. I included only those that consented to donate samples, either as individuals or as households. Sampling baboon groups followed a purposive strategy. Considering that the research aimed to document forms of human-baboon interactions and to investigate the potential for disease exchange between the two species, I selected three baboon groups that interacted intensively with the residents of the households recruited for the study. I followed baboons in the field and collected fresh faecal samples opportunistically when baboons defecated. I provide further details of the biological

component of this research: sample size, sample collection, processing and preservation in the field, laboratory procedures at the Institute of Primate Research and the results in Chapter 7.

2.5 Qualitative data collection and analysis

2.5.1 Data collection

Data collection for the ethnographic component of the study involved participant observation and interviews that I conducted mostly as informal conversations, with some as formal interviews. Actual data gathering started once I had explained the process of the research and my research participants were happy to proceed with the study. I collected all the data in person, in the form of taped conversations and interviews, field notes and photographs. I recorded my observations and any other fieldnotes in a simple ethnographic notebook. I recorded conversations on a voice recorder whenever I felt that the information was critically relevant to my research or when I conducted formal interviews. At all times, I assured my research participants that the information obtained would be confidential and only pseudo-names would be used in the writing of the research.

I conducted all the interviews in a mixture of Swahili and the local Kamba language and later transcribed the recordings into English. I also took pictures whenever necessary, and subject to permission to do so by research participants. In situations where immediate recording of observations or conversations was not feasible or appropriate, I wrote down the information the same day in the evening or as soon as it was practically possible to do so. At the end of every week, or at the earliest convenience, I transferred all information into an excel master sheet and coded it for theme and content.

For key informants in the health and conservation sectors, I used existing contacts from my past research or official letters of introduction from the Institute of Primate Research to reach the top managers. A good number of the officials that I visited were personally known to me and others had colleagues who knew me from my previous work. Drawing on this circle of contacts simplified access. I collected data from official documents, gathered audio-recordings of interviews with top management officials, and from informal conversations with other employees at KWS, County and Subcounty health offices and NGOs. I also made audio recordings and jotted contemporary fieldnotes in formal meetings such as community *barazas* (official chief's meetings) and weekly Community Health Volunteers' meetings. I conducted interviews with the key informants in English but allowed the conversations to flow freely which meant sometimes switching to Swahili language that was more comfortable with most people. Table 2.1 represents a summary of the categories of research participants and the information generated from the different categories.

Table 2.1 Categories of research participants and the information gathered from each

Participants	Type of information/data
Households	Detailed observation and accounts of everyday activities: cultural practices, behaviour, socioeconomic activities, etc. Interactions with baboons and wildlife more generally including bushmeat hunting. Baboon behaviour and change in behaviour over time. Perceptions and beliefs about baboons; patterns of crop loss and deterrence measures. Knowledge of, attitude towards, and effect of zoonotic infections on their lives individually or as a family. Use of healthcare services including those of traditional healers. Sociocultural, economic, political and environmental conditions influencing health and wellbeing, e.g. access to water and sanitation. Stool samples to investigate parasites.

Village elders	Historical (colonial & postcolonial) development and social memory of establishment of Tsavo and Chyulu National Parks. Cultural beliefs, norms and practices of the community and changes in these over the years. Structural issues: KWS and Government's response to wildlife related issues.
Wildlife managers and Officials in conservation NGOs	History and management of Tsavo and Chyulu Hills National Parks Human-wildlife interactions. Management of human-wildlife, human-baboon and local people-wildlife managers' relations. Perceptions of local peoples' behaviour and interactions with baboons, and wildlife and parks in general. Cultural beliefs, norms and practices of the community and changes in these over the years. Baboon health
Medical, Veterinary, Public Health Officers, Traditional healers	General characteristics of health in Nthongoni. Incidence, prevalence and distribution of zoonotic diseases and parasites. Lay terms for and knowledge of zoonotic infections. Characteristics of the community that expose them to zoonotic infections: behaviour, ecological, cultural beliefs and practices, etc. Prevention and control measures. Healthcare and One Health interventions. Residents' use of healthcare services including those of traditional healers.
Baboons	Baboon-human interactions, baboon behaviour Faecal samples

2.5.2 Data saturation

In carrying out the ethnographic part of the research, I followed Glaser and Strauss's (1967) concept of saturation. The concept provides that data collection in qualitative research should continue until such a time that there are no new surprises in the data, and no further patterns, themes or new ideas are emerging. As such, I simply took all available opportunities to observe, hold general conversations and conduct interviews without setting out a specific number of cases, until I felt data saturation had occurred.

2.5.3 Data analysis and presentation

Analysis of the qualitative data was iterative, taking place from the start of the study and running throughout the fieldwork and the writing up period. I used an inductive emic approach, as proposed by Glaser and Strauss, (1967). I started by transcribing only a few conversations/interviews from individual cases and incidents, and these developed progressively into more abstract categories which guided me on the thematic codes to use. I then added new themes as and when they arose. However, while Glaser and Strauss (1967) propose grounding of meaning in the emergent data, I espoused Tracy's (2013) iterative approach that encourages continuous reflection on the emerging data and triangulating it with current literature, evolving insights, priorities and existing theories. This reflexive process allowed progressive revisiting and refining of the data, focus and understandings.

I present my observations and the opinions and voices of the people that I interviewed and observed, throughout Chapters 3, 4, 5 and 6. I often use direct quotes and extracts from conversations and interviews as illustrations. I use quotation marks for short quotes and indentation for large extracts over 40 words. These are followed by a pseudonym for the informant and their age and occupation where applicable. Figure 2.1 summarises the activities I carried out during the research.

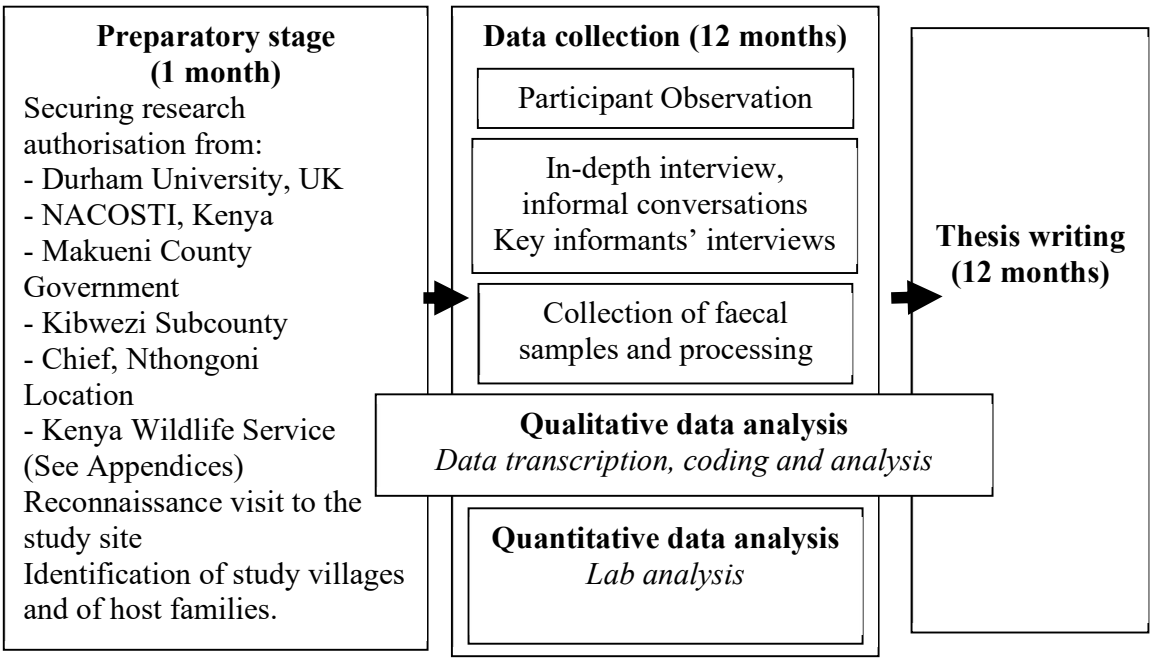

Figure 2.1 Summary of activities for fieldwork and thesis writing

2.6 Ethical concerns

As highlighted in section 2.2 above, this research was subjected to Durham University's Ethical Review Processes at two levels: The Anthropology Department's Ethics and Data Protection Subcommittee on the ethical issues that relate to involvement of humans in social-related research, and the University's Life Sciences Ethical Review Process Committee, for audit on potential effects (pain, suffering, distress or lasting harm) that the research was likely to have on baboons. The study was non-invasive and was not directed at any vulnerable groups of people or animals. It was therefore unlikely to compromise the safety or wellbeing of either the humans or the baboons. Nevertheless, at all times, I gave utmost consideration to any potential negative consequences and conformed to the guidelines provided by the University's ethical review committees and to the rules, regulations and norms provided by the National Commission for

Science Technology and Innovations (NACOSTI); the body mandated with regulating research in Kenya.

I discussed with potential participants, the main objectives of the study, their role in the research and the nature of interviews (where applicable), and how the information gathered from them was going to be managed. I assured them that their participation was entirely voluntary and that they had the liberty to withdraw from the research at any time, and that the withdrawal would have absolutely no consequences for them. I also reassured them that they had absolute right not to answer any question that they didn't want to answer. I informed them that I needed to record some of our conversations and clarified that this was purely so that I could remember what we had been discussing. I also told them that I would at times make notes or take photos but that I would always seek their permission prior to doing that. I then approached individuals willing to participate in the research and took them through the content of the consent form. Those who offered to participate gave a verbal consent that I recorded.

For the biological component of the study, I explained the objectives of the study and informed potential human participants about the procedure before asking them whether they were willing to participate. I followed guidelines provided by the Life Sciences Ethical Review Process Committee of the University of Durham and by NACOSTI, Kenya for ethical considerations for the collection of faecal samples from baboons.

While carrying out the study, I always endeavoured to observe the rights of the participants to privacy and confidentiality. I used pseudonyms to hide their identities and kept details such as addresses and mobile phone numbers that could disclose the identity of the informants. I stored

all the confidential data on a password-protected computer. I sought participants' consent to use their photos where necessary in my reports but reassured them that I would make every effort to conceal their identities.

2.7 Reflections

Some of the challenges encountered in this research were methodological and related to the incorporation of the bioscience component in a predominantly ethnographic study. For instance, much as I would have wished to conduct an ethnography of baboons it was practically impossible to do so. I had to rely a lot on people's perceptions of baboons rather than understanding baboons' experiences or point of view. Nevertheless, as a primatologist, I triangulated observed baboon behaviour and people's perceptions to come up with concerted and all rounded baboon realities. Similar methodological challenges concerned collection of faecal samples from humans. Some participants were uncomfortable with donating stool samples or were suspicious of my motive for collecting the samples. A few people ended up withdrawing from the research altogether despite my reassurance that the samples were to be used purely for academic purposes. This necessitated pushing sample collection to towards the end of my stay in each particular village, so as not to interfere with collection of ethnographic data. In most cases, this suspicion eased with time as I immersed myself in the community and gained their confidence.

Although I come from a different region from my study site, being a Kenyan offered me the advantage of living and working in a culture that was not much different from my own. Besides, having worked at the study site before, I was familiar with most of the cultural, religious and

gender norms, and people and sites that needed special attention and respect. Speaking fluent Swahili, the Kenyan national language, and basic Kamba, the local language, made communication easier and smooth. However, the study site experiences high levels of poverty and being a student from an international university often raised the expectations of the research participants and the community more generally. I was often approached with requests to help with money for medication, food, school fees among other needs. Some people approached me with requests to help a daughter or a son secure a job. It caused me great pain and made me feel helpless whenever I failed to honour their requests, which was most often the case. There were no quick fixes to this and to get around it, I had to ensure that I constantly lived and behaved in a manner that was consistent with what the people perceive as the status of an ordinary student. Living in their villages, eating their food and participating in their everyday activities greatly helped to keep people's expectations to manageable levels.

There were other ethical dilemmas. Although the ethical code for me as a researcher was to protect the privacy of the participants and to convey this protection to all individuals involved in a study (Creswell, 2014), I often encountered situations that either involved activities that are considered illegal such as hunting, or activities that were detrimental to people's health, such as selling bushmeat and selling or smoking of marijuana. In one particular family that I stayed with, the head of the house was a hunter and living next to one of the National Parks, he often sneaked into the park to hunt, lay or inspect his traps. These were crucial activities for my research. It would have been important to participate in, experience and record first-hand how hunting, killing and slaughtering the meat was done but there was no way I could have done this without involving myself with illegal activities. Nevertheless, I had the opportunity to witness

the slaughtering and preparing of the meat on a few occasions, when the hunter brought a kill home without butchering it in the forest.

Another dilemma revolved around reciprocity. I had intended, as part of giving back to my research participants for their involvement in my study, to give small rewards and also to advise all the individuals that turned out positive for any gastrointestinal parasites to seek treatment from the health facilities in the area. I had also proposed to hold feedback workshops with public health, veterinary officials and conservation authorities to discuss the parasites identified in faecal samples as a follow up to this study. However, this was compromised by lack of funding. I plan to organise the workshops once I complete my studies. I will also provide a report to the relevant public health and veterinary offices on the health risks that I observed and the gastrointestinal parasites that we recovered from both humans and baboons.

Chapter 3: Nthongoni: Parks and people

Prior to the creation of Tsavo National Park, Ngulia people, a forest dwelling subgroup of the Kamba people, lived in Ngulia hills at the centre of what is now Tsavo West National Park. They were traditionally hunters and gatherers and depended on wild animals for meat, and forests for green vegetables, honey, medicines and fuelwood, among other products. Living together with Ngulia were Kamba herders who practised agro-pastoralism. The herders had semi-permanent homes in the foothills of Ngulia and Chyulu hills in what is now Chyulu Hills National Park. The herders moved with their livestock depending on the season but also cultivated crops such as sorghum, millet and cowpeas. During the rainy season, they herded their livestock including cattle, goats, sheep and donkeys down to the savannah grasslands and relied on the green pasture and on the water that flourished from seasonal rivers. When the rains varnished and the seasonal rivers dried up, the herders drove their livestock to the forests on the hills. The hills had permanent springs and remained relatively green all the year round.

Mr. Mwalua, one of the oldest persons now living on the border of Tsavo West National Park described the lifestyle that people knew and lived prior to the establishment of the parks. He said that his community had unrestricted access to forest resources, and that they intermingled freely with wildlife. Boundaries were marked by environmental features rather than fences: ‘the River Tsavo is the one that marked our boundary with the Taita people (an ethnic group living to the south of Tsavo East and Tsavo West National Parks) while Chyulu hills marked the boundary between the Kamba and the Maasai’.

According to Mwalua, trouble started in 1936[1] when the 'white man' (i.e. the colonial government) embarked on a mission to transform Tsavo area into an uninhabited wilderness. The 'white man' asked his family and the entire community living at the foot of Ngulia hills at the time to relocate to what is now Nthongoni. Mwalua claims that the Kamba people are very peaceful, and although they were not happy with the idea, they obliged with the orders and moved out without resistance. However, they discovered that the place they moved to was not only drier than their original home, but was also occupied by other people, so there was competition for pasture and water. Because there were no physical borders, people continued grazing and accessing forest resources in the parks. Many people drifted back into the park over time and eventually resettled into their original homes. A series of removals and reoccupations of the area followed until 1948 when Tsavo was officially declared a national park, comprising Tsavo East and West. This time, 'police and armed park wardens and rangers razed every property owned by the local people inside the park and restricted us from entering the park. From then on, anybody found grazing livestock inside the park would be arrested and have their cattle confiscated', says Mwalua.

In this chapter, I focus on the formation of Tsavo West and Chyulu National Parks in Kenya and illuminate how the creation of the parks shaped and continues to shape the lives of the inhabitants that lived in, were displaced by, and live adjacent to the parks. I examine the ways in which colonial history, political and global conservation agenda influenced the pathways followed in the creation and management of these national parks. In doing so, I extend existing research on people's relations with parks by attending to lived experiences of the people of

[1] Official records say Tsavo National Park was established in 1948 but Mwalua says they were first evicted in 1936.

Nthongoni to reveal place-specific dynamics in the relations among people, protected areas and power structures. I take advantage of ethnographic contextualisation to produce detailed and comprehensive accounts of experiences of being displaced and alienated by, and living next to, the national parks. Specifically, I attend to the ideologies that structure the governance of the national parks, the structural violence that was used to dispossess the native inhabitants of the landscape now encompassed in the parks, and the unequal power relations that continue to play out between government agencies and local people.

I argue that this dispossession alienated people from their own land with grave consequences for their survival, cultural identity and economic development. At the same time, their displacement produced space and place for new inhabitants in the form of park and hotel managers and staff, tourists and researchers. The chapter demonstrates two radically different ideas of a park: For park managers and conservation organisations, the parks are viewed as pristine wilderness that conserves wildlife for posterity, attracts tourists and as a source of employment (Sheldrick, 1972; KWS, 2008). For the majority of local people, the parks are a symbol of exploitation and marginalisation, and mark the deprivation of the economic, cultural and spiritual significance of their landscapes.

To start with, I present current anthropological debates about the conceptualisation of national parks and conservation more generally in section 3.1 below. I then present my arguments in 3 other sections. In section 3.2, I describe the establishment of Tsavo and Chyulu Hills National Parks and the historical development of the National Parks' movement. I then present in section 3.3, how the creation of Tsavo West and Chyulu Hills National Parks resulted in the

dispossession of the local people and highlight the political trajectories that these dispossessions took and the impacts they have had on local people. I specifically focus on Tsavo West rather than Tsavo East because although the two parks were combined when they were initially established, the people of Nthongoni are direct neighbours of Tsavo West and Chyulu Hills but not of Tsavo East National Park. Section 3.4 illustrates the current state of Tsavo West and Chyulu Hills National Parks and the activities that take place in them. In the conclusion, I argue that conservation ideologies and strategies have had more to do with imperial and state control over resources than with conserving nature and biodiversity. I also highlight the role of anthropology in illuminating the complexities inherent in determining who benefits and who suffers from conservation, and whose story prevails and whose is ignored.

3.1 Parks and power

Western assumptions about conservation tend to distinguish between human and environment or nature and culture (van Uhm, 2018), a philosophy that conceptualises human life and wild life as two separate categories that are universally incompatible. As such, local inhabitants of 'ideal wildlife areas' are treated as misplaced. Because they are the closest and most visible community, the inhabitants are often considered as the primary threat to the biodiversity in these areas (Igoe, 2005). To rescue species from extinction and 'save the planet' from the voracious consumption of resources, the inhabitants, therefore, have to be removed (Brockington and Igoe, p. 425 2006). However, current anthropological debates on human–wildlife and human-environment relations more generally critiques these binary categories as state strategies to extend control over biodiversity hotspots (Campbell, 2005).

The debates about control over biodiversity also draws our attention to the role played by global historical processes such as colonialism in the ideation and implementation of conservation strategies and policies. In East Africa, and indeed most parts of the developing world, protected areas were created alongside colonial states and took the form of a paramilitary endeavour (Dunlap and Fairhead, 2014; Cavanagh, Vedeld and Trædal, 2015). The processes that the colonial governments used to displace and dispossess local inhabitants for conservation were similar to those they used to politically, economically and socially colonise the local people (Campbell, 2005). Igoe and Brockinton (2007, p. 432) refer to this as a process of *territorialisation*, involving the partitioning of resources and landscapes in ways that controlled, and often marginalised, the local people. This often made the local people associate conservation with colonialism, military force, cruelty and authority (Dunlap and Fairhead, 2014). Even after independence, most national governments in Africa followed in the footsteps of their colonial masters to create new protected areas and maintain the status quo of the existing ones. Campbell (2005 p. 293) sees this as a way of extending state control over areas that the state regarded as 'awkward and unprofitable peripheries', as well as over the inhabitants of these peripheries. In section 3.2 of this chapter, I describe how this happened in Nthongoni.

Some anthropologists have illustrated the role conservation played in colonising aspects of traditional heritage such as hunting and gathering, and replacing them with foreign neo-colonial ideologies of development such as tourism (Igoe, 2005; Vedeld *et al.*, 2012; Kopnina, 2012). While these new forms of development are promoted, subsistence use by indigenous people is prohibited. As such, protected areas serve to demonise and uproot indigenous people's

relationships to land and wildlife, undermine their traditional housing patterns and destabilise their subsistence (Brockington, 2002; Brockington and Igoe, 2006).

Anthropologists who consider resource exploitation as a fundamental developmental strategy, fault conservation projects for curtailing land use and access to forest resources and thus derailing the development of indigenous people (Sikor and Stahl, 2011). Alongside dispossession and displacement, restricted access to natural resources and derailed development of indigenous people, is denied land tenure rights which is a problem characterising most conservation areas in Kenya (Muriuki *et al.*, 2011; Greiner, 2012; Mwangi *et al.*, 2016) and other parts of Africa (Fairet, 2012; Vedeld *et al.*, 2012; Fortwangler, 2019), and in other parts of the world (He, 2010; Torri, 2011) In most traditional societies in Africa, for example, land was owned communally and forests were part of that communal property (Cernea and Schmidt-soltau, 2003). Lack of access to forest resources is therefore synonymous with landlessness and it compromises people's livelihoods and economies.

Expounding on the effects of protected areas, Torri (2011) shifts the focus from colonial and global political structures to attend to the political economic forces in play at local and national levels. She observes that past conservation approaches have often used a top-down approach where management decisions are made by the state and implemented by state agencies at the local level without the involvement of the local or indigenous people. Igoe (2005) and Igoe and Brockinton (2007) terms this form of marginalisation of local people as corporate exploitation.

Land ownership have also been shown to influence how people manage and use resources (Brockington and Igoe, 2006; Goldman, 2011; Perez, 2018). Insecure tenure rights can discourage investment and subsequently affect the productivity and sustainability of the land (Ervine, 2011). However, there are other aspects that may affect sustainability. McElroy and Townsend (2009), for example, point out that much of what used to be thought of as traditional practice, such as hunting, has evolved from a sustenance activity into a commercial practice. There has been a transition to a capitalist economy which has a much more profound negative influence on non-human species and human welfare in a larger ecological context than ever before (Kopnina, 2012). This points out to the ways in which global economic forces penetrate conservation areas to produce new forms of challenges for and about conservation. These complexities are important in helping us to understand how conservation issues emerge in a particular area and the contexts that shape them.

Most practices that are considered unsustainable are blamed on increased population or on ignorance on the side of the local people. Granted, increase in population may result from high birth rates but also from immigration from other areas. Wittemyer *et al.* (2008) suggest that the development and good social services brought about by well-managed conservation areas may attract people into the areas and thus increase the population. However, the findings presented later in this chapter and work by other anthropologists provide evidence that disturbs arguments revolving around development and good social services (Brockington and Igoe, 2006; Igoe, 2006; West, Igoe and Brockington, 2006; Igoe and Fortwangler, 2010; Davis, 2011; Kopnina, 2012).

In most developing countries, immigration and settlement into areas adjacent to conservation areas often resulted from violent evictions from the areas reserved for conservation (Spence, 1999; Davis, 2011; Piermattei, 2013), or from colonial and state displacements from other areas (Muriuki *et al.*, 2011). These displacements squeeze people together at the periphery of conservation areas, resulting to high population density in these areas. The problem is further complicated when these are marginal areas with harsh climatic conditions and poor infrastructural services (Lamarque *et al.*, 2009; Nasi, Taber and Van Vliet, 2011; Weidman, 2011; Makindi *et al.*, 2014; Stevens, 2014). Apart from disruption to families, such areas have numerous socio-cultural and economic challenges for the local people, including abject poverty.

Going by international laws, indigenous people have rights to own and manage protected areas (Colchester, 2004). However, most countries in Africa, Asia, and parts of Latin America are yet to review their national laws and policies to conform to this law. Besides nonconformity, the question of who is truly indigenous and who is not is a controversial one (Igoe, 2005; Blaustein, 2007; Bixler, 2013). Igoe (2005) describes different categories of what he terms as indigeneity. He singles out people who were indigenous to the area before it was converted into a conservation area but also recognises the marginal groups who were historically moved into conservation areas or areas adjoining them. Implementation of the international law in such situations may occasion conflicts over who deserves ownership or management rights over the areas. Igoe (2005) further observes that collaborations between conservationists and local communities are likely to be more fruitful if the local community have legal authority over the natural resources. The contrary is also true: that conservation is likely to face antagonism if local

people have no rights over the conservation area or the land the people occupy adjacent to conservation areas.

Resource use rights and collaboration between conservationists and the local people are greatly influenced by the discursive language used in negotiating these rights and collaborations. Local people may have complex socioeconomic and cultural values and beliefs that are difficult to simplify into narratives that distant audiences can identify with and support. Even when these audiences appear to understand, the meanings they have might not be the same. Likewise, conservation experts structure their arguments in technical terms that are difficult for local people to comprehend. This calls for what Conklin and Graham (1995) term as a 'middle ground': an intermediate position or point where both the experts and the local community come to an agreement. Unfortunately, the inequitable relationships between the two sides often mean that the middle ground they reach is defined more by the ideas and agendas of the 'expert' conservationists than by those of the local people (Igoe, 2005). Moreover, due to language barriers, there is a tendency for government agents or the elites from the community to represent the local people at national and international fora. These representatives may not necessarily be in touch with the communities they purport to represent and thus the views of the local people are lost in the process.

While realities constructed by experts or bureaucrats are often out of step with empirical reality, they are extraordinarily powerful and difficult to refute, largely because of the links the experts have to policy and funding (Igoe, 2005). Further, Igoe and Croucher (2007) observe that some conservationists and park managers are quick to judge local people's beliefs and practices as

primitive and ‘unsustainable’. They see the local people as unworthy conservation partners who lack pro-conservation knowledge, skills and attitudes and thus as people that cannot be trusted with conservation (Chapin, 2004; Igoe, 2005). However, Leach (1994) warns about the assumption that communities with conservationists’ knowledge and beliefs will obviously have minimal negative effects on natural resources. She suggests that most effects result from the numerous socioeconomic and land tenure issues inherent in most conservation areas, rather than from ignorance.

Anthropologists have also attended to the question of whether protected areas and conservation bodies should have a responsibility to people who have been dispossessed or displaced by the same global processes that now finance the conservation bodies (Igoe, 2005; West, 2006; West, Igoe and Brockington, 2006). In the past, transnational conservation bodies have been criticized for aggressively using local people to fundraise but then wound up with all the funds (Chapin, 2004). This question about sharing of income could be broadened further to include enterprises such as tour operations and hotels whose existence is dependent on the conservation areas, yet most of them do not give back to the communities that were dispossessed and their livelihoods curtailed to create these conservation areas.

A saying goes ‘he who pays the piper calls the tune’. Conservation work in most places and particularly in the developing world depends heavily on funding from international donors and essentially multilateral or diplomatic agencies. This leads to these agencies interfering in making conservation decisions. When conservation organisations or state agencies mandated to manage conservation areas rely on donor funding, they have a reduced ability to take strong stances

against a matter that is supported by the donors even when that matter is unfavourable for conservation or for the local people (Chapin, 2004). There are also discrepancies in terms of policy implementation and the support funding agencies offer for implementation of a conservation agenda. The World Wide Fund for Nature (WWF), for example, has often supported human inhabitation in national parks in Latin America while condemning the same practice in East Africa (Igoe (2004). These discrepancies result to perceived injustices that are likely to influence people's relations with conservation areas.

The debates about lack of development, denied access to resources, land rights, sharing of benefits, traditional grazing or hunting rights, lack of consultation and involvement in management decisions among others, are helpful in illuminating the types of tensions that exist between conservation bodies and state departments responsible for conservation on the one side and local people on the other. These tensions shape people's perceptions of wildlife and conservation more generally. Analysing the tensions is useful because it helps in revealing the contexts within which encounters between humans and wildlife occur.

3.2 The establishment and management of Tsavo and Chyulu National Parks

The current Tsavo East and Tsavo West National Parks were established as a single park in 1948 but were soon (1949) subdivided into Tsavo East and Tsavo West for administrative purposes (KWS, 2008). The Kenya-Uganda Railway line is used as the administrative boundary between the two parks. At the time of their establishment, the colonial government argued that conservation was the best use for the land because the area had abundance of wildlife. Records under the custody of KWS indicate that the area was virtually uninhabitable by humans due to

the presence of tsetse flies, low and erratic rainfall that prevented cattle ranching, and insecurity due to frequent slave raids from the Kenyan coast. This, however, runs counter to empirical data from this study and from secondary sources that show that an indigenous community occupied the land, particularly the area surrounding the Ngulia hills, but was forcefully evicted when the parks were established (Muriuki *et al.*, 2011a; Muriuki *et al.*, 2011b; Kamau and Medley, 2014; Mwangi *et al.*, 2016).

Today, the larger Tsavo Conservation Area consists of three national parks: Tsavo East, Tsavo West and Chyulu Hills, and covers over 21,000 km^2. It is the largest protected area complex in Kenya, covering about 4% of the country's land mass (KWS, 2008). The parks are managed by the Kenya Wildlife Service (KWS), a Kenyan state corporation that was established in 1989 with the mandate to conserve and manage wildlife in Kenya, and to enforce related laws and regulations (KWS, 2018). KWS is managed by a board of 15 trustees, nine of whom are appointed by the President and the other six by the ministry in charge of wildlife. Noticeably, there is no established representation of the local inhabitants on the board, which reflects the structural marginalisation of the people living adjacent to or displaced by national parks. The organisation is headed by a Director General, various Directors heading directorates and under them heads of departments. KWS manages about 8% of the total landmass of the country, with 22 national parks, 28 national reserves and 5 national Sanctuaries. The Tsavo Conservation Area is headed by an Assistant Director who has overall responsibility for Tsavo, and Chyulu Hills National Parks combined. Each of Tsavo East and Tsavo West has a Senior Warden, but Chyulu Hills falls under the jurisdiction of the senior warden of Tsavo West. All the personnel are

recruited and appointed by the director general at the headquarters in Nairobi, and then they are posted to specific workstations.

Like most other national parks, the world over, Tsavo and Chyulu National Parks adopted the Protected Areas model of Yellowstone National Park, established in the USA in 1872. This model focused on conserving 'natural ecosystems' and considered the exclusion of human beings from these 'natural ecosystems' as the ultimate conservation ideal (Adams *et al.*, 2004; Adams and Hutton, 2007). Implementing this model implicitly presumed that there were no people living in these areas prior to the creation of the parks.

The idea of creating Yellowstone National Park was born in 1870, when a few American expedition lovers gathered round a campfire on a late summer evening to discuss how best to tell the world of their adventures in the Yellowstone landscapes (Spence, 1999). A few members proposed that they should each declare ownership of a parcel of land at the 'most scenic locales and thus profit from the parade of tourists that was sure to follow' (p. 41). However, another member vehemently disagreed, saying that he did not approve of ownership of any portion of the land. Instead, he proposed that the whole 'wilderness' be set aside as a great National Park. All the members emphatically concurred and Yellowstone National Park was created soon after (Spence, 1999). This story represents the premise underlying the creation of the original national park in America, which later formed a precedent for other national parks throughout the world. Notably, the notion of benefiting from tourism had featured prominently in the discussion. Today, this notion has almost overridden all other reasons behind the formation of protected areas.

The creation of the first national park had less to do with preserving undisturbed nature than it had with the desire to keep the scenic features out of the hands of private interests. Spence (1999) observes that for more than a decade that followed, little attention was accorded to the preservation of landscapes or species. Yellowstone's first administrators and tourists focused on the park's monumental features such as geyser basins and the Grand Canyon to the extent that they hardly encountered the local inhabitants in the rest of the park. Moreover, the inhabitants, the Indians, preferred to stay away from visitors during the summer tourist season. This served to confirm popular assumptions that they feared the park's peculiar landscape, further solidifying the claims that they did not occupy the landscapes. However, increased tourist visits soon triggered conflicts with the Indians, heightening serious concerns. The park managers felt that even the slightest fear of Indian attack was likely to prevent tourists from visiting the park. As a result, the Indians had to cede and abandon the park, as well as the adjacent regions. The official statement implied that the superstitious fears of the Indians over the park's 'thermal wonder' - roaring cataracts, sulphur pools and spouting geysers - made them uninterested in the park (Spence, 1999 p.60). This distortion and obscuring of facts demonstrate how distant skewed power relations influenced conservation and, as I will demonstrate further in this chapter, spilled over to influence latter days national parks such as Tsavo West and Chyulu Hills. The distortion illustrates the role of the state and state interests in directing and legitimising power and control over those rendered or deemed subordinate in society.

The idea of protection and preservation of pristine nature spread in the twentieth century (Adams and Hutton, 2007), with nature preservationists picking the uninhabited landscapes preserved in American parks and showcasing these as models of preservation efforts (Spence, 1999). Local

inhabitants were depicted as troublesome and a big challenge to conservation, warranting their removal. As such, the creation of protected areas in most developing countries espoused forceful evictions in an effort to attain the wilderness levels represented by the American parks. This resulted in negative perceptions of and attitudes towards protected areas that subsequently led to resource-related conflicts (De Pourcq et al. 2017; Clements et al. 2014; Dunlap and Fairhead, 2014; Redpath et al. 2013; Canavire-Bacarreza & Hanauer 2013; Adams & Hutton 2007; Wang et al. 2006; West et al. 2006).

Over the years, the United Nations Environmental Programme (UNEP) and the International Union for Conservation of Nature (IUCN) have revised the model for national parks to incorporate the protection and maintenance of a healthy environment for people and nature (Madden, 2004). This is based on the realisation that national parks are not only essential for biodiversity conservation but are also important to the cultures and livelihoods of indigenous peoples and local communities (UNEP-WCMC and IUCN, 2016). The two organisations further argue that parks can bring benefits to millions of people through tourism, deliver clean air and water, and protect people from the harsh realities of climate change and natural disasters. At the IUCN World Parks Congress held in Sydney, Australia, in 2014, 217,155 designated protected areas were reported. These included all protected areas designated at a national level, those under regional agreements (e.g. Natura 2000 network), and those under regional and international conventions or agreements (e.g. Natural World Heritage sites) (UNEP-WCMC and IUCN, 2016). IUCN has often attributed the increase in the number of protected areas to the recognition of the role that protection plays in safeguarding nature and cultural resources and mitigating human impacts on biodiversity (Adams and Hutton, 2007; UNEP-WCMC and IUCN,

2016). Despite the desire of UNEP and IUCN to incorporate the interests, cultures and livelihoods of indigenous peoples in conservation endeavours, protected areas in various parts of the world present realities that are a far cry from what the two organisations have prescribed on paper (Alexander, 2000; Wang, Lassoie and Curtis, 2006; West, Igoe and Brockington, 2006; Adams and Hutton, 2007; Dunlap and Fairhead, 2014; Brockington and Wilkie, 2015). In the sections that follow, I use the case of Tsavo and Chyulu Hills National Parks to demonstrate this discrepancy.

3.3 Displacement and dispossession of indigenous people

When Tsavo was declared a national park, Chyulu Hills became the only forest resource that local people could access to harvest forest products and graze their livestock. Meanwhile, Nthongoni's population continued to grow when other members of the Kamba community were moved there, after colonial settlers displaced them from the upper parts of Kibwezi division (now Kibwezi Sub-County). At independence in 1963, the now independent Kenyan government settled some members of the Kikuyu community at the foot of Chyulu hills. Some of these members had been dispossessed from the central Kenya highlands (popularly referred to as the white highlands during the colonial period), and later imprisoned or confined to detention camps owing to the protests that erupted from this dispossession and subsequent struggle for independence: the so-called *Mau Mau* rebellion. Land adjudication then started changing from communal to individual ownership and people who found themselves landless after coming out of detention were resettled by the government. In Nthongoni, some people were resettled in a former sisal plantation while others settled in the foothills of Chyulu hills.

These resettlements meant a rapid increase in human population in the Chyulu area and increased pressure on limited resources, particularly pasture and water for livestock. Moreover, most of the people that had been moved from the central highlands were farmers and started cultivating the land and growing subsistence crops. This generated conflicts between pastoralists and farmers. Pastoralists who had only known free movement of their livestock felt choked by farmers who fenced off their croplands. Chyulu hills also faced rapid degradation from both the herders and the farmers who continuously cleared new land for cultivation.

In 1983, approximately 741km^2 of Chyulu hills was converted into a National Park (KWS, 2008). This meant that the forest resource was no longer accessible for farmers or herders. People who had settled either permanently or semi-permanently in the newly designated National Park or were farming or grazing their livestock in this area were told to move out. Unlike with Tsavo West National Park, the resistance this time was stronger because the land adjoining the park had become more congested and there was little land for the people being evicted to occupy. A series of removals and resettling followed and there was increased resistance from local people. This resistance prompted the government to use force to remove the residents. People were beaten and some were arrested. '…we were chased like animals. They (Government officials) didn't even allow us to harvest the crops that were ready for harvest', said Mr. Maweu, a farmer. Houses were set on fire and crops and other property razed. Livestock was shot, injured or killed. Many people were also injured, and others arrested and jailed. After that, anybody found in the park was arrested and prosecuted for trespass or poaching.

The establishment of Tsavo and Chyulu National Parks seems to have perfectly followed the precedent set by the original parks in the United States. The creation of Yellowstone National Park, for example, witnessed the removal of the native people and subsequent relocation to reserves (Litke, 1998). The people lost not only their lands but also their cultural and economic activities and outcomes (West, Igoe and Brockington, 2006). The decision to remove the native Indian people was made without their knowledge and consent. After their removal, the government obscured the history of their occupancy to create the impression that the land was a wilderness (Spence, 1999; De Pourcq *et al.*, 2017). As Spence (1999 p.4) observes, 'uninhabited wilderness had to be created before it existed'. Similar transgressions were committed elsewhere in the world and in Nthongoni. For example, case studies in the central African region, reviewed by Cernea & Schmidt-soltau (2003), revealed that indigenous people were forcibly evicted by governmental institutions and bilateral and international agencies to create the now highly publicised undisturbed forests in the region. No compensation was paid, or planning done to help those displaced to re-establish their livelihoods elsewhere, or to help the communities that received the displaced people.

The bush-men of Southern Africa and the Maasai pastoralists of East Africa faced a similar predicament after being evicted to create national parks and reserves in their respective areas (West, Igoe and Brockington, 2006). Seeland (2000) also reports forced eviction in Nepal during the creation of Royal Chitwan National Park. An oryx reintroduction project on the Arabian Peninsula, although lauded a conservation success story, saw the withdrawal of land-use rights from the local people. The *Harasiis* were denied grazing rights over pasture they had shared with the oryx for centuries (West, Igoe and Brockington, 2006).

In Nthongoni, people were not consulted about their removal and there were no efforts to enable them to settle in their new area. Moreover, official KWS records (2008) imply that the land was barely inhabited before the parks were established, which reveals efforts to conceal the history of their occupancy. These accounts serve to demonstrate unequal power relations between government agencies and local people, and the role colonialism and global conservation movement played in shaping past and present conservation issues in Nthongoni and elsewhere.

Ocampo Duque & Chilamack (2012) point out that the state has the power to reclaim rights over land ownership through financial compensation, either by negotiation or direct appropriation, and once property rights are taken away, the original landowners may be evicted or relocated to other areas. No compensation was offered in the displacements that happened during establishment of both Tsavo and Chyulu Hills National Parks. Moreover, the residents were not issued with ownership documents for the land they now occupy. Given that people in the area had experienced a series of evictions in the past, lack of ownership documents seems to instil a sense of fear in the residents: 'What if they wake up one day and decide to make this a park too?' wonders Mrs Kisyula, an elderly farmer.

Muriuki et al. (2011), posit that residents in Nthongoni have been slow to assert themselves against perceived injustices and failed service delivery, for fear that state officials might start to question residents' rights to occupy the land. Failure to question the government or to fight for their rights does not signify satisfaction on the side of the people of Nthongoni. Rather, it is, I contend, a form of communication: an expression of their profound fear of further oppression and dispossession. In the words of Mr. Nzugu, one of my hosts while conducting this study,

'You cannot win a fight with the government'. Poor socioeconomic status and the lack of long-term stakes in the land are likely to have reduced the residents' motivation to invest in the land or to actively engage in the conservation of natural resources. I present more data on the socioeconomic impacts of Tsavo and Chyulu hills National Parks on the people of Nthongoni in chapter 4 of this thesis.

3.4 The current state of Tsavo and Chyulu National Parks

Besides discussing the park histories that have turned a blind eye to the past inhabitants of Tsavo and Chyulu Hills National Parks, this study also examined the changing importance of the landscapes covered by the two parks for the different groups of people that now occupy, work in, visit or 'trespass' in the parks. KWS does not allow unauthorised entry to the park. Legal entry is restricted to staff of the institution, fee paying tourists[2] and those working in the hotel sector within the parks, or in organisations or businesses affiliated to KWS. Several categories of premises are located inside the parks. The first category includes offices and other workstations such as workshops, vehicle garages, stores and security monitoring stations for park managers and other park staff. Most of the senior park managers are also housed inside the parks, in state-provided residential houses. The senior staff live here with their families and have servant quarters for their house helps. There are no schools inside the Parks, but the children of these managers and their house helps are provided with transport to school every morning and brought back in the evening. Park staff residing outside the parks are transported to their workstations inside the park every morning and transported back in the evening. This serves to

[2] There are manned gates at the entrances of every National Park in Kenya and a fee commonly referred to as conservation fee is charged.

illustrate how whilst local people were rendered aliens to the parks, 'alien' managers, staff and their families have become inhabitants or are allowed to live inside the parks. Ironically, these members of staff are also turned into aliens once they retire or their employment is terminated. Tenancy is, therefore, reliant on the service the person is rendering to the state or to the ruling class. I revisit this concept of alienation in chapter 4.

The second category of modern-day park residents includes hotel managers and other staff in the tourism industry in both Tsavo West and Chyulu Hills National Parks. For instance, Tsavo West National Park alone has eleven hotels with an average of 60 rooms each. One of the largest hotels has 96 rooms (F. Kings safaris, 2010). The majority of the managers and other staff of these hotels have residences inside the park. Those who are not housed are transported to and from their workplace daily. Alongside hotel workers are the tourists who visit the parks all year round and stay in these hotels during their visits. Paradoxically, a good number of the hotels and lodges popularly known as *Bandas* are situated at the foothills of Ngulia hills, right in the area where Ngulia, the indigenous inhabitants were evicted from. This category of modern park residents echoes what Spence (1999) writes of Yellowstone National Park: An uninhabited wilderness had to be created before it could be preserved and ironically reserved for tourists. Moreover, just like the Indians in Yellowstone, the local neighbours of Tsavo and Chyulu National Parks were and still are exhibited as a noble symbol of the wild but are simultaneously precluded from visiting the park or entering the tourist hotels (cf. Bruner and Kirshenblatt-Gimblett, 1994).

Spence (1999) depicts the creation of uninhabited wildernesses as the ideal situation envisaged by the architects of the original national parks. However, the removal of the indigenous people and termination of their activities can be analysed as a way of introducing bureaucracy to the management of park resources. The parks that were to be conserved as a wilderness free of any inhabitants are now sites of lucrative tourist activities. All sorts of activities are aimed at increasing tourist visitation, including increasing bed capacity and modernising hotels and campsites to make them more comfortable and levelling roads to make the parks more accessible. While discussing the challenges that park management face, one of the wardens at the study site described herders as some of the people that give them the most trouble. He quipped that 'tourists come to the park to see wildlife but not livestock'. The local people are only seen as useful when they contribute to the tourism sector such as by putting on special cultural shows, displaying artefacts or providing cheap labour like cleaning, trimming flowers and fences and chopping wood at the hotels.

Further, the links between the tourism sector and creation of national parks illustrate what Igoe and Brockinton (2007) refer to as a neo-protectionist agenda where states create protected areas to derive economic benefits from conservation or tourism. In a bid to achieve a competitive advantage in the global tourist economy, countries hastily set aside land as national parks without considering the impacts of these critical decisions and processes on the local people. Moreover, Igoe and Brockinton (2007) point out the influence globalisation has on neo-protectionism. They observe that areas with high biodiversity are territorialised, transformed, marketed and made available for national and international elites, but often at the expense of local people. The local inhabitants are denied access to their traditional spiritual relationships

with their land. At the same time the land is converted into a park or a concession area for ecological service payments that directly benefit conservation organisations but not the local people (Kopnina, 2012).

In Nthongoni, this situation is reflected in an excerpt I copied from a tour company's website about Umani springs. Umani springs is one of the highly disputed areas in Kibwezi forest, a National Reserve that has now been added to Chyulu Hills National Park. The indigenous people regard it as one of the shrines where they used to conduct a religious ceremony referred to as *Ithembu*[3]. In 1992, the forest was fenced off and local people can no longer access the shrine. The advert on the tour company's website stated that 'The Kibwezi Forest is a birdwatchers, botanists and entomologist's delight and is perfectly situated to make the most of all the sites and sojourns on offer within the greater Tsavo Conservation Area'. What this implies is that the area is now marketed for visitation by elites: birdwatchers, botanists and entomologist. Although exclusion of local people is not explicit on the advert, not many of the local people can afford to regularly pay the 1.5 USD entry fee that is charged to access the shrine.

Similarly, another advert from a website belonging to a conservation organisation reads:

> Umani Springs is an exclusive home-from-home boasting three tranquil bedroom areas, a divine pool and sunbathing oasis and a relaxing living room twinned with a stylish 'bar-come-dining' area offering the ultimate escape in indoor and outdoor living. The property sleeps ten people, offering two sleek queen-size rooms and three spacious twin rooms. Each bedroom is beautifully designed with high thatched ceilings, large netted windows, alfresco showers and a sweeping veranda overlooking the encircling forest. The enticing spring-fed swimming pool is surrounded by beautiful gardens offering plenty of spots to sit-back, relax and enjoy the ambience of the forest. As a self-catering property Umani Springs

[3] *Ithembo (mathembo* in plural) is a traditional ceremony that is carried out by elderly men and women to offer sacrifices to gods, and to seek for compassion, rain and a good harvest.

> operates with a small team of staff including an excellent cook who will prepare sumptuous meals with your guidance and the supplies and ingredients you bring.

Noticeably, the advert runs on the website of the organisation that financed and facilitated fencing of the forest. The organisation now runs the forest alongside Kenya Forest Service (KFS) and has its own security guards who protect the forest and the fence together with KWS and KFS rangers. This implies that the exclusive tourist facility is either owned by the organisation or by people affiliated to the organisation. The situation strikingly portrays Igoe and Fortwangler (2010)'s concept of *reregulation* where state policies are deployed to facilitate the privatisation and marketisation of social and environmental life: in this case, a traditional shrine. Furthermore, in converting the shrine into an exclusive home that local people cannot access, the people ends up suffering from what Alcorn (2008) terms a double loss: that of a spiritual facility and a material resource.

Another category of people that enters the park comprise the group the government and government agencies such as KWS regard as 'trespassers' or 'poachers.' The majority of these are former inhabitants of the parks or descendants of these inhabitants. Although access to the Parks is restricted, their difficult situations prompt them to take the risk of entering the park to access forest resources. While carrying out this research, I identified at least 14 commodities that drove members of the community into the parks: pasture, firewood, charcoal, honey, building materials, game meat, herbal medicine, wood for sculptures, wild fruits, vegetables, *miraa* (khat) and illegal materials such as *bangi* (*Cannabis sativa*), sandalwood and owl eggs. Grazing land, firewood, charcoal, honey and khat were the most sought after of these commodities. People found their way into the park, by either cutting through the fence, slipping

between or under the electric wires or going through part of the park that was not fenced. This last option was particularly used by the people bordering Chyulu Hills. However, as shown in the introductory vignette to Chapter 1 of this thesis, entering the park is a great risk attracting a heavy fine or brutality.

Besides the harsh penalties that accompany trespass, people often complain about double standards and exploitation: '…We always wonder, why are we charged with trespass, yet wild animals are not said to have trespassed when they come to our farms. This is not fair …it's not fair at all', says Mr. Mutie, a farmer. During this research, a KWS warden inadvertently betrayed the impression he held of the local people by saying that: '...they are like a thief who is planning to steal your cows and yet is living with you. You can't be very comfortable with that kind of a person'. This illustrates criminalisation of local people and their activities revolving about the parks. Local people denounce the cruel extra-legal treatment they receive from the park rangers. The parks are heavily guarded by trained paramilitary personnel who are armed and dressed in army uniforms. They also drive all-terrain four-wheel vehicles in military colours. This echoes Spence's (1999) narrative about militarisation in Yellowstone National Park. Spence says that the management resembled a small military installation with a heavily fortified blockhouse that was located on an isolated hill offering the best defensive viewpoint against the indigenous American Indians. Cavanagh, Vedeld and Trædal (2015) also highlight the militarisation of park officials in Central African Republic, and in Kenya, Tanzania and Uganda. Military attire is oppressive. It is a symbol of authority and power and is meant to instil fear in civilians - in this case, the local people. Further, as Duffy (2014) observes, the use of heavy-handed tactics makes

the local communities less likely to support conservation efforts or provide conservation services such as surveillance and intelligence.

As well as being dispossessed of their land, local people often find their lives and activities criminalised. On the one hand, they can no longer hunt, fish, farm or herd their livestock in the parks to make a living. On the other hand, they are not able to compete in the tourism sector. They only qualify for menial jobs in the parks, and training programs for them to fill admin or supervisory level positions are virtually non-existent. They are impoverished as one farmer clearly puts it: '…Even at times like now when there is drought, the park doesn't help us in anyway. They (referring to park managers) cannot allow us to graze or water our cattle in the park and there is no food aid or any other assistance that comes from them', says Mr. Mutie, a farmer. Igoe and Brockinton (2007) theorise such situations as neoliberalism in conservation or neoliberal conservation. They posit that conservation cannot be achieved without addressing the difficult and systemic inequities and power relations that inextricably link to many of the global environmental problems today.

3.4.1 Contention over fencing of the parks

Park managers and conservationists see fencing of national parks as an ideal way to prevent human-wildlife conflict. Fences should demarcate boundaries, contain wild animals in the park, keep domestic livestock out and restrict illegal activities inside the park (KWS, 2008). However, fencing meant different things to different residents of Nthongoni and to the same people at different times. Those bordering Tsavo National Park and the part of Chyulu hills that is already fenced said that the fence was only effective in preventing people from accessing pasture and

other forest resources but was not effective in restricting animals to the parks. They claimed that animals such as baboons, elephants, porcupines and leopards still managed to get into their farms. This raises the question of whether it's practically possible to completely separate wildlife from humans. For the people living along the border of Chyulu hills that was not fenced, putting up a fence was not desirable:

> If they put up the fence, what do they expect us to do? Where do they expect us to graze our animals? We have allowed the animals to roam freely onto our farms, why should they restrict us from grazing in the forest?
>
> Mueni, a farmer.

Several other community members with whom I spoke feared that they would be forced to sell their cattle when the fence was fully built. They observed that although it was illegal to graze their cattle in the park, they still managed to take the cattle to the forest occasionally which allowed their own pasture time to regenerate. They felt that once the fence was built, it would become impossible to graze their animals in the park. This demonstrates that part of the contention was fear of unsecured future livelihoods. Mueni further argued that the residents were the people who took care of the forest by preventing poachers and loggers from accessing the forest through their land. They considered themselves as the custodians of the forest: 'You know, poachers must pass through our land before reaching the forest' she said. In addition, some respondents questioned the rationale of putting the fence on their border with the park and not in the middle of the forest where they believe their border with Kajiado County is:

> By putting up a fence here, it means the entire forest will now belong to the Maasai… The fence should have been put in the middle of the forest at our border with Kajiado County but not on our side alone (the side of the park that borders Makueni County).
>
> Mr. Jomo, a farmer

Apparently, there is no fence on the side that borders the Maasai (Kajiado County). So, the local people see putting a fence on the Kamba side as a way of giving the entire forest to the Maasai. The argument also implies that despite being dispossessed and restricted from accessing forest resources, the people are still strongly attached to the forest, and still considers part of the hills as their rightful property. The quote suggests a different reason for the fence: People saw the fence as marking a different boundary between the Kamba and the Maasai communities, not between humans and wildlife. In other words, they did not see the park itself, which points us to the deep-seated ontological differences between local people and conservationists' perceptions of the fence.

3.4.2 Cultural logics and contention over land ownership

Apart from the contention over fencing and the consequent restricted access to forest resources, land ownership is a particularly emotive issue in Nthongoni, due to the religious and semiotic values that people attach to ancestral land. Land that is inherited from forefathers is treated as a precious endowment that should not be sold or disposed in any other way. It is a valuable heritage that should not be sold or given to undeserving individuals. Mr. Mithili narrates the counsel he received from his grandfather as he was handed over the responsibility of taking care of their ancestral land. The family practised agro-pastoralism and for many years had moved with their livestock to a distant land where Mithili was born and brought up. One evening when he was about 19, his grandfather called him aside and told him it was time he went back to take care of their ancestral land on the slopes of Chyulu hills:

> He told me his father, my great-grandfather, had some land in a place called *manyanyani*. Drawing a map on the ground, he gave me directions and told me to look for an abandoned *zizi* (cowshed). It will be surrounded by *muaa* trees (*Acacia tortilis*). On one side of the cowshed, you will find a marked graveyard.

> That is where your great grandparents were buried. The land stretching from Chyulu hills all the way down to the railway line is your land. You should never leave it no matter what happens. Do not cross the railway line. The land beyond the railway line is very dry and you will not get anything from there. Stick to the land on the hills…he then told me about three prophets, namely *Methili, Mbalo* and *Kalimani*. *Kalimani* is the one who prophesied about this land. He said that the population was going to grow very high in the future, and land would become scarce. Many bad things that have never been witnessed will happen and people will start fighting over land. Only the people who 'run' to the hills will survive. When I later learnt how to read, I read the same thing from the bible: 'then let those in Judea flee to the mountains' (Mathew 24:16). It dawned on me that even before Jesus came to the world, there were true prophets. This land is blessed, and it was a gift to us from God. My forefathers lived in these hills. Even now if you went to the hills you will see some curved stones where they used to play *mbao*[4].
>
> Mr. Mithili, an elderly farmer and herbalist

The above extract demonstrates the value and context-specific meanings land and property may hold for people and which may not necessarily be the same for different people. Unfortunately for Mithili, part of his land adjoining Chyulu hills was taken by the government and he was moved further down the hills to the drier region that his grandfather had advised him to avoid.

Away from contention about land ownership and effects of dispossession, fencing the park is also seen as likely to exacerbate human wildlife conflict by, for example, blocking migratory routes for elephants. Mr. Amin, a middle-aged man, narrated how a pregnant woman was recently killed by an elephant as she tried to stop it from passing through her homestead. Apparently, elephants pass through the area when they are migrating to Chyulu from Tsavo National Park or when they are going back to Tsavo from Chyulu. On this particular day, the

[4] *Mbao* or *bao* in Swahili is a traditional board game that is normally played by men. It is played by two people at a time, one person for each side. Each player has two rows of 8 holes, into which counters or seeds are placed. Moves are made by taking one or more seeds and sowing them along the rows of holes either clockwise or anticlockwise. The aim is to capture your opponent's front row seeds or make it impossible for him to make a move.

woman woke up to find an elephant going up to the hills by her homestead. She took some pieces of iron sheet and banged them together noisily to chase the elephant. She chased the elephant for some distance, but it suddenly turned back on her and trampled her to death. Residents claimed that the elephant had climbed up the hill and when it encountered the newly erected fence, it got an electric shock and retreated back to the woman's homestead. They said that elephants do not normally charge back when chased but on this particular case, the elephant was furious for being barred from reaching Chyulu hills and probably even more infuriated by the electric shock. The fence therefore appeared to increase rather than decrease human/wildlife conflict by blocking migratory routes and keeping animals in contact with people rather than keeping them in the parks. This is ideologically ironical: While nature-culture ideologies envision fencing as a way to separate people from wildlife, this particular fence between Nthongoni and Chyulu Hills National Park is serving to entrap elephants together with humans.

Moreover, people blame elephants for breaking down the fences. Majority of the people I spoke to in Nthongoni, mentioned how easy it was for elephants to knock down trees over the fence or to simply trample the fence posts. In this way, the elephants make way for themselves and for other animals such as baboons to cross over to farms. This illustrates the active role played by wildlife in constructing human-wildlife encounters. Furthermore, it reinforces the question whether it is practically possible to completely separate humans from animals within shared ecologies.

3.5 Conclusion

An African proverb holds that ‘until the lion tells his side of the story, the tale of the hunt will always glorify the hunter’. The proverb means that without the loser giving their version of the story, the accounts of the winner become the only story and others may never understand the whole context. The story told by the people of Nthongoni reveals accounts that have been hidden for many years and is an echo of what happened to the Indians of Northern America. Firstly, the Tsavo and Chyulu Hills National Parks that adjoin the people of Nthongoni and Yellowstone National Park that neighbours the Indians, enshrine dispossessed landscapes. In both cases, state apparatus depicted the people not as occupiers of the land but as visitors who did not use the land regularly. For Indians, official records implied that they avoided the national park area because of the superstitious fears of geysers. A similar narrative was told for Nthongoni people: that they avoided the land because it was unconducive to use or occupy due to tsetse flies and the fear of slave hunters from the Kenyan Coast. In both cases, however, the stories told by and about the indigenous people are those of inhabitants that were violently evicted from their land and marginalised thereafter.

The establishment of the original US National Parks appears to have set a precedent that was soon to be copied and applied by other governments throughout the world. As Spence (1999 p.5) puts it, the ‘removal of natives in Yellowstone is important because it provided a model for native dispossession the world over’. The situation in Nthongoni illuminates the impacts of colonialism and neoliberal conservation on people in remote rural areas, both in terms of their role in initial displacement and control over resources, and in subsequent marginalisation of the local people in the economic arena. It highlights themes of skewed power relations and

exploitation. The chapter reveals that nature or natural landscapes, in this case national parks, are an outcome of global and national political processes where state apparatus is used to direct, legitimise and exercise power and control over the landscapes and the people occupying or adjacent to these landscapes. I argue that conservation ideologies and strategies have had more to do with imperial and state control over resources than with conserving nature and biodiversity. I have also demonstrated the role of ethnography, and anthropology more generally, in illuminating and revealing the complexities inherent in determining who benefits and who suffers from conservation, and whose story is heard and whose is ignored.

Chapter 4: Economies of Alienation in Nthongoni

On one of my occasional visits to Tsavo West National Park while carrying out this research, I found a man who had been arrested the previous day as he collected dead wood for carving. He had spent the night in a small room that serves as a cell at the Kenya Wildlife Service (KWS) offices and was waiting with the evidence (the piece of wood that he had collected) for a vehicle to be available to take him to court for prosecution. It was clear that he had been beaten. I inquired about his injuries and the officers exonerated themselves, saying that the person had been arrested by the guards employed by one of the conservation NGOs working in the area. When I contacted the guards, they claimed that it was necessary to use some force since the man resisted arrest. A park official asserted that a few of the people neighbouring the park had a mind-set that was very difficult to change:

> They were born here, and this is what they grew up seeing their parents do, and since their parents do not take them to school, their entire life is dependent on the park. They see the park as their own asset. These are the kind of people giving us problems.
>
> A senior KWS officer

The above incident reflects the intricate interactions between people and parks, and people and park officials, and points to how these interactions are embroiled in the economies and livelihoods of the local residents. It serves to introduce the concept of *alienation* that I emphasise in this chapter. The Oxford dictionary defines alienation, in part, as the act of turning away; separating or making unfriendly or hostile. In terms of law, the dictionary defines alienation as the transfer or conveyance of ownership to property by one person to another (Oxford Dictionaries Online, 2018). In social sciences however, *alienation* was coined by Karl Marx to denote economic, social, personal, and ideological estrangement or isolation that people experienced from processes of production (Lunn, 1984). Marx understood alienation as loss of

control, specifically the loss of control over labour. He theorised that in capitalist systems, people who provided labour to the systems, were denied control over three areas: control over the conditions in which they worked and lived, control over their own humanity or their ability to consciously shape their world, and control over fellow human beings, particularly those that owned the systems or were in charge of production (Lunn, 1984; Cox, 1998).

Although this chapter is not about labour or processes of production, I borrow the concept of alienation as a window through which to look into how park boundaries served to estrange residents of Nthongoni from forest resources, wildlife, economic opportunities produced by the park and ultimately from sense of self as human beings. Other authors have borrowed the concept to address forms of alienation that deviate from Marx's original ideas of alienation. For example, in *Man Alone: Alienation in Modern Society*, Eric and Mary Josephson described societal alienation of diverse groups such as women, immigrants, sexual deviants, drug addicts, young people and artists (Josephson and Josephson, 1962). However, Eric and Mary understood alienation exclusively as psycho-social disorders of individuals rather than a problem rooted in the way the society was organised. My conception of alienation is in line with Marx's notions in so far as I focus on organisation of society and how economic structures shape the rest of society (Marx, 1856).

In traditional societies people used their creative abilities to produce objects which they used, exchanged or sold (Cox, 1998). In Marx's world that is characterised by capitalism, workers are alienated, and they cannot use the things they produce to keep alive or to engage in further productive activity (Lunn, 1984). The products are the property of the owners of production. No

matter how desperate the workers are, they cannot access what they have produced (Cox, 1998). In Nthongoni like I have argued earlier (see section 3.1) forests were the source of livelihoods for most traditional societies in Africa. Peoples production was therefore reliant on forests. Separation from these forests was therefore tantamount to alienation from their indigenous sources and processes of production. Marx developed the concept of alienation to demonstrate how power influenced the seemingly impersonal forces that dominated the society. He illustrated how although aspects of the society might appear natural and independent of us, they result from human manipulation (Cox, 1998).

Marx's concept of alienation is, without a doubt, different from a multispecies focus where humans and nonhuman species are seen as actively participating in co-constructing their lifeworld. However, the concept provides an excellent footing to help us to understand how power and organisational structures shape the society and its economies. By adopting the concept and extending the focus beyond humans, I attend to a more-than-human form of alienation that is experienced in Nthongoni. In the section that follow, I explore the multiple forms of isolation that Nthongoni residents experience from Tsavo West and Chyulu Hills National Parks, including alienation from their indigenous land; alienation from natural resources; and alienation from tourism and other social and economic activities that the parks produce. Living at the edge of the parks and of their subsistence strategies, the residents endeavour to reconstitute their lives and eke out a living from the land they now occupy. However, conservationists see most of the economic and livelihood activities that the residents engage in as discordant, or incompatible with conservation. Some of the strategies are branded aberrant and lawless, heightening conflict between people and wildlife, and between people and

managers of protected areas. The concept of alienation is helpful in illuminating the ways in which protected areas shape economies, space, place and people at the periphery of the areas.

4.1 Alienation from the economic resource that is land

Current anthropological arguments see conservation as an intervention that endeavours to save the lives of wildlife and in the process disrupts the economies of the less fortunate in human society. In extreme cases, conservation advocates the protection of preferred species while exterminating others (Van Dooren, 2014; Bocci, 2017). With evictions from Tsavo and Chyulu Hills National Parks, the rural economies that revolved around resources such as pasture, bushmeat, woodcrafts, fruits and vegetables were hit hard. Mr. Mangau, one of the evictees, says that conflicts with park officials heightened soon after establishment of the parks since the land which the people settled in was not adequate to sustain people and their livestock. It was also drier than the land that they were evicted from. Farmers kept forcing their way into the parks to graze their animals. Ironically, the same colonial government that had displaced the people and denied them access to pasture in the parks, embarked on a plan to destock the pastoralists under the pretext that the community was overstocked and hence were overgrazing: 'The government said that our people were getting poorer as a result of overgrazing and recommended destocking the land by decreasing the number of cattle an individual held' says Mr. Mangau.

Livestock keeping is particularly central for the Kamba people as their livelihood revolves around livestock. Other than nourishment such as milk and meat, livestock is used as a form of exchange for other products and services. For instance, a family might exchange a chicken for

a small bag of grain, a goat for clothing or a cow for construction materials. Moreover, many cultural ceremonies rely on livestock. For example, the bride price payable to a girl's family before marriage is made in the form of cattle and sheep or goats. Forced destocking therefore increased the overall vulnerability of the local people. It also served to alienate the people from both a family resource and property that is crucial for cultural ceremonies.

Land dispossession also serves to deepen the cycle of alienation from other factors of production and in particular capital. Lack of land and investment capital are most felt by people who are at the lowest steps of the investment ladder (Igoe and Brockinton, 2007; Igoe and Croucher, 2007). As West (2006) argues, the costs and benefits associated with conservation are distributed unequally and do not affect society in a homogeneous way. Further, Igoe and Brockinton (2007) argue that the poor often find themselves deprived of their property even when that property is protected by the law. In Nthongoni, local people are now selling the land that they were moved to, to newcomers who have resources to invest in it. While people may appear to sell the land on a willing-seller willing-buyer basis, in fact they sell it because of the difficult situation they often find themselves in, which renders them alienable. The choices available to them are all mutually conflicting: to remain in abject poverty or to sell the land and relocate or become labour on the same land. As Ngau observed, it's only people who have 'something' that can succeed in Nthongoni:

> First, you must have money to invest in tilling the land, the money to invest in sinking boreholes for water for irrigation and in the irrigation system itself. It's very difficult to harvest anything here if you do not make such heavy investments. Besides, you also need to invest in a functional fence to protect your crops from wild animals.
>
> Ngau, a local resident

Although selling the land is an option, residents of Nthongoni do not have title deeds for the land. The only documents that signify ownership are an allotment letter which is not considered as a true legal deed. Most people in Kenya do not accept the letter as legal evidence of ownership. As such, land that is on an allotment letter has a much lower value than that on a legal title deed. Desperate and powerless, those that circumstances force to sell their land sell it at a small fraction of the actual value. Absurdly, even though the people have over the years sought for land titling, I argue that obtaining a title deed for the piece of land left after dispossession, is simply tantamount to formalising the dispossession.

4.2 Alienation from natural resources

Separate from dispossession, another form of alienation relates to practices of conservation that limit access to natural resources such as water, grazing-land, animals for hunting, wild vegetables, and wood for carving and construction. The people of Nthongoni were not only alienated from their indigenous land as a property but also from access to subsistence products and services that the forest provided. Moreover, the physical or virtually marked boundaries of the parks do not deter wildlife from accessing human habitats. Wildlife often roams outside the boundaries, eating crops and destroying other property, attacking livestock and at times killing or maiming the residents (MacKenzie *et al.*, 2017). Most farmers complain of animals foraging on crops: 'If it's not baboons during the day, tit's elephants, porcupines or bush pigs during the night. …Elephants often come during the dry season, but baboons, bush pigs and porcupines come all the time', said Mr. Maweu, a farmer. Farmers have to invest extra energy and hours in guarding their crops: 'We must always have somebody guarding the farms. Baboons will still

outwit you at times and sneak into the farm, but the destruction is negligible compared to when nobody is guarding', said Mutie, a farmer.

Guarding of crops has both social and economic implications as the person is hindered from engaging in other social activities or doing any other work. Children, for example, are removed from school to help their parents guard crops during the day, which must continue until crops are harvested and out of the farm. Alienation is extended by lack of compensation for the destruction caused by wildlife from the government or from the conservation agencies. Mutie said that many people have come to the area and bought land thinking they would be able to farm it intensively, but they leave after a few attempts and experiencing trouble with wildlife.

Besides the economic impacts of wildlife, Vedeld et al. (2012) observe that people bordering protected areas are constantly conscious of how park managers treat them. When people are not compensated for wildlife damage and not allowed to retaliate against the wild animals, peoples' sense of alienation from a park is exacerbated. People are likely to perceive wildlife as increasingly destructive if the state appears to prioritise wildlife over human livelihoods and wellbeing. Kopnina (2017), and Hughes (2005) argue for a distinction between people who want to access or harvest natural resources as a matter of necessity and basic subsistence, and those who engage in it as 'criminals,' or with an intention to benefit commercially from the resources. Concerted efforts by park managers and the community can be harnessed to help differentiate local populations hunting for subsistence, and those who hunt for commercial gain (Hughes 2005).

4.3 Alienation from tourism and other social and economic activities

Through KWS, the government has embarked on what West (2006) sees as turning wildlife areas once owned by the local peasants into an industry responsible for generating an income from tourism, to fund government activities and even make a profit. Igoe & Brockinton (2007) terms this as *reregulation*, where the state transforms previously untradeable things into tradable commodities and makes state-controlled territories available to investors through rents and concessions. At Tsavo and Chyulu Hills National Parks, KWS gets income through internally generated revenue including park entry fees, rental and land and property-lease agreement income, and aircraft hire. It also gets funding from the government and grants from other development partners, NGOs, and bilateral and multilateral organisations. Internal revenue accounts for approximately 50% of all the revenues (KWS, 2015). The Tsavo Conservation Area is a key income stream for KWS. It is the most visited conservation area in Kenya, and the revenue it generates is a significant proportion of what KWS uses to finance other less visited but nonetheless conservation-critical parks and reserves, as well as to underwrite ongoing institutional transformation processes (KWS, 2008).

The Kenyan constitution and the Wildlife Conservation and Management Act of 2013 provide for compensation by the government for deaths, injuries and damages caused by wildlife (KWS, 2015; Kamau, 2017). Despite this, residents of Nthongoni complained that not a single claim for compensation had been met since 2013, when the Act was repealed. They said they were compensated regularly prior to 2013, although the payments were small. Kabiri (2010) claims that KWS is unable to offer compensation due to financial constraints. This is a contradiction, given that KWS' own records denote Tsavo Conservation Area as a source of income that

finances other parks and reserves and supports other transformational processes at the institutional level. For their part, KWS officials blame unmet compensation claims on 'moral hazard', describing a dramatic increase in claims after the amount of compensation was increased. The situation demonstrates another form of alienation considering that people who must suffer to sustain tourism at the conservation area receive neither compensation nor consolation for their loss, while the money that the parks generate is channelled to other areas.

Residents also complain about the categorisation of some animals such as baboons and porcupines and other rodents as pests, implying that no compensation can be claimed for destruction caused by such animals. KWS stipulates that such pests can be eliminated in favour of human economic interests. However, the community claims that it is not helped to remove the pests and is still required to report and record a statement for any such elimination. These processes have economic implications on top of the damage caused by the wildlife and the risks involved in killing it.

Lack of compensation introduces us to the concept of 'moral economy'. The people of Nthongoni feel that the benefits they accrue from the adjoining National Parks, if any, are not equal to the resources they forfeit and the suffering they endure from the damage caused by wildlife. They see the government and KWS as the main beneficiary of the parks. Moreover, while tourists have access to the parks, the people adjoining the parks do not. Focusing on tourism as an industry and putting Nthongoni into context, I would argue that local people are producers of tourism considering that the land they traditionally occupied is now a tourist attraction and the food they grow inadvertently provisions the wildlife. Albeit by force, the

people of Nthongoni have foregone resource use to sustain the wildlife and the environment. They therefore argue that they should benefit from what KWS refers to as ‘conservation fee’.

KWS regards Tsavo and Chyulu Hill National Parks as biodiversity ‘GeneBanks’ as they provide a home for endangered mammal species and harbour large concentrations of wildlife. Chyulu Hills National Park is important as a corridor for the movement of elephants from Tsavo East and Tsavo West National Parks into Amboseli National Park. It also acts as an important water catchment for Mzima springs and Tsavo and Galana rivers; the Tsavo parks are important for the in-situ conservation of elephants, endangered Hirola antelopes, greater kudu and Grévy ’s zebra (KWS, 2008). All these are critical for vibrant tourism in the area. Moreover, Mzima springs is the sole source of the water that serves the coastal city of Mombasa, another hotspot for tourism that the custodian people of Nthongoni do not benefit from. Nthongoni is not served by the water from Mzima springs and does not benefit from the proceeds generated from the water provided to Mombasa residents.

Generally, the tourism sector appears to favour KWS and the people servicing the industry such as commercial tour operators and hoteliers more than it does the local community. Igoe and Brockinton (2007) observe that local people are sometimes removed from landscapes on the basis that the people would be absorbed into the tourist industry once national parks are established. In the current study, only one of the 32 families that I interviewed in Nthongoni mentioned having a family member working for KWS. The man is in charge of the electric fence separating Nthongoni from Tsavo National Park, and his occupation is arguably a low-status, low-wage role for someone living by the fence and affected by it. Ironically, he is employed to

facilitate and enforce the alienation of his fellow residents from the park, as well as that of himself and his own family.

Despite this, KWS boasts of creating many job opportunities for the people living in Nthongoni. One of the senior officers claimed that most of the hotels inside the park have employed staff from Nthongoni. However, this claim is contested by the residents: 'I don't know anybody from this village who have been employed by those hotels. They always bring new people. If you go to seek for employment, they ask you for papers (meaning certificates). How many people here have attended *Utalii*[5]?' said Syombua, a pub attendant. She implies that not many people have attained the level of education and the kind of skills the hotels ask for. She says that she only knows of two girls who are employed as cleaners, not what she regards as 'nice jobs.'

Most residents of Nthongoni are born and raised in conditions characterised by abject poverty that affects their education. Children often drop out of school due to lack of school fees. At other times they are withdrawn from school to guard crops or help with household chores such as fetching water. As a result, most children do not get a good education and are thus disadvantaged when it comes to competitive jobs in the tourism and hospitality industry in and around the parks. The situation makes the people view the parks as business ventures that alienate them for the benefit of tourists and the outsiders working in the tourism sector (Igoe and Brockinton, 2007).

[5] Utalii is one of the renowned colleges that teach hospitality related courses in Kenya.

The philosophy of the present park management is that tourism and scientific research are acceptable uses of park resources, while local peoples' uses are not acceptable (Vedeld *et al.*, 2012). This philosophy is alien to most local people and does not reflect their values well, putting the people in constant conflict with park managers. Communities see parks and wildlife as a refuge from modern life for tourists and the elite. Piermattei (2013) observes that most farmers perceive national parks only in terms of their bureaucracy and restrictions, as symbols of injustice and of social inequality, a form of alienation.

Besides the unequal opportunities to access jobs, respondents in my study claimed that very few people from the villages neighbouring Tsavo and Chyulu Hills National Parks have the opportunity to visit the parks as tourists. The local residents attribute this to lack of finances to pay for the entrance fee and hire the transport required to traverse the parks. No one is allowed to walk inside the park, something that the people did before the parks were established. Among those that had visited the park, the majority considered the visit as a privilege that comes from schooling as they had visited during school trips. In spite of the trips being much cheaper than what is charged today for similar trips, respondents said that not many students managed to pay and so many finished their education without having visited either of the parks. They now see elephants and giraffes across the fence, and once in a while the animals cross-over to their land. This appears to perpetrate a form of double alienation from the parks: Apart from the physical separation from an economic resource that was originally their own, the local people’s poor socioeconomic status deprives them of the privilege of accessing the parks legally. Tourists from all over the world can access the parks but the people living right next to the parks, the original occupiers of the land, do not enjoy the same privilege.

Besides being deprived of access to the park, members of the community complain that they are punished heavily if they are found within the confines of the park even when, according to one of the residents, 'they are not doing anything wrong'. It is illegal to be in the park without paying the fees stipulated by KWS. However, residents see this as unfair particularly when circumstances force them to enter the park: 'You could be grazing your goats and then one of them strays into the park, so you enter the park to bring your goat back' says Jomo, a farmer. The residents say that despite the wildlife officials preaching good neighbourliness to them, the good neighbourliness is one-sided: 'If your cow gets into the park, even by mistake, and they find it there, they cannot allow you to bring it out. They tell you that that is food for the lions', says Mutie, a farmer.

Residents also read double standards in terms of how they and their counterparts the Masai from across Chyulu Hills are treated. As a protected area, any illegal entry into Chyulu Hills National Park is prohibited. However, the Masai pastoralists living on the leeward side of Chyulu hills graze their animals inside the park, cross over the hills to the Nthongoni side and sometimes come to water their animals at the watering points in Nthongoni (personal observation). Herders from Nthongoni are heavily punished if they are found inside the park and this makes them feel cheated, wondering why the restriction on access is applied selectively. At the time of this study, the local people also complained of diseases that apparently spread from wildlife to their livestock, through Maasai livestock: 'They grazed in the park and then came to water at our boreholes. Their animals freely intermingled with our animals. Before they had gone back, we had started experiencing cases of foot and mouth disease' claimed Mr Jomo, a farmer who also serves as a village elder in one of the villages in Nthongoni. Jomo further claimed that the

pastoralists also stole a number of their goats. ‘You know they have very big herds and once one of our goat mixes with theirs, they just drive them away together. We have now resolved not to allow them into our area again’.

Closely entwined with the diverse themes around dispossession and alienation are the economic practices of the people, some of which are rendered alien to the people once their land and the wildlife are declared a protected area. Similarly, economic activities that were not known to the people are slowly entrenched after creation of the parks. In the next section, I discuss the changing economic activities, space and times of the people of Nthongoni, and attend to how power relations construct these changes.

4.4 Getting by: The changing economies of Nthongoni people

The economies of people living close to protected areas are deeply entwined with the natural resources of the areas (Dunlap & Fairhead 2014; Stevens 2014; Vedeld et al. 2012; Adams & Hutton 2007; Cernea & Schmidt-Soltau 2006). However, the question of what happens to the people when their areas are declared protected remains poorly addressed in conservation circles (Brockington & Igoe 2006). Vedeld et al. (2012) observes that parks and protected areas tend to have their own social lives as they shape, reconstruct and change the land use patterns and the lives of the people surrounding them. These social lives, however, do not unfold naturally but are rather influenced by some individuals or institutions with a kind of power that the local people don’t have. As West (2006) suggests, protected areas are spaces of sovereignty and state power, with governments imposing strict rules about who gets to use the areas, when and in which way. Globalisation, modernisation processes and the tourism development that

accompanies protected areas also contribute to the changes shaping and reconstructing the daily lives and economies of the peasants bordering protected areas (Sims 2010).

The majority of the residents in Nthongoni are farmers who grow crops such as maize, beans, millet, green grams, cowpeas, pumpkin, pigeon peas, green vegetables and cassava. This is the primary means by which most households acquire their food. When the harvest is good, some farmers sell the surplus to buy other items or to meet requirements such as school fees and or medication. For most people directly bordering the park, farming is not very profitable because wildlife destroys the crops. Even in areas where the park is fenced, animals such as baboons and other monkeys, bush pigs, and porcupines and other rodents can cross the fence and destroy crops. As a result, most of the farmers have abandoned farming on their land and moved further away from the park border. Here, they hire land for cultivation while they use their own land closer to the park for grazing, charcoal burning, harvesting grass for thatching and other activities deemed less attractive to wildlife. One such farmer is Mama Kisyula, an elderly woman:

> I stopped farming here (the land adjacent to her homestead) due to destruction by elephants and baboons. I have rented some land near the shopping centre (about 4 km away) where I grow maize, beans, cowpeas and green grams. If you plant maize here, you will have to spend the whole day each day guarding the crop against baboons and vervet monkeys.

This situation has made renting out land appealing to people whose land is far from park boundary and thus relatively safe from wildlife and who want to make quick money from the land. There are also those who do not want to risk farming in the otherwise harsh climatic conditions. On a very small scale, young men and to an even smaller extent women, generate off-farm incomes from working on other people's farms as labourers in agricultural-related

activities. Transport of farm products by hand, donkey or donkey-pulled carts, bicycle or motorbike is also common in Nthongoni. The situation appears to reflect what Igoe & Brockinton (2007) refers to as neoliberalism in conservation where dispossession and alienation of local people allow new economies to evolve. With poverty and lack of resources to play the neoliberal game effectively, the local people are turned into labour.

Apart from growing crops, the next most popular economic activity in Nthongoni is livestock keeping. As small-scale farmers, most residents in Nthongoni have no income or any other means of livelihood. Keeping livestock and or raising poultry is to them a way of cushioning themselves from emergency situations that may happen to their families from time to time which require them to find money somehow. For example, when a student is sent home from school due to unpaid school fees, a member of the family is sick or they need cash for another reason, people sell a chicken, goat or cow depending on the extent of the problem. When harvests from their farm are not adequate to feed their families, residents turn to livestock and sell what they deem commensurate to the amount of food they need to supplement. In other words, livestock is their 'saving account' and economic lifeline. When such livestock is eaten or killed by wildlife, their livelihood is threatened.

Cattle, goats and sheep have enclosures within the homesteads and are driven out during the day to graze and drink. The animals are normally grazed on pasture within the community but when the area gets too dry, most people take the animals to graze in the parks. This is particularly true of the people bordering Chyulu hills that was partially fenced when I carried out my research. Park managers claim that, even in the fenced part of the park, the local residents sometimes cut

the fence down to allow their livestock to graze in the hilly areas that remain relatively green during the dry season.

Livestock also provide a source of income for the villages and individuals who have sunk boreholes or dug wells on their farms. I observed big herds of livestock coming to such boreholes or wells for watering daily. The nomadic pastoralists from *Maasailand* who graze their animals in the hills also drove their animals to these villages for watering (Figures 4.1 & 4.2). This is a lucrative business for the villagers and individuals who own watering points. They charged KES 10 (≈USD 0.1) for each animal. On a good day this fetched KES 2000-3000 (USD 20-30)[6]. Nthongoni is generally dry, with less than adequate rainfall in the two rainy seasons: April-May and October-November. The rest of the year is dry and occasionally the rainy seasons fail to come.

Figure 4.1. Maasai pastoralist watering his goats and sheep in Mwitasyano, Nthongoni.

Figure 4.2. A woman fetching water from a borehole in Mbondeni, Nthongoni.

[6] In an earlier study, we established that 75% of the households in Nthongoni earned less than KES 3000 per month (Mwangi et al., 2016). The majority of the people are subsistence farmers and do not have a source of income.

KWS officials say that livestock incursions into the park are a big problem since the livestock compete with wildlife and displace larger herbivores. However, grazing livestock in the parks is another way through which people in Nthongoni are socially stratified. Residents claimed that a few wealthy local landowners who own large herds depended on access to the park for grazing. They claim that such businessmen influence park managers and their animals are allowed access into the park. Moreover, these large herds pass through community land and graze along the way as they are driven to the park. This ruins the community's grazing opportunities both inside and outside the park. Moreover, residents say the owners of the large herds often recruited young local men as shepherds. This meant that it is the hired shepherds who are arrested and charged when a crackdown on people grazing in the parks is conducted. This impoverishes the community further as they have to bail out their relatives. It also heightens community's conflicts with park managers.

The situation described above echoes what Igoe and Brockinton, (2007), see as a product of neoliberal conservation, where state rolls back protection of its citizen from powerful transnational, national, or individual interests to create what it regards as a free market. For people who are already deprived, neoliberalism only serves to create a space that disadvantages them further as they are not able to compete effectively. Critiquing neoliberalism in conservation, West (2005) observes that removal and separation of people from their native land for conservation allows biodiversity or nature to be made into commodities while native people are made into labour.

Bushmeat and trade in wildlife products, although illegal in Kenya, are common economic activities in Nthongoni. An official of the KWS that I talked to, confirmed this saying that they arrest many people for harvesting bushmeat inside the parks. ‘There are villages where you don’t find any butchery around, yet the people are still eating meat. We have managed to control commercial poaching for things like ivory but the level of hunting for bush-meat is still very high’, he admitted. This appears to go along with the observations made by Vedeld et al. (2012) and Brashares et al. (2011). These two teams concluded that bushmeat was a ‘safety net’ for impoverished rural households that protected them from chronic malnutrition. Because hunting is a practice typically passed on from fathers to sons and from generation to generation, many hunters see it not only as an economic activity but also as an important and sacred family tradition (Margo, 2012).

Bushmeat and wildlife products more generally are treated as unique, original and authentic in many native communities; characteristics that determine the value of the products (Van Uhm, 2018). Most residents in Nthongoni revealed that the taste of wild meat is better than that of livestock meat. One of the hunters narrated that he had ‘customers’ who have a particular liking for Sykes monkey meat. He revealed that he hunts Sykes monkeys for them and gets chicken or beer in exchange. The preference for Sykes meat over chicken appears to support Siniscalchi's (2013) argument that food is not just a matter of having enough to eat to keep alive: it must satisfy personal tastes, religious rules, and a host of social obligations that are all as important to the life of the group as having a meal.

Nthongoni people traditionally subsisted on bushmeat as a key source of protein. The majority of the people still see bushmeat as a rightful resource that they have been denied access to. They argue that since wildlife feeds on their crops, and that tourism benefits from wildlife, it's only fair that they also be allowed to hunt and consume bushmeat. Nevertheless, most farmers claimed that most bushmeat nowadays is not a result of intended hunting. Rather, it results from retaliatory killing of animals that they find foraging on their crops. Phrases like: 'We eat them because they eat our crops' or 'we kill them because they destroy our crops', were common from the farmers. Several studies have championed the ideology of allowing local residents controlled access to bushmeat (Nielsen, 2006; ENS, 2011; Nasi, Taber and Van Vliet, 2011). In particular, ENS (2011) and Nasi et al., (2011) have argued that sustainable harvesting of bushmeat is not only achievable but is by far the best available option in terms of compatibility with biodiversity conservation, food security and self-sufficiency, and local livelihoods. Banning and strictly enforcing laws that prohibit the hunting of endangered species but allowing the continued hunting of resilient species would favour both conservation and the local inhabitants.

To some residents though, bushmeat was an industry of some sort. Nzugu, an elderly farmer, says that when he was younger, he made good money from selling bushmeat and other products that he came across as he went about his hunting activities, such as owl eggs, ivory, lion and leopard claws and sandalwood. He also made animal traps for sale. In his days as an active hunter, Nzugu says he left his home in the morning, either alone or in a group of other hunters, for a hunting expedition that lasted anything from a day to a whole week. They often used dogs to sniff out wild animals. Sometimes they set traps and then moved some distance away from

the traps and lit fires to drive animals to the traps. Today, he doesn't hunt in the park but still sets traps and wire snares on his farm, which borders the park. Many of his colleagues have also abandoned fulltime hunting and they now split their time between working in their farm and hunting or trapping. On a few occasions, I observed some of the traps and snares that Nzugu had set on his farm. He says that these are not necessarily meant for bushmeat but are a way of protecting his crops from damage by wild animals, particularly monkeys, antelopes, bush pigs and rodents. Nonetheless, he consumes, shares with neighbours and friends or sells the meat he gets from the traps.

Nzugu often complained how difficult life had become after establishment of Chyulu Hills National Park. He admitted that a few people could not give up hunting and have now taken it up as a fulltime occupation. They have transformed hunting, processing, transporting and selling of bushmeat into a whole set of economic activities. This transformation reverberates with McElroy's (2013) observation about the profound negative influences that capitalist economies have inflicted on practices such as hunting. The hunters in Nthongoni camp out in the forest, only coming out to bring meat to their partners in the business. 'Their work is to hunt and butcher the animal, then they bring the meat to their associates who either sell the meat in the village or transport it to nearby towns for sale', says Nzugu. Occasionally, buyers use motorbikes or donkeys to travel into the forest to buy the meat directly from the hunters. The business is highly gendered. While hunting, butchering and transporting the meat are predominantly male activities, women mostly prepare and cook the meat. Sometimes women are involved in selling the meat in the villages.

Bushmeat in Nthongoni villages is commonly referred to as *sukuma ndoo*, which in direct translation is 'bucket vegetable'. It is normally smoked or dried in the forest but sometimes it is transported and sold fresh. It is sold to people who ordinarily don't hunt but have some income to buy the meat from the hunters. These include teachers, shop-owners or people in formal employment with government or other organisations. The hunters generate cash from this to buy other items such as clothes, beer, and cereals, or pay school fees. Sometimes the meat is exchanged directly for other food items such as maize, cowpeas, sorghum and vegetables.

Most local hunters use bows and arrows which are made locally. The arrow has a sharp metallic tip that is often laced with poison extracted from roots, bark and berries of certain species of plants and sometimes from the venom of snakes. Mithili, a village herbalist who also specialises in making poisoned arrows makes his livelihood from his traditional medicine trade. He inherited the trade from his grandfather and was initially very angry with the grandfather for giving out all the cows without leaving him any: 'He told me that what he had not given me, God would provide. He didn't give me any livestock, and I have never needed to keep livestock, but I have still taken my children through schooling out of the medicine he left me'. Mithili obtains most of the plants he uses from Chyulu Hills and other small forests in individually owned farms.

Looking at it differently, illegal hunting or poaching as it is commonly referred to as in conservation circles, can be seen as a full industry. On the one hand, it necessitates the hiring of wildlife protection officers including wardens and rangers and their managers. In Tsavo and Chyulu Hill National Parks, for example, KWS rangers craft their lives and identities through

their engagements with illegal park entrants such as poachers and 'illegal' livestock herders. I use illegal here, because residents of Nthongoni claim that commercial ranchers or large-scale livestock keepers who pay a license are allowed to graze their animals inside the park. KWS vehemently denies that they issue such licenses which implies that the livestock is allowed into the park through corruption. Nonetheless, KWS wardens and rangers are employed and armed by the state and earn their livelihood from patrolling the protected areas and guarding the wildlife. On the other hand, hunters must employ tactics to protect themselves from being caught by the wildlife officials and also from being attacked by wild animals such as buffalos and lions. This protection normally comes in the form of magical powers from undisclosed traditional healers who also earn a living from the trade. The hunter is either bathed with herbal medicines or given a talisman to carry with him while in the forest:

> Some hunters are treated and conferred with the ability to disappear like lightening in the face of danger. If a hunter is, for example, charged at by a buffalo or a lion, he just utters some magical words that makes him disappear from the scene. The powers are also capable of blinding, for example, a ranger such that they will not see you when they are patrolling. …There are also powers that are used to transform a hunter into an animal such as an antelope, such that a hunter is able to mingle with other antelopes as he chooses on the one, he wants to kill.
>
> Kyeva, a middle-aged resident of Nthongoni

This narrative about the use of magical powers was echoed in different parts of Nthongoni but the terms and/or conditions under which the magical powers were sought differed. While some hunters sought to be guided to where the prey were, others sought to be invisible to the forest guards. Yet, others like in Kyeva's case above, sought for transformation into their prey's image so that the prey may not run away from them but be calm to allow easy killing. In all the cases, however, the magical powers seem to have been sought after for a specific practical purpose. Writing about Yukaghir hunters of Siberia, Willerslev (2007) posited that the perspectivist

representations that the hunters expressed were not mere intellectual constructs but discourses that were intimately bound up with the hunting activity in which they were engaged. Similarly, the hunters in Nthongoni appeared to appeal to magical powers for providence, and for protection from the risks that hunting entailed. By using magical powers, the hunters made sense of their world and maintained close social ties with the spiritual world.

The powers conferred were neither finite nor did they necessarily depend on one's ability to pay for them. In some instances, the powers were ancestral and were conferred as an avenue through which the ancestors fulfilled their moral obligations as providers and protectors of their descendants. Musyoka, a former hunter, talked about a ceremony called *Kithangona.* Although a little different in terms of conferment, the powers given through *Kithangona* work in a similar manner to the magical powers Kyeva describes above. *Kithangona* is a ceremony performed when a new-born baby carried all the characteristics of a person that has died. In addition to looking like the relative, they might have birthmarks at exactly the same place the departed relative had them or have the same disability as their predecessor. They also share the deceased's behaviour. When this happens, a birthday ceremony is arranged as if it was being held for the child but in essence it's being held for the predecessor. A goat is slaughtered, and a piece of skin cut from the foreleg is tied on the wrist of the baby. After that, the father of the child talks to the predecessor telling him that they have recognised and accepted his new presence in the family, saying 'Tunajua ni wewe na tuna kukaribisha nyumbani' (we know it's you and we welcome you home). The predecessor is then asked whether he has any conditions. If there are none, he is asked to protect the young child. From there henceforth, the predecessor lives in the body of

the young child. Musyoka says he was born in such circumstances, and as a hunter he enjoyed protection from his predecessor for many years:

> Sometimes I would start praying that I capture an elephant, and when I went to sleep, I would hear a voice asking me to wake up and directing me to some place in the forest. It would also advise me on which route to take to avoid any danger either of fierce animals or of armed rangers. …when I followed these instructions, I definitely got the elephant. After a successful kill and removal of ivory, the voice would then guide me out of the forest. At one time, I heard the voice tell me there was danger ahead along the path that I was using. It told me to hide the ivory and climb up a tree that was nearby. Just then two armed rangers came and it's like they sensed there was someone up the tree because they stopped and looked up, but they didn't notice me which was weird as the tree didn't have many branches or leaves to hide me. You know when you have such a guardian, danger can come very close to you, but it will not touch you. Rangers can come up to where you are, but the guardian makes you to disappear from the rangers eyes, and they won't see you.
>
> Musyoka, a farmer and a former hunter

Musyoka's account brings to the fore a semiotic dimension of bushmeat as a connection to the departed ancestors, and to the spiritual world more generally. It illustrates a way of reliving or living well together with the forefathers. The spirit world offers protection to the hunters and guides them to the animal. It also allows the animal to submit itself to the hunter. The activity is seen as a sacred tradition embodying notions of a family inheritance and a heritage. Nevertheless, the precarious conditions in which the hunters live demonstrate the social effects of protected areas as they change the lives and wellbeing of the local people. They reveal the different kinds of risks the various actors in the bushmeat industry take in an effort to eke out a living and or uphold their cultures. West (2006) draws on how the push for conservation changes the social nature of people's surroundings and fixes local people in particular kinds of space. She further points out the restrictions to resource access and control that are then enforced by the state: because of their native activities and land-use practices, the local people are seen as primitive and destructive and they are thus criminalised. Bocarejo & Ojeda (2016) and Dunlap

& Fairhead (2014) also decry the form of violence against local populations: both physical violence and violence perpetrated through restrictions and control of resources.

Besides bushmeat, other dimensions appear to drive people to hunt wildlife. Diseases such as HIV/AIDS, for example, are gradually bringing new economic approaches to the making, use and sale of folk medicine extracted from wildlife. One of the research participants told me that use of baboon liver as medicine for AIDS was becoming popular in the area and thus hunting of baboon was slowly becoming a lucrative business. The practice is illegal and is thus carried out with a lot of secrecy. Particular instructions are followed when acquiring the liver: For example, the baboon from which the liver is extracted must be healthy and mature, not a baby or a juvenile, and must be wild not a pet or raised in captivity. It must be a fresh kill, not an animal that died of unknown causes. It should not have been killed through poisoning or by use of poisoned arrows. The baboon should not be tortured during the killing. 'You know if you torture the animal, the liver *melts',* says Kamwana, a research participant. The bile must be left intact as it is important for preservation of the liver. The liver is dried in the sun and then mixed with other herbal products such as *mrenda,* a green leafy vegetable. As a middleman, Kamwana sells the liver in this state and does not know what, if any, further processing is done. He says that those who bought the liver initially came every few months but as the medicine became popular, the frequency of visits and the amount of the liver required increased. This is likely to exacerbate hunting of baboons, thus pitching local people into heightened conflict with wildlife managers.

As a new and growing trend in Nthongoni, use of baboon liver as medicine demonstrates the changing social meaning, value and judgement that people hold for wildlife and wildlife products. Kamwana observes that although Nthongoni residents do not keep baboons as pets, the people who came for baboon liver were very particular that they would not buy a liver extracted from a pet or from a baboon that was kept in captivity. They insisted that the baboon must be hunted from the wild. Van Uhm (2018) suggests that wildlife products from wild animals are believed to be more 'pure and natural' than wildlife products from captive animals. In Chinese traditional medicine, the healing qualities of farmed rhino horn are believed to have less medicinal value than those of a horn from 'real wild' rhino (van Uhm and Siegel, 2016). As the functional value of baboons changes, and with it the rise in demand for baboon liver, the economic dynamics attached to baboons in Nthongoni are likely to change too. An increase in maize farming is also likely to attract baboons closer to humans, making them an easier target.

Making and sale of handcrafts such as woodcarvings and basketry is another activity that the Kamba people are renowned for. In Nthongoni, making and sale of sisal baskets, decorated woodcarvings, wooden beehives, stools, spoons, snuff-bottles, handles of axes and knives are particularly common. The handcrafts are sold in gift shops, open-air markets and art galleries in the major cities and towns of Kenya, and along busy highways such as the Nairobi-Mombasa road. As an economic activity, woodcarving is largely influenced by tourism as most artefacts go into the tourism industry. It fits into what Igoe & Brockinton (2007) sees as new economies evolving from dispossession and alienation, and with subsequent neoliberalism in conservation. However, the business in woodcrafts and handcrafts more generally is constrained by restricted access to the forests where the artists often get the raw materials. Access to the Chyulu hills,

which used to be the source of wood for carving, is now restricted, and those in the industry often find themselves in trouble with park managers when they try to access wood from the park. Even when the wood has been acquired legally, say from community land, residents say that park managers often harass them when they encounter them with the wood or with finished products. The residents are always asked to provide evidence where the wood was sourced. This further illustrates how state-led conservation strategies translate into criminalisation of and violence towards local populations. It allows us to understand the everyday occurrence of violence legitimised by narratives of conservation and the protection of nature (Dunlap and Fairhead, 2014; Bocarejo and Ojeda, 2016).

Charcoal burning is a visibly popular economic activity in Nthongoni and the larger Kamba community. As one travels along the main Nairobi-Mombasa highway, a huge collection of sacks of charcoal dots the roadsides. Once in Nthongoni, charcoal kilns are a common feature every few homesteads and the smell of the smoke that comes from the kilns is unmistakable. Residents claim that charcoal making is their only economic lifeline when food crops are destroyed by wildlife or fail because of other natural causes such as drought. A middle-aged couple that I found preparing a charcoal kiln in Nzouni, for example, told me that they stopped farming when every season they planted, the crops were destroyed either by elephants or baboons. The village has historically been frequented by elephants to the extent that the village's name, *Nzouni*, means the place of elephants. Mumo and other villagers find solace in making charcoal since as she puts it: 'No animal can eat charcoal'. 'Even elephants keep off when they smell the smoke from charcoal kilns' she reiterates. At the time of this research, charcoal burning had just been banned in the neighbouring Kitui County, a situation that is likely to

increase charcoal burning in Nthongoni in the near future, which may result in environmental degradation.

Besides charcoal and the trade in animal products or products made from animal materials, other non-farm economic activities that thrive in Nthongoni include making and selling brass amulets, tools and weapons. Brewing and selling *muratina,* the local beer, is also common. The village shopping centres have businesses such as small retail shops, food vending kiosks, open fruit and vegetable stalls, handicrafts, tailoring, carpentry, and mechanics and to a small extent formal employment for teachers, nurses and government administrative officers. These are all activities that the people of Nthongoni seem to engage in to getting-by and to ameliorate their alienation from the parks and from the economic opportunities that the parks provide.

4.5 Conclusion

In this chapter, I have demonstrated how protected areas dispossess and alienate people from their indigenous land, constrain resource access, change people's ways of life and their economies and continuously alter rights and power relations. As the closest and most visible people, local residents are perceived and treated as the primary threat to protected areas. They are seen as invaders and illegal and are often criminalised and prosecuted. In addition to these negative perceptions, the wildlife in the otherwise protected areas infringes on local economies by destroying food crops, maiming or killing people and livestock and passing on diseases to livestock. Moreover, the government and conservation agencies espouse a neoliberal approach where new economies are allowed to evolve, but local people are unable to compete effectively, having been deprived of resources. They are labelled lawless, aberrant and primitive for

practices such as hunting for bushmeat and ivory. Lawful businesses such as sale of handicrafts are subject to strict controls and are sometimes harassment of traders. Although the tourism industry is generally viewed as a lifeline to the global economic system (Western *et al.*, 2019), this again is configured as a sector that requires specialised skills and experience that the local people in Nthongoni do not have. With no place for them in the emerging free-market economy, local people simply become disposable.

The action plan inaugurated during the 5th World Parks Congress emphasised the social and subsistence losses that the people living in and around protected areas suffered from dispossession and subsequent poverty and culture change (West, Igoe and Brockington, 2006). Following the congress, neoliberal conservationists championed a the win-win-win scenario for both conservation and local people (Igoe and Brockinton, 2007; Ferguson, 2012). In spite of this, the data presented in this chapter reveal a world that is much messier than the neoliberal ideal suggests. Contemporary protected areas continue to affect the people living in them, adjacent to them, and displaced by them in numerous ways. In Nthongoni, a few people may have benefited from the jobs that the parks created in the conservation and tourism sector, but the majority suffered from dispossession and consequent alienation from their land. The chapter sheds light on how the state power underlying the processes of creating and managing protected areas affect the daily lives and economies of the local people. It engages with anthropological arguments on alienation and dispossession, neoliberalism and moral economies to help us understand how conservation reconstructs economies, space, place, and people. The chapter extends anthropological debates on how social lives, politics and economies unfold at the borderlands of protected areas.

Chapter 5: Human-baboon relationships across the borderlands

For three years, *mumo:* a lone elderly male baboon, has not been sighted in Nthongoni. It has not rained for a long time too and the land is very dry. For the people of Nthongoni, *mumo* is much more than an ordinary baboon. He is god incarnate and thus has supernatural powers. None of the residents that I interacted with know where he originates from, but most people have no doubt that he is different from other baboons. He is sacred and his presence brings good fortune to their home, village and Nthongoni more broadly. Likewise, his extended absence is an indication of imminent misfortune and calls for both human and divine intervention. Unlike other baboons living in large groups, *mumo* normally moves and feeds in solitude. He is not aggressive to people and doesn't kill or attack goats or chicken. When he enters your farm, he is not destructive and, for instance, only picks a few maize cobs and leaves quietly. His foraging on people's crops is seen as a blessing and is thus not simply tolerated, but sanctified. In fact, most of the residents yearn for *mumo* to forage on their crops or at least to enter their homestead so as to bring them blessings.

Mumo's prolonged absence and the misfortune that might befall the people of Nthongoni, often prompts the *Atumia* (elders) to conduct a ceremony named *ithembo* to appease the gods. The ceremony is carried out by elderly men and women who have long passed the age of 'sleeping together' (having sexual relations). They come together under the *muumo* tree: a sanctified type of fig tree, offer sacrifices to gods, and pray for compassion, rains and a good harvest. The designated *muumo* tree and the area for the ceremony are referred to as *mathembu.* When the elders assemble at the *mathembu,* they demarcate the area by drawing a circle the size of a hut around the tree. An imaginary door just like those made for a hut is marked on the ground and

every person entering the ceremonial 'hut' must go through this door, not anywhere else. The villagers bring a handful of the seeds they intend to plant that season, and offerings such as animal fat, sorghum, millet, green grams, and maize flour. All these are placed at the bottom of the *muumo* tree. Except for the elders, everyone else then moves to about 100 m away from the centre of the ceremony. The elders then slaughter a goat or, if the crowd in attendance is big enough, a bull. They then present the offerings to the gods. This entails pouring some goat blood at the base of the *muumo* and burning some of the meat and the other offertory items to ashes. The rest of the meat is roasted and eaten communally by the people who have attended the *ithembo*, starting with the elders. The animal that is slaughtered is normally donated by one of the villagers, but the benefactor has to remain anonymous. He should not boast about it and should not even let the other villagers know that he made the donation.

Despite the physical separation produced through the creation of Tsavo and Chyulu National Parks, and the alienation of people from land and wildlife, *mumo* and baboons in general are still physically, socially and spiritually entangled in the lives of the people in Nthongoni. This embeddedness of baboons in people's lives is characteristic of what Margo (2012) describes as a close-knit entanglement where ritual, art and mythology often draw humans and nature into each other. In this chapter, I describe the intertwined lives of people and baboons in the human-wildlife interface of Nthongoni, and demonstrate how the nature-culture categories implied in the neoliberal conservation agenda (Igoe and Brockinton, 2007; Ferguson, 2012), are undermined by human-baboon sociality. Neoliberal conservation envisages pristine lands that are free from human habitation and thus uninfluenced by and separate from culture. Consequently, its proponents partition resources and landscapes in ways that control, and often

exclude, local people (Igoe and Brockinton, 2007). In the particular case of Nthongoni, the national park boundaries form and mark the official partition between humans and wildlife but the envisioned separation of wild life from human life does not break the sociocultural bonds that the people have with baboons and nature more generally. The embeddedness of baboons in the daily lives of people in Nthongoni challenges the notion that creating protected areas separates humans from nature and wildlife.

The liminal position of *mumo,* between animal, human and sometimes spirit, illustrates the bond that exists between humans and animals, humans and spirits and between the living and the dead. In trying to theorise and understand these forms of entanglement, I use 'multispecies ethnography' (Kirksey & Helmreich 2010) to illuminate how humans and baboons in Nthongoni co-construct life and world for one another through active interactions. Earlier studies on relations between humans and animals often used social constructivist frameworks that viewed humans as the only actors or active agents in human animal interaction. Animals were seen as incapable of having characteristics such as language, culture and sociality, that were regarded distinctive to humans (Kohn, 2007). Instead, multispecies ethnography uses a posthuman approach to focus not just on humans or only on animals but on how humans and animals mutually interact. (Kohn, 2007, 2013; Faier and Rofel, 2014). Post human approaches acknowledge animals as moral subjects (Franklin and White, 2001), agents of their own existence and of their interactions with humans (Donaldson *et al.*, 2012).

To extend my reflections of coexistence and embedment, I draw on Eduardo de Castro's notions of perspectivism that provides a lens through which to focus on the semiotic worlds of human

and animals. Perspectivism explores the different semiotic dimensions of human, animals and spirits through which people and animals see and perceive themselves and each other (Viveiros de Castro 1998; 2012). Kohn argues that animals, plants and spirits are immersed together with humans in a socio-cosmic medium where each being, plants and spirits included, continuously constructs and shapes the life of the others (Kohn 2013). Although both Viveiros de Castro and Kohn (2007, 2013, 2014) uses perspectivism to analyse specific creation and interpretation of signs in the Amazonia, the notions are useful in helping us to attend to semiotic meanings that permeate human-baboon interactions in Nthongoni. This chapter will describe the ways in which baboons in Nthongoni transform between physical form and spiritual form, and in the process influence human social life in a profound way.

In close connection to perspectivism, is the concept of personhood and selfhood that Eduardo Kohn uses to analyse how the Runa people in Ecuador develop modes of 'trans-species communication' to communicate with their dogs (Kohn, 2007, 2013). Kohn observes that the dogs derive perceived personhood through engagement with the Runa in the same way the Runa attain part of their selfhood from interacting with the dogs. This form of shared personhood determines how the Runa relate to their dogs. In the same way, baboons in Nthongoni are personified and this has an influence on how people perceived and treat baboons. Exploring the ways baboons are personified is helpful in illuminating how baboons symbolically construct and participate in diverse cultural realities, and in understanding how their semiotic embedment blurs the lines between nature and culture.

Perspectivism and personification of animals often generate stories that are passed down through generations. Giles-Vernick and Rupp (2006) have observed that it is through these stories that people make sense of their lives. The stories are an avenue through which people depict and debate social differences, social tensions and relations between self and others. Through the stories, people make claims about control of their environment or land, access to resources, spaces and wealth, and boundaries between life and death. People also find connections with the spiritual world. Donna Haraway's post-human focus on how humans and non-human beings shape each other's lives and how their interactions are in turn shaped by political, economic, and cultural forces (Haraway 1989; 2003; 2008) are useful for a study pitched in a colonial and postcolonial context.

The chapter is divided into three sections. Sections 5.1 addresses the personification of baboons, starting by providing more evidence of *mumo's* personification. I then describe the many levels at which *mumo* influences the social worlds of the people of Nthongoni. *Mumo* is not simply a baboon to the people of Nthongoni, and while other baboons are personified, *mumo's* stature transcends that of ordinary baboons to adjoin people's ancestral and spiritual realms. Section 5.2 continues the discussion of personhood but through the varied perspectives of seeing, thinking about and living alongside 'ordinary' baboons other than *mumo.* Section 5.3 describes a variety of other ways in which baboons are involved in human social life. Finally, I conclude the chapter by highlighting its contribution to anthropological debates around the 'nature-culture' dualism (the separation of humans and nature), and about the question of what happens to human life and wild life when their separation and alienation is enforced. I also underscore

the insights the complex narratives I present can offer to the conservation of wildlife and nature more generally.

5.1 The baboon that is not a baboon

Humans are not the only species responsible for their life and culture (Magliocco, 2018). However, they are not always conscious of, or aware of the origin of, the other species or forces responsible for shaping their evolving world. Embedded religious and spiritual connections serve to illustrate the existence of these other species or forces. The accounts of *mumo* I present in this section reveal the role of symbolic meanings in determining how people see, think about and interact with certain animals, and demonstrate the social and spiritual disarray that is likely to emerge when such animals are separated from humans.

Although most of my research participants were well aware of *mumo,* they had difficulty explaining how he came about or where he originates from. Those who have espoused Christianity no longer felt that *mumo* was supernatural but still held that he was different from other baboons. He moved alone and was not destructive. Nobody would dare harm or kill *mumo.* However, in the event that he was mistakenly or accidentally injured or killed, people believed that the person who caused the injury or death would face misfortune. Such misfortune may extend to their family and sometimes affect the whole village in the form of a prolonged drought or a pandemic. A cleansing ceremony had thus to be conducted to evade such misfortune. Considering that such ceremonies are expensive to organise, people must endeavour to live well with *mumo*.

Mumo, a farmer who is named after the revered baboon describes *mumo* as a baboon that is 'respected like an old man'. Unlike other baboons, *mumo* is seen as 'composed' and 'disciplined'. Old men in Nthongoni are seen as icons of wisdom and tranquillity. For *mumo* to be thought of and respected as such, he has in the eyes of Nthongoni people acquired what Fuentes (2006) terms the humanity of animals: 'Even when he enters your farm he only picks one or two maize cobs then leaves slowly without destroying anything,' said Mumo. *Mumo* is thus highly respected to the point that his feeding on food crops is not perceived as the raiding associated with other baboons. In this regard, *mumo* may receive preferential treatment owing to the semiotic value he has for the people of Nthongoni. The perception of what is otherwise regarded as stealing changes and the act is not only tolerated but is appreciated and highly esteemed.

Mumo's influence and respect goes beyond having human dispositions attributed to him, and touches on naming of people. Children that are born around the time *mumo* is sighted in the village are often named after him. This is regardless of the sex: either male or female, a unique phenomenon since naming in Nthongoni and indeed the larger Kamba community follows a clear male-female divide. Sharing of names between the baboon and people demonstrates the distribution of personhood across human and baboons and further elucidates the fluidity of attributes that are thought to set people apart from animals in particular rural settings.

Mumo's presence in the village is rare and when he appears, people delight in the hope of heavy rains and a good harvest as a result. Once he is sighted, people pass the information door-to-door to announce it. They immediately start preparing their land for planting. As such *mumo* is

seen as a messenger from the spiritual world bringing a message of goodwill. At this juncture, his attributes transcend beyond humanity and he becomes supernatural. In Kohn's 'socio-cosmic medium' animals, humans and spirits continuously transform from one form to the other and communicate through what he refers to as 'semiosis': the use of signs and images to converse to each other (Kohn 2013). In Nthongoni, the gods or the ancestors in spiritual form communicate to the people through *mumo* about the time to plant. This centres *mumo* in the material and livelihood domains of the people of Nthongoni as he mediates their cultivation timelines. Moreover, people must observe discipline and social order, and live well together with *mumo* if they are to expect good rains and harvest. This shows his role in producing meanings of humanness and constructing the social worlds of people. The entwinement he enjoys in the social lives of people serves to castigate attempts to alienate him from people by creating protected areas for him.

Muasya, a middle-aged farmer, gave an account of his understanding of how *mumo* comes to be. His account contains echoes of an analysis that primatologists like Robert Sapolsky describe as the dominance hierarchy in baboon sociality. In his *Primate's Memoir,* Sapolsky (2001) describes how in old age, an alpha male is ousted from its group by an aspiring alpha male and cannot join another group owing to its age and dwindling physical strength. As such, and if it's lucky enough to survive the fight that has led to its being overthrown, it may remain in solitude henceforth. This solitude is what defines *mumo* from both Muasya's perspective and Sapolsky's accounts, and thus in a way demonstrates the blurry line between nature and culture in terms of how *mumo's* perceived solitary nature, a natural behaviour of baboons, transcends nature-culture duality to become a source of dominant influence in human sociality. The baboon social

behaviour - hierarchical dominance, ousting and consequent solitude - is deeply entwined in people's social life to the extent that it profoundly influences their culture, spirituality and livelihoods.

Mumo's spirituality resonates with Viveiros de Castro's notion of Amerindian perspectivism where the external nonhuman appearance of animals is conceived as skin or clothing that hides a human or a spiritual interior (Viveiros de Castro 1998). According to Viveiros de Castro, animals and spirits in the Amerindia are people in their own spheres and therefore everyone - humans, animals, spirits and souls - describes the other from their own viewpoint. The people of Nthongoni might not describe *mumo* in terms of how he sees people, but they portray him as a supernatural being with both spiritual and human attributes. This is crucial as it reveals the penetration and entwinement of animals across the human-spirits divide and between nature and culture. Moreover, *mumo's* behavior demonstrates his humanity and agency. He is not perceived as destructive and this earns him tolerance and respect. This depicts a cohesive coexistence of humans and animals, and explains why people may tolerate, appreciate and live well with animals in shared interfaces.

Besides personhood, humans and animals are also connected through what Eduardo Kohn terms as *multinaturalism* or the use of symbols and signs (Kohn 2013). Many residents of Nthongoni claimed that *mumo* normally carries a stick called *muo* with him, which he uses to dig out roots to eat. The *muo* is regarded as a gift from god to *mumo*, to aid him in feeding. It is therefore believed to hold magical powers. 'If you are lucky to come across it, you keep it safely in your house and good fortunes will henceforth follow you, says Mumo. *Muo* is sometimes used by the

people in planting food crops and, just like a visit from *mumo,* it is believed to improve crop yields. It is used in planting seeds into the first few holes or the first furrow. A few seeds, representing what will be planted in the entire farm, are picked and mixed together, then planted in the hole or the furrow. Normally the head of the family does this. After that, the other members or the person who has been hired to plant will proceed with the rest of the planting. A dried baboon hand is similar to *muo*. When a crop-foraging baboon is caught either by use of a trap or through hunting, the right hand is cut off and placed in the sun until it has completely dried and stiffened. It is then stored safely and used in the place of *muo* while planting. *Muo* might be an ordinary stick and so is the dried hand of a baboon an ordinary hand. However, by virtual of their relation to *mumo* and the entire system of spirits and gods in the social lives of Nthongoni people, they become indispensable tools and symbols. This demonstrates *multinaturalism* and illustrates *mumo's* involvement in constructing and producing social meanings in people's lives.

The stories told about *Mumo* raises fundamental questions that may be relevant for conservation. Ordinarily, animals are considered as a group or as a species. However, the relations between mumo and the people of Nthongoni does not seem to fit in the taxonomic categories. Although he is a baboon to biologists and conservationists, he is a spiritual figure to the people of Nthongoni. The semiotic values accorded to him warrants him to be different from other members of his own species. The name baboon does not appear to represent mumo in the realities of the people of Nthongoni because it does not capture the complexity of his shifting identities. After all, people do not encounter and relate to him as a baboon species, but they share an intimate and affective relationship with *mumo* as an individual. Focusing solely on the

species scale renders the 'individuated' character of nonhumans meaningless (Govindrajan, 2015).

5.2 Personification of other baboons in Nthongoni

Personification, the attribution of human qualities to nonhuman beings and objects, connects the personified entities closely to people. When used to describe animals, personification defuses western cosmologies of duality between nature and culture (Kohn 2013). Kohn sees humans and animals as immersed in the same social-cosmic medium and each is a product or outcome of the semiotic processes that takes place through interactions. What identifies an individual as a person is not a universal constant. Rather, it is continuously negotiated in specific times and places and in reaction to varying situations and social relationships (Appell-Warren, 2014). This helps to explain, for example, how ordinary baboons are different from *mumo* and how their different symbiotic values are negotiated in Nthongoni. It is also useful in understanding their different positions in terms of how they undermine the nature-culture duality. Ordinary baboons are also different from *mumo* in their interactions with people at functional, material and social levels. Some residents regard baboons as 'human-like', 'intelligent' animals while others see them as 'malicious' and 'naughty'. Still others feel that baboons are like any other 'innocent' animal going about normal survival strategies. This section presents the different ways in which residents of Nthongoni perceive ordinary baboons, the attributes people assign to them and the ways these attributes shapes humans' and baboons' lives and human-baboon relations.

5.2.1 Baboon language and communication

One crucial characteristic of baboon personhood in Nthongoni is their use of language. Jomo, a farmer, has had intensive interaction with crop-foraging baboons to the extent that he now says that he understands their language. He says that when the baboons approach his farm, they first check the tree where he normally sits when keeping guard. They know that he sits there, and so check if they are being watched before making any attempt to get into the farm. He says that on numerous times, he has heard them ask each other: "*ve mundu*?" Is there anybody? And then some respond *"mm! mm! mm!,* yes, yes, yes, ...and after that you see them walk away. When he is concealed and they cannot see him, the answer is different: *"a-a! a-a! a-a!"* no no no. They then proceed to enter the farm. He claims that he has had many encounters in which he clearly deciphered baboons' language:

> At one time I found a group of them up a tree and threw a stone using a catapult. It hit one of the baboons and they all dropped down. You know if you scare them when they are up on a tree, they do not take the time to climb down. They jump or just drop down all at a go… When they got into a nearby bush, I could hear the leader ask the others: ni waumia? Is anybody hurt? And then the others said a-a! a-a! a-a! no no no. They speak to each other I tell you."
>
> Jomo, a farmer.

Ndovu, another farmer, also claimed to comprehend baboon language saying that by listening to them, he is able to tell their next move. Although the use of language in animals is a controversial topic (e.g., Lloro-Bidart 2017), Jomo and Ndovu's perceived personhood in baboons is not limited to looks and rational behaviour but is extended to verbal language.

Residents of Nthongoni say that baboons can read people's minds and expressions and behave accordingly. Jomo, for example, says that when he is grazing his animals, baboons do not run away from him as swiftly as they do when he is guarding his crops. He also says that they can

clearly differentiate between a herding stick and a catapult and are more scared of a catapult than a stick. In a study of macaques in Hongiu village, Japan, Knight (1999) made a similar observation. Firstly, people claimed that the monkeys 'tiptoed' into the crop-fields where they foraged silently and unnoticed. Secondly, like the sight of a catapult in Nthongoni, the macaques were very familiar with guns, such that the mere sight of a gun was enough to make the boldest of the monkeys run away in panic. Milton (2002; 2005) disqualifies the modernist way of seeing nonhuman others as 'what something is, an individual', saying that personhood emerges out of what someone, including an animal, does in relation to others. Likewise, Kohn (2013) and Agustín & Kohn (2012) argue that a person, including a nonhuman person (read an animal), is an outcome of a semiotic process that uses signs and symbols to converse with others. Milton (2005) posits that human beings are apt to recognise any living or non-living entities as persons like them if they develop an emotional attachment to those entities. Although this observation doesn't directly refer to human comprehension of animal language, it appears to resonate with the personification of baboons in Nthongoni and their coded language.

Residents of Nthongoni claim that baboons are aware that they are protected from humans and the park is a no-go zone for people. They say that when you chase baboons for 'stealing' chicken or maize, they flee back into the park and once they have passed the park fence, or the park border in areas where there is no fence, they appear to relax. 'They know that that is their territory and you are not supposed to follow them beyond the borderline' says Mutheu, a farmer. 'They don't run any further. Instead, they wait until you give up and go back to your farm, then they follow you back', she reiterates. I followed baboons on one occasion and recorded an instance where the baboons crossed the fence into the park and immediately appeared relaxed.

They started grooming one another not far away from where I was. The baboons never allowed me to come that close whenever I encountered them foraging in community land. This difference in baboon behaviour inside and outside the confines of the parks appears to communicate baboons' awareness and appreciation of the nature-culture boundaries created by the parks.

5.2.2 Baboons as close relatives

Respondents viewed baboons as following human social structures, and therefore considered them as closely related to humans. Such considerations served to diminish the attributes that are supposed to separate humans from animals. Some respondents described baboons as mothers and fathers based on how they take care of their families including playing with their children and disciplining them when they misbehave. They also described how baboons punish the wrongdoers in their group. Muasya, a research participant, kept mentioning *'Yiika'* (age group) when referring to age categories in baboons, implying that he considered baboons to have age groups. Age groups have historically been used in many Kenyan communities as ways of marking connections to people with whom one shares a journey through life. For example, juvenile baboons engage in similar fights to those that young boys often get involved in. Talking about this, Muasya made a particular reference to a mutually agreeable act of accepting defeat in baboons where the one that is defeated in a fight raises its bottom for the victorious one to spank. That way the fighting ceases. Mumo also had a story about how similar baboon families are to human families:

> You might find the adults seated in a circle in a relaxed mood and appearing to have a discussion or a conversation. If you look at them keenly, you see one or the other member make certain sounds and the others appear to either agree or disagree. The infants will most often be playing separately but not very far from the adults. Sometimes, one of the infants will run to the adults and start engaging them in their games, just like our children do. The adult baboons may then toss

> the kid (infant) like a ball, from one baboon to the other … and they are very careful not to drop the kid. In the event one allows the kid to drop, the culprit is rebuked by the others, to the extent of being beaten up… sometimes when a child runs into adults that are busy with something or in a serious conversation, the child is slapped and chased away.
>
> Mumo, a farmer in Nzouni.

Like the patriarchal relations of most human societies, baboons in Nthongoni differ in the way they regard and behave towards men and women. This contributes to the way people share and assign gender roles. Kisyula, an elderly woman, claims that baboons do not respect women: 'When a male baboon notices that a woman is working all alone in the farm, it normally shouts *Kigo! Kigo! Kigo!* to inform the others that it's a woman who is in the farm, and so they shouldn't be scared'. Kisyula says that baboons do not run away from women and that is why women and girls do not guard crops. 'The male baboon can run away from a young boy but a woman like me, even when I wear trousers to disguise my looks, it will still know', she reiterates.

Njenga, a farmer, says that baboons also have very strong ties with their family members in terms of handling the dead. He has on many instances seen a baboon carrying a dead infant around. They hold on to the body until it completely decomposes. A similar observation was made in macaques by Knight (1999): orphaned monkeys clung on to their dead mothers while mothers whose babies had died carried the dead baby around with them for days afterwards. Njenga adds that it's very rare to come across a dead baboon. He has a feeling that they 'probably bury their dead like people do'.

5.2.3 Mischief in baboons

Interestingly, even those not so harmonious interactions between people and baboons are personified. In fact, some residents regarded baboons as 'mischievous people' who run away to hide in the forest. Baboons are decried as 'thieves' or 'criminals', 'naughty', 'malicious' and 'just out to cause destruction'. Sometimes they are seen as 'remorseful', like when they are killing goats. Earlier in my research, I had learnt that baboons are fond of gouging out the eyes of goats before killing or eating the goat. Sometimes they gouge out the eyes but leave the goat alive. I asked Jomo whether that was common, and he responded that it was. 'Perhaps they feel pity eating the goat while it's still staring at them,' he said. Njenga, a farmer, regarded baboons as thieves: 'they are thieves! …what other name do you give to someone who steals your crops on the farm or breaks into your granary… someone who snatches your chicken and eats it?' He asked.

Ndovu, another farmer, similarly referred to baboons as thieves. At one time I asked him whether there are people who kept baboons as pets, but he gave a very quick and strong no, and then remarked: 'Baboons are thieves... how can you keep a thief in your house?' Although Kohn (2013) describes good deeds by animals as humanity of animals and the bad acts of humans as the animality of humans, his notions fall short of attending to the analogies exhibited about baboons in Nthongoni: the paradox of animals that have had human dispositions bestowed on them, yet use these human characteristics to execute animality.

Njenga also describes baboons as 'malicious', saying that when they see you coming to chase them from, for example, a maize farm, they start picking a maize cob, take a single bite and

drop, then pick a second one and do the same. ‘When you are not chasing them or when they are all alone in the farm, they can stick to one maize comb until it's finished before picking a second one’ he said. Another dimension of malice relates to goats and chickens. Residents claimed that baboons kill and eat these but vomit the content after a short while. The local people could not deduce anything but malice from such behaviour. Giving it a religious dimension and perhaps a little sarcastically, Njenga asserted that: ‘baboons will also face judgement when Jesus comes back. They will have to be answerable for all the evil things they do to us.’ These accounts imply that the people of Nthongoni perceive baboons as beings that can plan and execute evil, as well as understand and experience punishment.

Jomo narrated how ‘organised’ baboons are and how they play a kind of a hide and seek game with farmers. According to him, the baboons come as a group and one or two members of the group tease you. As you chase these away, they keep you engaged by not running very fast or very far. If you stop following them, they pretend they are coming back so that you chase them further and further away. In the meantime, the other members invade your field. At other times, baboons come as a group but leave one of their young ones at a strategic point to watch over them. If it does a good job, for example, alerting them when danger is approaching, then it will be brought a share of the food that the others have taken. If the baboon left to keep guard does not alert the ones in the field and they are bombarded as a result, then it is beaten thoroughly by the others as they flee.

During my stay in Nthongoni, I had first-hand experienced of some of the assertions that the locals made about baboons. On one late afternoon, early in my fieldwork, I offered to guard

Jomo's maize and sorghum crop while he took his cattle to drink water at the village borehole. I had stayed in the village for a few weeks already and had noted that baboons liked crop-foraging in the early morning and late afternoon, so, it being late afternoon, I was extra vigilant. I also did not want to disappoint Jomo, having stayed with him and seen the effort he invested in cultivating, planting and guarding the crops. I had seen the various entry points the baboons approached the farm from and had a keen eye to make sure I was scanning all the points. Jomo's farm is less than a kilometre from the border of Tsavo National Park, and so I was particularly watchful over the side that faced the park. About an hour into the guarding, I was startled by grunts as a group of baboons ran from the farm with maize cobs in their hands. They were running away from Jomo, who was chasing them after he spotted them right inside the farm as he came back from the borehole. I was greatly ashamed, but I could not understand how the baboons got into the farm. Jomo was quick to reassure me that baboons were smarter than us people, especially when they were crop-foraging. He told me how they observe our movements and once they identify any weaknesses in our keeping guard, they silently sneak into the farm. It happened again a few times during my stay, but my guarding skills had improved immensely by the time the crop was harvested. Jomo always said that the baboons are never too far away from the farms. They lurk in the nearby bushes and keep a constant eye on the people. 'If you move away for a moment or relax your attention, that's when you realise, they were around all along' he advised. Mutua, another farmer, said the stone outcrops in the area camouflage the baboons, making it hard to see them or to tell how many of the baboons were around.

> If you are not very vigilant, they will sneak into the farm one by one and you will only realise how big the group was when they are escaping. At other times they will sneak into the farm, pick some maize or whatever other crop is there and then come out to a strategic point where they are able to see you and monitor your movements. If they notice you are seeing them, they turn their back on you and face the other side, only looking at you from the corner of the eye as they eat

whatever they had picked. When they finish, they carefully sneak into the farm again.

Mutua, a middle-aged farmer.

5.2.4 Baboon intelligence

For his part, Njenga, said that baboons could 'keep a record' of the number of people in a homestead. 'If they observe and see one of us is missing, they stop and appear to ask each other where the missing person could be'. He observed that the baboons would henceforth look much more vigilant and very hesitant to get into the farm, but that: '…when we are all seated here, they get into the farm comfortably.' From a primatological perspective, Strum et al. (2008) agrees with claims about baboons' intelligence observing that this is probably the reason they are seemingly more to blame for crop-foraging than other animals such as wild pigs, an argument that is also made by MacKenzie et al. (2017). Baboon's tendency to move in large groups exacerbates the problem since the more there are, the more damage they are likely to cause. Much as we may define a chemical product as a poison or pollutant if used in inappropriate way or in the wrong concentration, baboons are also regarded as pests when in the wrong place, context or, in this particular instance, in inappropriate numbers.

Baboon's 'intelligence' extends to dealing with the deterrence methods that people use for them. My respondents said that baboons can differentiate between real and fake threats. In my first days of research, I observed that most men and young boys always carried a catapult. I was later to learn that this was for chasing away baboons and vervet monkeys. One of my informants told me that a catapult is a very powerful deterrent: 'Even when you do not use it to throw stones, the sight of the catapult alone is enough to scare a whole troop away' said Jomo. Osborn and Hill (2005) observe that threats to primates are more effective when made by a human guard

than a scarecrow. Farmers in Nthongoni said scarecrows are a futile deterrence method, since baboons appear to understand that scarecrows do not present a threat. Mwende says that baboons are too intelligent to be deceived by scarecrows. 'They get scared the first time they see it but after careful observation, they realise this is not anything to be frightened of', she concluded. This agrees with observations by Nekaris et al. (2010) and Strum et al. (2008) that scarecrows are relatively ineffective at deterring baboons. Osborn & Hill (2005) also see scarecrows as 'empty' threats that the baboons are quick to habituate to.

Baboons also express 'intelligence' when they deal with predators. When they are attacked by leopards, for example, a very peculiar thing happens, as narrated by Jomo:

> When the leopard come to the base of the tree where baboons are sleeping in (Jomo says that leopards normally attach at night), the baboons know the leopard is capable of climbing up to where they are so, the dominant male normally picks a juvenile or the weakest member of the group and throws to the leopard. Sometimes the leopard will get contented with that and go away. Other times the leopard will eat that and still want to climb up for more. If that happens, the male may pick on yet another baby and throw to the leopard. …the baboon does not like touching the ground at night. They understand there is a lot of danger lurking in the darkness. If it's during the day, however, the baboon that has been thrown down to the leopard serves to distract the leopard, if it runs away and the leopard chases after it. The other baboons then get an opportunity to run away or to climb further up where the leopard cannot reach them. …If the attack is repeated a few times, then the group will change the sleeping site.
>
> Mr Jomo, a farmer.

Understanding humans and coexisting well with humans is central to surviving as a baboon. Jomo observes that, baboons tend to have sleeping sites in the village instead of inside the park. He observed that even when there is no food to forage on in the village, the baboons often come back to sleep in the village. He attributes this to the attachment they have to people. He also argues that they come to the village to escape from predators such as leopards. Animals have

been shown elsewhere to seek protection and security from humans (Ingold 2015; Kopnina 2017).

5.2.5 Instilling discipline

Baboon intelligence and actions determine human's reaction towards them. Just like the way baboons beat the young ones to discipline them or the way humans discipline their children, the idea of instilling discipline also manifests when the people of Nthongoni are retaliating against baboons' crop-foraging. However, the measures that they employ might have far-reaching implications not only for the baboons but for the environment in general. One informant narrated how they chase the baboons out of their sleeping sites.

> When they become too destructive, we identify their sleeping site and then at the bottom of the tree, we light a big fire at night. That will get them scared and come the following day, they will relocate. They normally do not sleep in an area where only one tree is present. They look for areas where there are a number of trees that are intersecting at the crown. That way they can jump from one tree to the other once they are cornered.
>
> Njenga, a farmer.

Njenga's method of dealing with wayward baboons was relatively humane. Several respondents said they burned charcoal in an effort to remove the trees that the baboons slept on. Others cleared the bushes where the baboons hid while crop-foraging. A more brutal way of dealing with them was intoxicating the baboons with traditional beer and then killing the ones that got drunk. Alternatively, people trapped and skinned a baboon and hung it on a tree along the route the baboons use. The residents said this method was highly effective as the group did not come back for a long time. As Mwende puts it '…the baboons will have been taught a lesson'. Nzou, an elderly farmer, agreed with the notion of teaching baboons a lesson in the account below:

> …if you have fierce dogs, you can kill one or two baboons and that will make the whole group keep off for some time before they forget the ordeal again. If you are lucky to kill the 'leader' of the group and then you place him along the pathway they normally use, that makes the whole group fear your farm and they will keep off for a long time. You will hear the baboons say aar! aar! aar! in astonishment when they see their leader dead.
>
> Nzou, a farmer.

Knight (1999) tells similar accounts of punishing monkeys in Hongiu villages in Japan. He observed that villagers placed corpses and skulls of macaques in or around fields and used them as monkey repellent. Killing monkeys and displaying the corpses to the other monkeys appears to be a popular way of teaching them a lesson. However, this is likely to have negative implication for the conservation of the monkeys.

5.3 Other aspects of baboons' involvement in social lives of Nthongoni people

5.3.1 Material ramification

The presence of baboons in the social life of the people of Nthongoni also resonates with what Smith (2013) terms as 'material ramification': the contribution, both positive and negative, to the people's economies and livelihoods. These may range from baboons serving as food for predators such as leopards and thus reducing leopard predation on livestock, to the negative implications of baboons foraging on crops and killing livestock as discussed in Chapter 4. Generally, the impressions that people have of baboons depend on the immediate type of interaction; desirable or otherwise. As Van Uhm (2018) observes, the value, judgement and social meanings of wildlife are dynamic and keep changing with time. He categorises the anthropocentric values of wildlife into three different types: functional, symbolic and social value, but points out that that 'value' can change (van Uhm, 2018). Fuentes & Wolfe (2002) and

Fuentes (2010) demonstrate such change in value by showing how macaques vary in meaning to different people and to the same people in different contexts.

In Nthongoni, people often claimed that baboons were not a serious problem when livestock keeping and hunting and gathering were the major subsistence strategies in the area. In fact, they were seen as close relatives, to the extent that some of the clans of the local Kamba people such as *Ngũli, Mbaa,* and *Mũlela* are named after baboons. With the dispossession caused by Tsavo and Chyulu National Parks - the removal of people from the now protected area and the resulting intensification of agriculture in the land adjoining the parks - the meaning and the value attached to baboons and indeed other wildlife slowly changed as baboons and the wildlife started foraging on people's crops. The people of Nthongoni started seeing wildlife as pests, or in the particular case of baboons, as *aivi* which means thieves. The crops that people planted were more compelling to the baboons than foraging in the parks and this brought them to crop fields resulting to conflicts with humans. Interestingly, the conflicts that result which often culminate in killing of the 'problematic animals' are often blamed on either the people or on the animals, never on the processes that led to transformations in livelihood activities.

Like the many other ways that baboon construct human life, baboon foraging has inadvertently contributed to a lot of changes in the social life of people in Nthongoni. Mr Jomo, for example, rarely spends time in his house when he has crops on the farm. He has to guard the crops against baboons from the wee hours of the morning through to dusk, and from forest pigs, porcupines, elephants among others throughout the night. He has constructed a nest - a tree-house-like

watchtower built high up a tree - which he uses to look out over his land for any intrusion by baboons or the other wildlife (Figure 5.1).

Figure 5.1 A shelter/watchtower used when guarding crops against baboons and other animals.

Jomo says this observatory is vital as it facilitates him to watch over all the corners of his farm and shelters him from the scotching sun during the day and from rains during the rainy season. Jomo says that baboons are particularly intelligent and therefore difficult to deal with in any other way. 'If you try to give them poison, they will rarely pick whatever you have laced with the poison. ...you will normally see them sniff at anything they pick before putting it into their mouth' he says.

Jomo's everyday life in the watchtower as he guards his crops is an illustration of how baboons actively participate in shaping his life. They determine what time he wakes up to guard the crops and structure his daily activities and time budget. They also determine his social life in terms of how he shares his time with his family, friends and other members of society in Nthongoni. This demonstrates the role of animals in producing and transforming people's lifeworld.

5.3.2 Learning from baboons

To some people, baboons have a functional value of providing insights into how to solve some of the common problems that afflict them. Mithili, a medicine man, for instance, explained that some of the herbal medicines that he has 'discovered' were inspired by baboons and other animals. He narrated that his grandfather would, for example, follow a baboon or a squirrel that had been bitten by a snake and observe what they did. If they pick some leaves, dig out some roots or gnaw at the bark of a plant, then he would know that that plant and the particular part that they picked or consumed was remedial to snake poison. Mithili also gives an account of how hunters learnt what plants were poisonous and could thus be used as ingredients in making poisoned arrows. He said that since baboons ate almost every plant, the plants they didn't eat were almost obviously poisonous. 'People extract juices from such plants and use them as an ingredient in the preparation of poison' he said. He further explained how he came up with a medicine that he now uses in treating respiratory problems in both humans and livestock.

> There was a time baboons were coughing a lot. You would have thought it was a person with TB… I used to see them dig out a certain plant and chew it. After some time, the coughing ceased. So, I learnt that the plant was good for coughs. I have since given it to many people and it has been very effective… I now use it to treat coughs and breathing problems.
>
> Mithili, a farmer and a medicine man

On explaining this, Mithili went to the inner room of his house and came back with an old bag made from goatskin. He removed a bulb the size of a small onion, scratched some dust from its skin and asked me to taste it. It tasted like menthol. He told me that those were the bulbs the baboons were digging out and were what he now uses for coughs. He was however quick to warn me that the medicine was to be taken in very small doses, otherwise, the plant was poisonous.

Recently, baboons in Nthongoni have acquired a new economic value after it was alleged that their liver was medicinal. Some local people claimed that the liver mixed with other concoctions helped cure HIV/AIDS which has a high prevalence in the area. I also heard anecdotal reports about people who harvested baboon eyes for use in treating eye problems in humans. The information about this was, however, scant. As Appadurai (1986) observes, the social life of things is dependent on human transactions, attributions and motivations. The economic, symbolic or social values that people attribute to things are often properties that are attributed to the thing in its social context, not something that is inherent in the object. Eating a baboon liver or using baboon eyes to treat eye problems in humans indicates attempts to transfer baboons' efficacious attributes and properties to humans, including their knowledge to self-medicate. It entails a kind of becoming that blurs human-nonhuman divide. The local people consider the baboon liver as the organ that stores medicinal properties that prevent baboons from falling sick. They theorise that the same medicinal properties will be transferred to their bodies if they consume the liver.

Mintz (1985), states that the value of an object is likely to rise when the meaning in a certain social context increases. This situation presents the inevitable ramifications that baboons face for possessing portent qualities for their human companion. The baboons risk serious injury and death while being hunted for body parts. As the use for baboon liver becomes more popular, the value is likely to increase. This is likely to have totally new implications in the future, for both their shared social life with humans and for baboon's own life as a species.

5.4 Conclusion

The narratives explored in this chapter represent in a rich, varied, and compelling way the different semiotic values attributed to baboons in a particular rural location in eastern Kenya. These values demonstrate how what we call non-human appears in the midst of human cultures, where it has enormous influence on people's everyday lives. The semiotic values vary with different context and time, and are linked to crucial sociocultural, economic, and political relations. For example, an elderly lone baboon named *mumo,* is a cherished part of a society in its material and spiritual forms, while other members of the same species are vilified as pests, invaders and thieves among others. Moreover, and in my own interpretation, the same baboon that is seen as a pest during its prime years as an alpha male can transform into a sacred and distinctively adored con-specific in old age.

This chapter has illustrated the behaviour of baboons as known to the people of Nthongoni. The people use this knowledge to understand, manage, manipulate and exploit the baboons. They also use the knowledge to decode their interspecies' communication with the baboons and make sense of their own lives. Residents socially apportion human attributes such as 'personhood', 'intelligence', 'spiritual importance', 'affect' and 'malice'. Baboons are viewed as able to express emotional feelings: They show maternal love to their children by playing with them; they beat their offspring to punish them when they do wrong; and they hold onto a dead baby for a prolonged period. They can use their hands and use herbal remedies to treat diseases and injuries such as snake bites. These attributes create bonds between human and baboons similar to those of family members or close friends. As Echeverri et al. (2018) puts it, such knowledge about animals and the accruing emotional attachment between people and animals trigger

concern and care for nature and thus promote mutual coexistence between humans and animals. Besides, baboons have also been shown as a symbol of promoting moral order and social cohesion within human society. The popular myth told to children that baboons are people who misbehave and are consequently banished; get lost in the forest by themselves and become baboons; or turn into baboons in afterlife, serves as a warning to the children not to engage in activities that are regarded as socially unacceptable or immoral. This involvement of baboons in human social life has presented baboons as active participants in human social dynamics rather than as objects living alongside humans. As Haraway, posits 'becoming is always becoming with' and humanness is an ongoing social processes involving encounters with other beings (Haraway, 2008).

While some semiotic values can contribute to appreciation and care for animals, some values can similarly be detrimental. The symbolic value attached to a baboon hand, for example, may lead to killing of baboons. Likewise, the growing demand for baboon liver as medication for HIV is likely to lead to increase in hunting and killing of baboons. In terms of health, in the event the baboon liver is not effective in treating HIV/AIDS, its continued use may result in a high prevalence of HIV in Nthongoni when people abandon other precautionary measures in the belief that the liver has cured or will cure them.

The chapter uses humans and baboons to underscore the significance of other-than-human species as active agents in creating and influencing meaningful social worlds. It also presents the challenges inherent in human modifications of the environment such as making boundaries to separate people from other species and from nature. Focusing on the close-knit human-

baboon interactions presented here, I conclude that the modernist nature-culture philosophy is a particularly problematic way for thinking about multispecies relations in specific rural settings. The information presented here is relevant in illuminating the basis for the complex social and political tensions generated when conservation interventions appear to undermine the semiotic values held by local people.

The array of cultural representations and construction of baboons offers some exciting perspectives in our understanding of human-animal entanglements and the social disruptions that result and are likely to result from the alienation created by protected areas. It provides insights into debates in multispecies anthropology around the separation of humans and nature, and about the question of what happens to human life and wild life when their separation and thus alienation is enforced. The analysis is crucial in helping us to better understand the interface of humans and wildlife: humans cannot be effectively understood separate from the animals they share habitat or interact closely with. Conversely, animals cannot be understood separate from humans in shared interfaces. The relational intrinsic or instrumental values human attach to animals speak broadly and deeply about people's way of life and interactions with nature. This underscores the relevance of a multispecies approach in understanding the complexities of how human and nonhuman others depend on, and construct, each other’s lives. It emphasises the need for a more than human approach when looking for forms of social agency and engagement in human-nonhuman encounters.

Chapter 6: Multispecies interactions and health in Nthongoni

Nthongoni forms an interface where people, domestic animals and wildlife interact in numerous ways, making the life, health and wellbeing of the different species inextricably interconnected. In such cases, the welfare of people, domestic animals[7], wildlife and the environment they all share needs optimum care to ensure health and wellbeing for all (Van Helden et al. 2013). Human health, for example, cannot be considered separate from the quality of the environment in which people live (Barrett and Osofsky, 2013). Likewise, animal health depends strongly on the health of the immediate physical environment as well as that of people and other organisms in their shared environment (Nathan D Wolfe *et al.*, 2005; Wolfe *et al.*, 2006). Our ecosystem and the multiple species living in it are so intricately intertwined that changes affecting one aspect of the system are likely to cause changes in other parts of the system (Rock *et al.*, 2009; Nading, 2013). Moreover, disease-causing organisms can cross from one species to the other (Muehlenbein 2016; Singer 2014; Gerritsen et al. 2011), spelling out the need to integrate human, animal and environmental health in addressing health issues, a goal that has recently become a formal policy priority in the form of the One Health agenda. This agenda fosters interdisciplinary collaboration of physicians, veterinarians, environmentalists, anthropologists, economists and sociologists in addressing health problems (van Helden, van Helden and Hoal, 2013).

The One Health concept derives from that of 'One Medicine', coined in 1984 to integrate human and animal health and research (Zinsstag *et al.*, 2011). On the outbreak of the severe acute

[7] For the purposes of this thesis, domestic animals include cattle, goats and sheep, donkeys, poultry, dogs and cats.

respiratory syndrome (SARS) epidemic in 2003, One Medicine evolved into 'One Health', expanding the focus beyond human and animal health to include environmental health, ecosystem services and health service delivery (van Helden, van Helden and Hoal, 2013). The new concept was built on the idea that the health of people, animals and the environment represented a continuum where improvements in health in one domain often produced positive health effects in the others. Over the years, One Health proponents have endeavoured to foster a collaborative effort involving multiple disciplines, working at the local, national and global level, to achieve optimal health for people, animals and the environment. However, different groups have interpreted the concept differently and employed it in various ways to serve their own specific agendas. When thinking about the interaction between people and animals, for example, the public health sector has tended to focus mainly on the hazards animals pose to humans and not those that humans pose to animals and the environment (Alder and Easton, 2005; Kahn, Clouser and Richt, 2009). Likewise, veterinarians tend to focus on the risks wildlife poses for domestic animals (Daszak, Cunningham and Hyatt, 2000), while conservationists focus on disease risks humans and domestic animals pose to wildlife, and the impacts humans have on the environment more generally (KWS 2018; Buttke et al. 2015; Hughes & Macdonald 2013; Ministry of Natural Resources 2008). When it comes to research, scholars have also tended to emphasise either diseases transmitted from animals to humans or diseases and health problems humans cause animals or the environment (see Rock et al. 2009).

In this chapter, I focus on how multiple species interact to constitute and construct health for each other and for their shared environment in Nthongoni. I pay specific attention to people and baboons, to examine the multiple levels at which the two species share environments and the

elements in it that constitute health: food, air, water and microbiota. This entanglement is in spite of colonial and postcolonial efforts to separate human life from wildlife. I illuminate the opportunities human-baboon interactions afford for disease exchange and other health implications for people, baboons and the environment, both positive and negative. This includes the role of baboons in the co-production of lay medicine for the residents of Nthongoni. Lastly, I examine how the One Health agenda is playing out in Kenya and at the study site. I argue that although lay one health[8] is part of lived realities in Nthongoni, the formal One Health agenda is embroiled in structural and politico-economic influences that curtail its operationalisation and success. The ways in which both the One Health paradigm and the lay one health play out in Nthongoni illuminate nuanced understandings of local conceptualisation of health and healthcare, and highlight the importance of recognising, appreciating and incorporating local knowledge practices in health interventions.

6.1 Colonial and postcolonial mediation of space and its implications for health

The human-wildlife interface in Nthongoni is an environment mediated by colonial and postcolonial practices of violent evictions and creation of protected areas, as I have demonstrated in earlier chapters. Nonetheless, creation of the national parks adjoining Nthongoni doesn't seem to achieve the envisioned separation between humans and wildlife, for the two have continued to interact. People and baboons, for example, continue to share food and water and interact in numerous other forms that shape their health and wellbeing. In terms of food, for instance, eviction and displacement of people from the national parks resulted in

[8] I use 'lay one health' to denote a traditional form of one health and to differentiate it from the institutionalized One Health Agenda.

modification of the adjacent environment, and adoption of new lifestyles such as sedentary agriculture as opposed to traditional foraging patterns. Maize farming became the main agricultural activity in the area, a situation that has been blamed for unhealthy human-wildlife interactions and in particular human-baboon conflict. During this research, one of the senior wardens at the Kenya Wildlife Service (KWS) that I talked to attributed increased human-baboon conflict to cultivation of crops such as maize and pawpaw, that are attractive to baboons and thus lures baboons into the farms. Similar observations have been made elsewhere (Hill 2000; Strum et al. 2008; Warren 2009).

Increased foraging of baboons on maize farms has implications for human health as it increases the opportunities for passing pathogens to people through contact with urine and faeces dropped by foraging baboons. People may touch contaminated faeces or urine left in the farms frequently when tending to their crops, and collecting vegetables and firewood (Smiley Evans *et al.*, 2016). In a study by Switzer et al. (2012), transmission of simian foamy virus from nonhuman primates to humans was attributed to environmental exposure to contaminated faeces and urine. In Nthongoni this risk might be exacerbated by poor socioeconomic situations that often lead people to consume the crops that baboons discard. In addition, destruction of crops by baboons also compromises the residents' ability to access and pay for health services.

To prevent baboons and other animals from foraging on their crops, people in Nthongoni guard crops day and night until the crop is harvested. Men generally guard at night while women and young boys guard during the day. The people who keep guard at night are not only at risk from pathogens spread by baboons but also face additional health problems such as pneumonia, and

are often prone to mosquito bites that transmit malaria (cf. Lamarque et al. 2009; Priston 2009). Community Health Volunteers[9] in Nthongoni suggest these two diseases are common in the area. Alongside guarding, people engage in several methods to deter baboons from crop-foraging. These include killing and skinning a baboon and hanging the carcass on the paths the baboons often use, a practice that is likely to expose people to zoonotic diseases, while killing and skinning the baboons.

People's transition from foraging to cultivation has consequences for their health and wellbeing. McElroy & Townsend (2009) observe that foraging people can eat a variety of leafy vegetables, fruits, roots, nuts and seeds that provide a well-balanced diet. The food is often supplemented with bushmeat, honey and insects such as termites and grasshoppers. Restricted access to natural resources coupled with dependence on cultivated monoculture crops results in food that is high in bulk but low in nutrients. The food is generally deficient in protein and many vitamins and minerals, and this has profound consequences for the health and wellbeing of the people (McElroy and Townsend, 2009). Such is the situation in Nthongoni: maize, the staple food currently grown by the majority of the people, is very poor food in nutritional terms (Nuss and Tanumihardjo, 2010). Moreover, the baboons that forage on maize crops cause damage that compromises the economic support for people to access other food varieties. This worsens the nutritional wellbeing of the people further. Baboons' dependence on maize is also likely to have nutritional implications for their health. However, while one would expect such implications to be negative, researchers have suggested that crop-foraging is nutritionally beneficial to baboons

[9] These are volunteers who elsewhere would be referred to as Community Health Workers (CHW). In Nthongoni, they prefer to be addressed as volunteers since they are not paid for the work. The members are drawn each from the 36 villages of Nthongini.

because human food provides a ready source of energy (Altmann *et al.*, 1993; Warren, 2003, 2009). In Nthongoni, I suggest that crop-foraging is similarly likely to benefit the baboons not because of the maize crops they mostly forage on, but because they forage on other crops such as pawpaw and can also supplement these with wild foraging inside the national parks.

Cultivation and reliance on monocrops often translate to clearing of wild vegetation. Moreover, to keep animals such as baboons from foraging on the crops, farmers often create a buffer zone that entails clearing of the vegetation or the trees in or next to their crops. This reduces the overall quality of the environment (Lamarque *et al.*, 2009; G. Muriuki *et al.*, 2011). This demonstrates the complexities of human-animal encounters and reveals how these construct the health of the environment and of the multispecies sharing the ecosystem. In the particular case of Nthongoni, the complexities are characterised by seemingly distant super-structural political influences that include deep histories of colonial and post-colonial evictions and displacements, and neoliberal influences that force reliance on monocrops such as maize.

Nthongoni is a dry area that experiences erratic rainfall and prolonged dry periods. Most rivers are seasonal. They survive for only a short while after the rains, and then go dry for most of the year. Moreover, the area is not supplied with potable water. Local and international NGOs have helped by sinking boreholes, but these are few and far between. Water is therefore a scarce commodity in the area. At least twice a day, people and their livestock congregate around water points which include boreholes, hand dug wells and stagnant water left behind by seasonal rivers. Wild animals and baboons in particular also come to these water-points when they cannot find adequate water inside the park. The water-points provide potential opportunities for disease

exchange between humans and wildlife: either directly or through livestock that can eventually spill the pathogens over to humans. Wild animals can also become infected with human or livestock diseases or parasites and carry them back into the park. The water-points thus interconnect humans, domestic animals and wildlife and construct an arena for them to share water and microbes.

Boreholes and some of the hand-dug wells are covered and are thus relatively safe from contamination with faecal matter from either humans or animals, compared to open wells and the stagnant waters left along by seasonal rivers. Most of the boreholes have a pipe that is connected to a manual pump from which people draw water for domestic use. For the livestock, people drain the water into a trough from which the livestock drink. However, children often fetch water unaccompanied and if there is no one to assist them with the manually operated water pumps, they fetch the water that remains in the animal troughs. Such water is likely to be contaminated with animal waste, such as faeces and urine, and may thus provide opportunities for disease transmission. Some children also play with the water that is left in the troughs (Figure 6.1) or in the stagnant waters in seasonal rivers (Figure 6.2). This is likely to expose the children to waterborne diseases. Playing in stagnant waters is a particular exposure to diseases such as schistosomiasis (McElroy & Townsend 2009). In my meetings with Community Health Volunteers, I gathered that *Schistosoma haematobium* is a common disease in Nthongoni. Schistosomiasis is globally categorised as second of the 17 neglected tropical diseases (McElroy and Townsend, 2009; WHO, 2011). The disease is largely blamed on neglected sanitation, and it is also neglected in terms of healthcare provision.

Figure 6.1 A young girl plays with water from an animal water-trough

Figure 6.2 A young girl fetching water from a pool of stagnant water

Besides the local people, livestock and wildlife, the water-points attract nomadic pastoralists from neighbouring counties such as Kajiado. These pastoralists must cross Chyulu Hills National Park to reach Nthongoni. This means their livestock intermingle with wildlife, a situation that has been claimed to result in diseases such as rinderpest in livestock (Bengis et al. 2002), although Wambwa (2005) suggests a counter-narrative of livestock being the source of diseases rather than the victim. Nonetheless, both studies suggest bidirectional transmission of rinderpest between livestock and wildlife. In the current study, one of the para-veterinary technicians who sits in the weekly Community Health Volunteer meetings attributed rinderpest in livestock to buffalos which he said were themselves relatively immune to the disease. Farmers also complained about foot and mouth disease brought about by pastoralists' livestock that had crossed the hills and watered at a community borehole:

> The Maasai have brought misery to our area. They came to graze last year, and we allowed them to water the animals at our boreholes. Their livestock freely intermingled with ours. Before they had gone back, our animals had started limping and showing blisters in the mouth. 'Doctors' [i.e. veterinary officers] told us it was foot and mouth disease.
>
> Mr. Maweu, a farmer.

Nthongoni also experiences poor sanitation. Government-provided sanitation facilities such as a sewerage system are simply non-existent. Families are required to dig out and construct pit latrines. However, a good number of families in the community have not constructed toilets. In one of the Community Health Volunteer meetings, for instance, members celebrated attainment of an earlier aim of three toilets for every five homesteads. This means that two of every five homesteads still do not have toilets and the residents defecate in nearby bushes. This human waste is likely to be blown by winds or washed away by flash floods during heavy rainfalls. Such waste contaminates water sources and food materials such as fruits, vegetables and grass and may thus pass parasites to other people, livestock and or wildlife. As I will show in Chapter 7, several similar parasites were recovered from faecal samples collected from humans and baboons sharing space and interacting closely in Nthongoni. This implies a high likelihood of the parasites crossing between the two species.

The creation of national parks has also brought other new health and disease trajectories for humans and wildlife both inside and outside the parks. Tourism in particular has resulted in modifications of the environment to accommodate commercial activities for tourists. The hotels and recreational facilities constructed inside the parks generate a lot of waste, including leftover food, litter cans, broken glasses and plastic papers and bottles. This waste is often not managed properly, and animals such as baboons and rats, and birds such as ravens, scavenge on the waste bins or pits. A study conducted by Sapolsky (2001), revealed that baboons traversing the national parks adjoining Nthongoni acquired tuberculosis through foraging from dumpsites of one of the tourist hotels. Tourists are also fascinated by feeding wild animals such as baboons and other monkeys, resulting in forms of contact that may facilitate disease transmission, or

injuries such as bites and scratches (Fuentes 2010). Apart from diseases, the presence of the waste generated by hotels or through people feeding the animals degrades and pollutes the environment.

6.2 Inseparable health of humans and animals

People and animals living in close proximity to each other coproduce health for one another in myriad ways. For instance, humans in Nthongoni learn from the health-seeking behaviour of animals. Mr Mithili, a traditional healer revealed how he derives insights from observing what baboons and squirrels eat. He says that these two animals are highly intelligent and have great knowledge of how to treat their illnesses. He asserts that it's very rare to see a sick or a dead baboon or a squirrel, and he attributes this to their ability to treat themselves. As such, he observes them, to see what they eat, how they eat it and what they avoid.

Mithili's account of how baboons help him to identify medicine (see also Chapter 5, section 5.3) is a clear illustration of how closely human and animal health is entwined in Nthongoni. It demonstrates the crucial role animals play in co-constructing health for people. As Brown & Nading (2019) observe, it's not only ontologically impossible to separate humans from the species they share environment with, but it is undesirable. Sharing of space and experiences, and learning and acquiring skills from baboons is an essential part of becoming human (Haraway, 2008; Brown and Nading, 2019). Mithili understands the cough baboons have as the same as the one humans experience. As a result, he follows baboons' intelligence and uses the same plants baboons use in treating the cough, to develop medicine for people. Besides using what baboons eat, Mithili says that observing what they avoid is also important for his medicine.

‘The plants they avoid are almost always poisonous, but these too are useful’ he says. He says he prepares some of his medicines by mixing small quantities of the poisonous plants with other plants, milk or honey.

Rock et al. (2007) observes that healthy companion animals have recently come to be viewed explicitly as potential sources of human health in North America. Whilst people in Nthongoni do not keep pets in the same way as in North America, relationships with domestic and other animals are viewed as very important for wellbeing. For example, as discussed in Chapter 5, *mumo* the baboon is highly regarded and appreciated in Nthongoni. His interaction with humans produces spiritual fulfilment and happiness. This contrasts with baboons’ potential to transmit infectious disease through direct contact, left over maize or fruits, or faecal contamination of water, fruits or vegetables. As Rock et al. (2007) observe, the fondness with which such an animal is treated has implications for the prevention and control of problems associated with zoonotic diseases or scratches or other injuries the animal might cause.

Animal attributes that bring them close to humans may either intensify their use to humans or limit it. Mithili says that his clan is prohibited from consuming baboon, dog or porcupine meat. He says that this is because baboons and dogs menstruate just like humans while porcupines use the same position as humans during copulation. However, he reveals that he uses baboon and porcupine bones as ingredients in some of his medicines. For example, he grinds dried baboon and porcupine bones into powder, mixes this with certain types of soils and undisclosed plant materials and uses this to treat dislocations of the hip joint or other joint problems. The medicine is taken alongside soup made from cattle, sheep or goat meat.

Although Mithili claims that the Kamba community is traditionary prohibited from eating baboon meat, new trajectories are developing. With the emergence of new diseases that do not have a cure or are not well understood, people have started using baboon parts as medicine. For example, the use of baboon liver as a medicinal product for treating HIV was increasingly becoming popular in the area (see section 5.3). However, Kamwana, a research participant, says that this is alien to Nthongoni, having been brought by Kamba people from a different county. There was also an emerging belief that baboon brain was good for improving knowledge and memory; making children, in particular, grow more intelligent. Nyerere, another participant, pointed out that regardless of the organ, baboon meat was generally believed to have medicinal properties for different human ailments. These accounts demonstrate the multiple forms in which the people of Nthongoni rely on baboons and animals more generally, to meet their health needs. However, their serving as food and or medicine, and being deeply entangled in people's health, might equally have negative ramifications for people's health. Hunting, butchering, preparation and consumption of baboon products might provide opportunities for zoonotic disease or pathogen exchange. Moreover, people tend to abandon other precautionary measures such as use of condoms or antiretroviral drugs when they believe that other remedies are working for them.

6.3 The interface between human and animal medicine

Although modern medical health and veterinary health systems tend to operate independently from each other, traditional medicine and ethno-veterinary treatments in Nthongoni do not seem to recognise these divisions let alone practise them. Mr. Mithili and other traditional healers treat both people and livestock, and in most cases use the same medication. For example, while

treating goats that were suffering from diarrhoea, I once observed Mr. Mithili retrieving medicine from the same bag that he used for humans. This prompted me to ask him whether the medicine was the same upon which he replied: 'there is no diarrhoea for goats and another for people. Diarrhoea is diarrhoea'. Later on, I observed the same happen for goats that the owner claimed were coughing. Mzee Dawa, another elderly traditional healer, diagnosed this as symptoms of what he referred to as *minyoo* (gastrointestinal helminths). Macgregor et al. (2017) holds that people in remote rural areas do not necessarily have access to separate human and veterinary health systems. Although his observation relates to modern medical and veterinary systems, the interconnectedness he refers to reverberates through the lay healing system of Nthongoni: on the one hand, residents seek medication for themselves or for their animals from the same healers, while on the other, traditional healers use same medication for both people and animals. This is a true demonstration that people of Nthongoni live and practise a lay one health.

In Nthongoni, understanding of the linkages between human and animal health and illnesses is not reserved for elites or professionals in the medical or veterinary systems. During my stay with Mzee Dawa, he exhibited a clear understanding of some of the diseases that crossed between humans and animals. For example, he claimed that he has treated people with diseases such as brucellosis and TB that he attributes to animals. 'Do you know why diseases pass from animals to humans?' he asked me on one occasion. 'It's because people have become materialistic and dishonest', he offered. I probed what he meant by that and he explained: 'When an animal falls sick, and the owner realises the animal will not survive, they slaughter it and sell to people who are unaware. Others treat the animal and even before the treatment is finished,

they sell the animal to butchers', he concluded. Mzee Dawa blamed this form of materialism on the social changes that were introduced by colonialism and the displacement of the people of Nthongoni from their indigenous land. He said that before, people were not as 'greedy' as they are now after being squeezed into the small villages they occupy. 'We never used to experience diseases like brucellosis, but nowadays these are common because people sell milk to others even when they know their cow is sick', he says. The connection he points out here is not just about transmission of a disease from animals to humans, but also about the social and politico-economic complexities facilitating such transmission. Adoption of market economies or capitalism more generally has eroded the moral fabric of the community resulting to sale of contaminated animal products to ignorant members of the community, consequently leading to proliferation of zoonotic infections.

Medical pluralism, the use of both 'modern' and 'traditional' medicine (McElroy and Townsend, 2009), is commonplace in Nthongoni, implying that people do not consider health as a unitary system with only one option for dealing with illness. Mithili observed that traditional healers were the first point of care for both human and animal diseases in Nthongoni. They were also the last result when people tried other alternatives and were not successful. He took particular pride in treating joint problems including arthritis which he treats with products from plants, wild animals and livestock. He claims that people often come to him because they know modern medicine cannot heal them from what he refers to as 'difficult' diseases. He also claims to have healed barren women who had not been successfully treated with conventional medicine. Most traditional healing is a family inheritance and the traditional family prowess has been an integral part of the community for many years. As such, traditional medical practices

have gained trust and respect from the local people. The affordability of the treatment compared to modern medicine is a further reason why local people use their service. This brings out an aspect of a lay one health model that is part of the community, that is practical and fulfilling, and that people live and identify with.

6.4 The institutional One Health Agenda in Kenya

Since its inception in 2004, the One Health agenda has evolved as a concept, with new but complementary and related approaches emerging in the process (Hinchliffe, 2015). Relevant lines and fields include ecohealth, comparative medicine, environmental health, veterinary public health, conservation medicine, ecosystem approaches to health, and environmental medicine (Barrett and Osofsky, 2013). There are also similarities between one health and fields such as global health, public health and population health (Barrett and Osofsky, 2013). This proliferation reveals the attention that One Health has attracted over the years and the understanding that joined-up approaches across the animal, public health and environment disciplines are necessary to address health concerns.

In Kenya, One Health became prominent in 2007 in response to the global threat of the H5N1 avian influenza and the 2006-7 Rift Valley Fever epidemic (Nyariki *et al.*, 2017). The country established a One Health taskforce that later recommended the formation of a One Health office dedicated to zoonotic diseases, that would link human and animal health experts. This was achieved in 2011 and the office was named the Zoonotic Disease Unit. It was charged with establishing and maintaining active collaboration at the animal, human, and ecosystem interface towards better prevention and control of zoonotic diseases. It is a small unit under the Ministry

of Health and Ministry of Agriculture. To set it rolling, the country developed a list of 17 priority zoonotic diseases that the Zoonotic Disease Unit needed to focus on and develop prevention and control strategies for. Although most leaders in the organisations had embraced the One Health approach, they were not actively involved in its implementation due to constraints such as inadequate funding (Nyariki *et al.*, 2017). This form of implementation denotes a top-down approach that suffered from both lack of power and of control over resources. More generally, the One Health agenda in Kenya adopted a One World metaphysics model where global projects are uniformly rolled out without consideration of the particular political and socio-economic conditions of different countries or regions (Law 2015). Failure to consider social, economic and cultural contexts that underlie health at the local level is the biggest challenge that most One Health programmes face (Hinchliffe, 2015).

Kevin, a One Health Technical advisor working for a bilateral organisation, says that the Zoonotic Disease Unit started on a good footing and has managed to establish the necessary structures and strategies for an effective One Health agenda in the country. However, he argues that it suffers from weak leadership because it is anchored in two different ministries and at a very low level in terms of hierarchy. It therefore suffers from a lot of bureaucracy. Another challenge is that its leadership has expertise largely drawn from veterinary medicine and public health. It doesn't have representatives from the wildlife sector, environment or any of the social sciences (sociology, anthropology, economic, political science, etc.).

In terms of its operations, Kevin says that the Zoonotic Disease Unit doesn't have annual work-plans and most of the programs running currently are held by individuals in what he terms as

‘project-based student-based’. By this he means that most of the work in based on projects that are run by overseas PhD students returning home to carry out fieldwork. When these students finish their fieldwork, there is no continuation and the projects die out. Kevin regrets that most of the projects are run in an ad hoc manner and it’s difficult to monitor or evaluate them. ‘They are like a series of pilot studies rather than activities of a fully-implemented One Health agenda’. The situation places One Health as a superstructure programme that is universally adopted but lacks structural and financial support at the national and local level.

Citing the rabies programme run by the Kenya Medical Research Institute (KEMRI) as an example, Kevin observes that the Zoonotic Disease Unit doesn’t have a centralised database and data from a big project such as the rabies programme are held in a small project office at KEMRI. Although the Zoonotic Disease Unit hosts the One Health secretariat, it doesn’t have direct access to the database. ‘We have different people working on different projects, sometimes similar projects (duplication of projects) but they don’t have a common work-plan. Everything is left to the discretion of the individuals running the projects and the interests of their collaborators’, he says. He also points out challenges with funding, saying that projects funded by the government suffer from inadequate allocation and sometimes suspension of funding midway through the projects. This leads projects to stall, and to low motivation in the employees. ‘How do you feel when you have worked so hard on a project ... you have probably engaged people on the ground and then when you make a requisition, you are told the money has been suspended until the next financial year. It’s very demotivating.’ He concludes. Being a small unit, the Zoonotic Disease Unit is anchored in a larger institution that has a broad mandate. It therefore faces all sorts of financial challenges as it competes with other institutional

obligations. Kevin quips that, in government, it's easier to mobilise funds during emergencies but very challenging to do the same to prevent such emergencies.

Based on these observations, I argue that operationalisation of the One Health agenda in Kenya is hampered by power structures where the state controls resources and makes decisions on which project is supported and which is suspended, who benefits and who suffers. At the global scale, One Health is an agenda that originated in the American Veterinary Medical Association (AVMA) and spread to the rest of the world through globalisation. As such, it may not be readily embraced by local health practitioners. As Kevin highlighted, most of the funding for One Health projects is derived from bilateral organisations such as USAID, international universities and NGOs. This often makes the projects short-term and the activities may not necessarily go along with local interests.

6.5 One Health in Nthongoni

The Zoonotic Disease Unit showcases two major achievements. Firstly, it has, helped to build the capacity of many local people through the Kenya Wildlife Livestock Syndromic Surveillance (KWLSS). This project targeted and trained young people to use mobile phones to monitor and report symptoms of diseases in livestock and wildlife. The young people that were trained were provided with a mobile phone installed with software for the monitoring and surveillance work. Secondly, the Zoonotic Disease Unit has, in collaboration with KEMRI, started a rabies project in Nthongoni and trained local people to monitor the disease at the local level. The project was running in three counties: Makueni where Nthongoni is situated, Kisumu and Siaya. However, the project was not free from the structural and financial challenges Kevin

highlighted. As a short-term project running from March 2017 to September 2018, there was no provision for extension or expansion. Meanwhile, Kivasu, a senior project officer, had data that indicated that cases of rabies in dogs were very high in the county. The disease often spilled over to other animals such as goats and donkeys. He observed that even though they had conducted mass vaccination of dogs and livestock, the disease was still likely to spill over from wild dogs and jackals from the neighbouring national parks. The project was however coming to an end and, as he put it, he didn't have a say over what happened next.

Kivasu claimed that most people were ignorant about rabies and didn't have any idea of the signs they should look out for. Considering that rabies, commonly known as *mungethya* presents as a mental problem, the people of Nthongoni recognise it as madness. Kivasu observes that people in Nthongoni have a common belief that once you show signs of madness or disturbance, you have been bewitched. '…instead of taking you to hospital, they take you to a *mganga* [witchdoctor or traditional healer]', he said. Lack of finances to take the person to hospital also played part in making people to delay seeking healthcare. Kivasu narrated a case where a young girl was bitten by a dog and the mother did not have money to take her to the hospital. Later on, the girl bit the mother and they both died of rabies. This account shows the effects poor access to resources have on vulnerability and responses to disease outbreaks (Craddock and Hinchliffe, 2015). Although Kivasu and his colleagues in the rabies project were required to follow cases up, they did not have the necessary medication and the best they could do was to refer the victim to a hospital. Doing so was often a tricky balance for the victim: Kivasu hinted that the vaccine was not readily available at the local dispensaries and the victim was required to travel to the Sub-county hospital which is as far as 70 km away for some of the victims. This was a nightmare

to most people considering that road infrastructure is non-existent in most parts of Nthongoni. Moreover, due to abject poverty evident in the area, most families would face challenges in raising the money to finance the journey to the hospital. The situation in complicated by the long incubation period of the disease which may last for anything between 1 week and 3 months, or longer (Kivasu, personal communication). Victims or families of victims therefore delay health seeking and, in some instances, cannot connect symptoms of the disease to a dog bite that happened many months ago. As such, rabies in Nthongoni, like most other zoonotic diseases, is enveloped in complex socially-mediated dynamics including beliefs, ignorance, political neglect and poverty. Wallace et al. (2015) point out that such differentials in risk and vulnerability highlight the critical role socioeconomic and cultural attributes play in shaping the ways health is constituted, and thus the need to focus on the sociocultural, political, and economic configurations that either safeguard or jeopardise both health and health programmes.

Kivasu observes other difficulties that the programme faced in handling rabies cases. For example, people did not bring their dogs for vaccination when there were free vaccination campaigns, and this made it difficult to prevent and control the spread of the disease. The programme's effort to teach people about the disease has also yielded some counterproductive results: 'When people learnt that a rabid dog does not live for more than ten days, people who got bitten by dogs started waiting to see if the dog would die, before seeking medication' said Winnie, a Community Health Volunteer. Kivasu asserts that delay in treatment of rabies is almost always fatal, and victims of dog bite or of any other animal suspected to be rabid should seek treatment before symptoms begin. This illustrates the discrepancies between the expectations and outcomes of health-promotion programmes, and points us to what Smith et al.

(2015) sees as top-down assemblages and relegation of social science to communication. In contrast to this, social approaches should be a core component in analysing and shaping knowledge, action protocols and responses.

Kivasu applauds collaboration between the public health sector and the veterinary department in the rabies project. However, he holds that medical personnel have not been actively involved in the programme. He also told me that Kenya Wildlife Service (KWS) did not participate, a point that a senior official at KWS appeared to contest, saying that although there was not much involvement with One Health interventions, they had good collaboration with other bodies interested in ensuring health for wildlife and livestock. The example he gave was of a collaboration with Northern Rangelands Trust, an NGO that supports wildlife management in Northern and North-eastern Kenya but did not operate in Nthongoni, which is in eastern Kenya. He eventually clarified that there was no current collaboration between wildlife and livestock vets or the Public health department in Nthongoni. Wambwa (2005) observes that KWS is restricted by its core mandate of conservation and management of wildlife. Most of its funding is therefore directed towards park management activities, with little if any funding going to disease surveillance and monitoring. This highlights the ways in which power structures and political economic influences like state governance, regulations and distribution of resources hamper the involvement of wildlife managers in programmes aimed at enabling health and welfare of the same wildlife and environment that the managers are mandated to take care of.

The rabies project also serves as a good example to illustrate the exclusion of traditional healers from One Health programmes. Although they are the preferred first line of healthcare for most

mental health illnesses, the healers have not been incorporated into the rabies programme. While One Health crusaders peg the success of One Health on society's ability to understand and accept scientific evidence and guidance for One Health, the impression created in Nthongoni echoes with what Craddock & Hinchliffe (2015) see as playing down of lay knowledge and conceptualisation, which is counterproductive.

In reference to the many challenges facing implementation of the One Health approach in Kenya, Kevin suggests that the One Health agenda should be placed under the office of the president, like the disaster management entities, if it is to gain the necessary attention and authority. He also feels that awareness-raising among government leaders is needed to enhance understanding of practical aspects of the approach. As an expert in One Health, he points out the lack of state support, political goodwill and commitment for the implementation of the agenda in Kenya. Unlike the challenges facing the institutionalised One Health in terms of implementation and interdisciplinary collaboration, traditional medicine in Nthongoni is a true mix of human and animal health practice with completely blurred lines between human health and animal health. The healers offer what I refer to as a lay one health service every day. However, they are excluded from the formal structures of veterinary and medical interventions and the One Health agenda more generally.

6.6 Conclusion

In this chapter, I have examined multispecies entanglements and the ways in which the different entangled species construct the health and wellbeing of each other and of their shared environment. In particular, I have focused on people and baboons to demonstrate how they

simultaneously act and participate in sharing and shaping mutual disease ecologies, as well as actively participating in the co-production of medicine. The focus on spaces mediated by colonial and postcolonial practices provides insights into the relevance of incorporating the political economic dimensions of people and space when considering livelihood and health for both humans and animals. The political lens is also useful to help illuminate the challenges that derail the uptake or implementation of innovative projects or programmes like One Health at the local level. The evidence in the chapter points in various ways to what Paige et al. (2015) regards as critical facts revolving around inequality between countries in the global north and those in the global south. Paige *et al.*, (2015) observe that countries are not equally able to recognise and respond to disease outbreaks, and that not all actors in disease interventions possess equal financial or political leverage to effect change. The relationships between the different actors within the One Health agenda also helps to explain why, although lay one health is part of lived realities of the people of Nthongoni, the interventions of the formal One Health are not joined up or very successful.

Studies of human-wildlife relations have often portrayed the problematic side of these relations. However, the multispecies approach adopted for this study helps us to focus not only on the problematic and even antagonistic aspects but also on the positive attributes. It has, for example, helped illuminate the critical role of both humans and animals in enabling the successes of the lay one health practised by traditional healers as opposed to the formal One Health under ZDU. For instance, observing what baboons feed on and what they avoid and putting this knowledge to practise when producing medicine for people and livestock is an illustration of the entwined nature and fluidity of traditional health practice in Nthongoni. This can contribute to the

expansion of discourses on the scope of One Health, what One Health constitutes in different contexts, the politics playing out in its implementation, and who is involved and who is left out in the processes.

The ethnographic work presented in the chapter extends the conceptualisations of animal and human interdependence beyond physical interaction and notions of semiotic values, to considerations for integrated health. I have also illustrated the influence of complex political, socio-economic and cultural attributes in not only configuring multispecies interactions, but also the health outcomes of these interactions and health interventions. The ways in which the One Health paradigm plays out at the local level illuminate new nuanced understandings of local conceptualisation of health and healthcare, and highlight the importance of recognising, appreciating and incorporating local knowledge practices in the application of health interventions. The work contributes to debates on anthropology of health in general and to anthropological understanding of both the lay one health and the institutional One Health agenda in particular.

Chapter 7: Potential overlap of gastrointestinal parasites in humans and baboons in Nthongoni

7.1 Introduction

Interactions between humans and wildlife play a critical role in determining the health and wellbeing of both. At least 868 species of infectious agents from 313 different genera are transmissible between humans and animals (Taylor et al. 2001). Of these, 32% are helminths, a large number of which infest the gastrointestinal tract and are transmitted by direct contact with faeces from an infected animal or human, contact with soil that is contaminated with faecal matter, or ingestion of similarly contaminated food or water (Taylor, Latham and Woolhouse, 2001; Mossoun *et al.*, 2015). Transmission can take place among animals (epizootic) or between animals and humans; either from animals to humans (zoonotic), or from humans to animals (anthroponotic) (Thompson, Kutz and Smith, 2009). Increased entanglement between animals and humans increases the risks for these bidirectional exchanges of infectious agents (Parsons et al. 2015; Jones-Engel et al. 2008). However, the risks of infection does not necessarily depend on the intimacy of the contact but on the level of spatial and temporal sharing of common habitat (Modry et al. 2015).

Species that are closely related to one another have a higher propensity to exchange infectious agents than those that are not (Rwego et al. 2008; Wolfe et al. 2006). Therefore, humans and non-human primates may be highly susceptible to exchange diseases, because of their close phylogenetic relatedness. Non-human primates can pass several gastro-intestinal parasites to humans including: *Strongyloides fulleborni*, *Trichuris trichiura*, *Oesophagostomum* sp., *Trichostrongylus* sp., *Enterobius vermicularis*, *Schistosoma mansoni*, Ascaris sp, *Entamoeba*

histolytica, *Giardia* sp.*, Isospora* sp.*, Blastocystis* sp. *and Balantidium coli* (Munene et al. 1998). Similarly, other studies have demonstrated a likely transmission of gastrointestinal parasites from humans to nonhuman primates (Mbora & McPeek 2009; Bezjian et al. 2008; Ekanayake et al. 2006).

Parasites can affect host survival and reproduction either directly through pathological effects or indirectly by reducing host condition (Gillespie and Chapman, 2006). Some of the pathological effects include perforation of the colon and other tissue damage, extra-intestinal pathologies such as liver abscesses, blood loss, spontaneous abortion, congenital malformations, and death (Pouillevet et al. 2017; Noyer & Brandt 1999; Despommier et al. 1995). However, not every infection develops into a serious pathology. Less severe infections that may impair nutrition, travel, feeding, predator escape, and competition for resources or mates, or increase energy expenditure, are more common (Gillespie and Chapman, 2006). Some parasites may not cause pathology in the host but still take away nutrients in the gut for their own functioning, and thus compromise the host's survival and growth (Coop and Kyriazakis, 1999).

Studies of the role weather conditions play in influencing parasitic infections in nonhuman primates have generated conflicting results. Humid conditions, for example, increased the intensity and prevalence of endoparasitic infections in wild mantled howler monkeys (*Alouatta palliata palliata*), brown howler monkeys (*Alouatta guariba),* and muriquis (*Brachyteles arachnoides*) (Stoner 1996; Stuart et al. 1993; 1990). The prevalence of gastrointestinal parasites was low in hamadryas baboons (*Papio hamadryas*) in hot and dry areas and high in mild, cool areas (Ghandour *et al.*, 1995). Other studies have demonstrated seasonality in some

parasites but not others in the same host species. The number of chimpanzees infected by *O. stephanostomum,* for example, was significantly higher in the rainy season than in the dry season while the incidence of *Trichuris trichura* and *Strongyloides fuelleborni* showed no seasonality (Huffman *et al.*, 1997). Contrary to studies associating wet weather conditions with increased parasite prevalence, some studies have found an association between higher rainfall and lower nematode richness (Poirotte et al. 2016). Still other studies observed no differences in parasite richness and prevalence between seasons (Maldonado-López et al. 2014; Müller-Graf et al. 1996; McGrew et al. 1989).

Considering that humans and baboons have a close phylogenetic resemblance, and geographic overlap of the two species in Nthongoni provides them with opportunities to share infectious agents, this study aimed to investigate the prevalence of and potential for exchange of gastrointestinal parasites in humans and baboons in Nthongoni, eastern Kenya. Being at the human-wildlife interface of Tsavo West and Chyulu Hills National Parks, Nthongoni experiences a high level of interaction between humans and baboons. An investigation of parasite prevalence is therefore critical to provide an index of population health of both humans and baboons. Investigating potential exchange of parasites is also crucial in establishing whether humans and baboons play any role as pathogen reservoirs for each other. I also sought to understand parasite dynamics by examining seasonal variation in parasites prevalence in the two species. Understanding these dynamics is critical for the formulation of appropriate parasite prevention and control strategies.

The study relied on analysis of faecal samples from the two species because parasites leave their host's body in faeces, and they are easily obtainable using non-invasive methods (Modry *et al.*, 2015; Blekhman *et al.*, 2016).

7.2 Material and methods

I collected faecal samples from humans and baboons in the Nthongoni area of Makueni County, Eastern Kenya. The study site lies between 2°56'S to 2°76'S and 37°9'E to 38°11'E. The major town in the area is Mtito Andei (2°69'S, 38.16° E, personal GPS recording). The elevation is about 600 m above sea level in the low-lying areas bordering Tsavo National Park and rises to about 900 m in the area bordering Chyulu hills. Nthongoni is characterised by a diversity of habitats ranging from savanna bush and semi-arid scrub as the dominant land cover to Acacia woodland, belts of riparian forest, palm thickets and mountainous forests on the Chyulu hills (Muriuki et al. 2011; Wato, Wahungu and Okello, 2006). Wildlife in the area includes: African elephants (*Loxodonta africana*), giraffes (*Giraffa camelopardalis*), eland (*Tragelaphus oryx*), impala (*Aepyceros melampus*), dik-diks (*Madoqua* spp.), buffalo (*Syncerus caffer*), baboons (*Papio cynocephalus*), Sykes monkeys (*Cercopithecus albogularis*), vervet monkeys (*Chlorocebus pygerythrus*) and major predators such as lions (*Panthera leo nubica*) and leopards (*Panthera pardus*). The area has a large variety of birds ranging from the small Tsavo sunbird (*Cinnyris tsavoensis*) to the big common ostrich (*Struthio camelus*) (Mwangi *et al.*, 2016; Kamau and Medley, 2014). The soils are of volcanic origin and basaltic rocks dominate the area. Rainfall is erratic and poorly distributed. Nonetheless, the region generally experiences a bimodal rainfall pattern that ranges 150-650 mm per annum. Short rains occur between October and December and long rains between March and June (Mwongela 2015).

Temperatures and evapotranspiration are high with mean monthly temperatures of 28°C. The area experiences prolonged droughts that at times result in serious famines (Muriuki et al. 2011).

I collected samples between January and August 2018. I restricted my sampling to the area within approximately 1 km of the boundaries of Tsavo West and Chyulu Hills National Parks, since this area had the highest level of interaction between people and baboons. For humans, I treated everyone in this region as a potential participant but only included those that consented to participate in the study. I provided consenting adults or children of consenting parents with sterilised faecal collection containers and directions for use. I collected the samples the following morning, labelled them appropriately and recorded the sample ID, date, and village and GPS location on data sheets. For baboons, I identified three groups that frequented homesteads or foraged on community farms. Two of the groups had sleeping sites in the villages. I established the trees these groups slept in in the evening and went back early the following morning to collect the faeces dropped that night. I followed the group that didn't sleep in the village in the field and collected samples opportunistically immediately after defecation. I made effort to sample individual animals only once although some baboons may have been sampled more than once owing to their erratic movement and lack of individual identification. The baboons in Nthongoni are used to being chased away for crop foraging and hence it was not easy to follow them very closely.

7.2.1 Sample size

I followed guidelines provided by Gillespie (2006) and the World Organisation for Animal Health (OIE, 2013) for the minimum number of faecal samples required for general surveys of

free-ranging primates. With an assumed prevalence of 5%, the guidelines recommend for a minimum requirement of 59 independent faecal samples. I aimed to collect 20 faecal samples from each of the three baboon groups at the study site, to total approximately 60 samples for each season. I targeted to collect a matching number of samples from humans. At the end of the sampling period, I had collected 106 human samples: 50 in the dry season and 56 in the wet season, and 113 samples from baboons: 57 during the dry season and 56 during the wet season. This number was dictated by coming to an end of a season and although the sample numbers were slightly short of the target, the sample sizes were larger than those analysed in other similar studies: Pouillevet et al. (2017) analysed 47 faecal samples, Ryan et al. (2012) 55, Bezjian et al. (2008) 41, Hahn et al. (2003) 55, 30, and 42 samples from three different areas and Murray et al. (2000), 35 samples.

Based on size, consistency, colour, and odour, I ensured that all the samples that I collected while following the baboons were from baboons. Similarly, I confirmed that all the samples donated by humans were consistent with human stool. With gloved hands, I used a wooden spatula to scoop up as much faecal mass as possible, obtaining approximately 6 g from each individual faecal mass. I put each sample into a separate 50 ml collection tube. To reduce the risks of contaminating the samples with other materials from the immediate environment, I endeavoured to collect samples from the centre of the faecal mass. I took a portion from each sample and set it aside for coproculture, to facilitate hatching of parasite eggs to larvae. I divided the remaining portion of each sample into two aliquots and preserved one in 10% formalin (for subsequent microscopy) and one in 75% ethanol (for further DNA analysis) as recommended by Modry et al. (2015). I transported all the samples to the Institute of Primate Research (IPR)

in Nairobi and stored the aliquots preserved in ethanol in a cold-room at -20^{0}C. The samples preserved in formalin did not require refrigeration and hence were stored at room temperature.

7.2.2 Coproculture

Most helminth eggs are not distinguishable, and it was therefore necessary to hatch them in the field, for ease in identification in subsequent analysis in the laboratory. I used a modified Harada-Mori faecal incubation method, which has been shown to be the most appropriate for field surveys (Modry et al. 2015). I took a thin film of faecal material from each sample and spreading it on the middle of a pre-prepared filter paper, which I then folded and placed into a 50 ml conical tube. I placed the tubes vertically and added water to immerse the lower end of the filter paper, leaving the faecal film out of contact with the water. After transferring the samples to IPR laboratories I monitored them under room temperature for two weeks, gently adding new water whenever necessary to ensure the lower end of the filter paper was constantly immersed.

7.2.3 Morphological analysis of samples

Morphological identification of parasites requires practical experience (Modry et al. 2015), so I engaged an experienced laboratory technologist at the Institute of Primate Research. We started the analysis of the incubated samples at the end of the incubation period. We removed the filter paper/faecal film and added water to the containers to a uniform level of 5 ml. We centrifuged the samples at 500 rpm for 10 minutes. We then poured off the supernatant and placed the sample tubes ready for examination. We used a pipette to suck a drop of the clear sediment and place it on a slide. We transferred the remaining sediment into 2 ml vials, fixed it with absolute

ethanol and stored samples at -20^{0}C for further molecular analysis. For the slides, we used iodine to immobilise the helminth larvae then added a coverslip. We examined the slides under the microscope using 10x and 40x magnification objectives.

We subjected the samples preserved in formalin to two concentration methods: sugar flotation and formal ether sedimentation. We followed the concentration procedures recommended by Gillespie (2006). We used the two concentration methods to increase the success of our diagnosis. Sugar flotation uses gravity to allow organisms that have lower specific gravity to float to the top while the debris sinks to the bottom, producing samples that are free of debris. It is most appropriate for parasite eggs and cysts (Pouillevet *et al.*, 2017). Formal-ether sedimentation allows the isolation and identification of heavy helminths such as trematodes (flukes). It uses solutions of lower specific gravity than the parasitic organisms, concentrating the latter in the sediment. Although sedimentation produces specimens that are less clean than the floatation method, it is easier to perform and less prone to technical errors (CDC, 2016). Combined, the two methods increase the chances of detecting parasitic organisms of varying density, and thus enhance diagnosis. They are particularly helpful when the parasites are in small numbers and thus easy to miss if only one method is used.

We homogenised each faecal sample thoroughly with a stirring stick to ensure that the parasite eggs were uniformly distributed in the sample. We placed 4 g of faecal sample into a plastic faecal sample jar and added 12 ml of water to the sample. We mixed with a stirring stick until the mixture became a thin brown slurry. To remove large debris from the sample, we swirled the sample to suspend the sediment and poured the slurry through a tea strainer into another

faecal sample jar. We swirled the filtrate to suspend the sample and poured the filtrate into a 15 ml conical tube. Using a pipette, we added water to ensure the sample volume filled the tube to the 14 ml mark. We then capped the samples and centrifuged them at 1500 rpm for 10 minutes. We poured off the supernatant. We kept this set of samples separately for use in the flotation method and repeated the above procedure to make a duplicate aliquot for use in the sedimentation method.

To prepare a sugar solution for flotation method, we weighed 454 g of sugar and dissolved this in 355 ml of hot water. We measured the specific gravity (SG ~1.27) after the solution had cooled. The solution is susceptible to mould, so we added 2 ml of 37% formaldehyde to prevent this (Gillespie 2006). We filled the set of samples set aside for flotation with the sugar solution, making sure the tube had a slight meniscus bulging over the lip of the tube. We gently placed a cover slip on top of each tube, centring the cover slip over the centrifuge tube. We then centrifuged the tube for 10 minutes at 1500 rpm. We gently removed the cover slip and placed it on a glass slide.

To maximise the sensitivity of the procedure, we added a few more drops of sugar solution to the 15 ml sample tubes to create a new meniscus at the top, placed another cover slip on top of the meniscus and centrifuged the samples again for 10 minutes at 1500 rpm. We allowed the new slides to settle for about 2 minutes and examined the two slides under the microscope at 10x power to confirm the presence or absence of nematode eggs. When we saw an organism or an object, we were doubtful about, we switched to higher magnification (40x) to see more detailed morphology. Viewing started at one corner of the slide and moved upwards in a line as

we counted the eggs. When we finished one row, we slid over one field of view and counted the next row until we finished the slide. We counted the number of each type of parasite eggs observed in the slide and recorded this on the sample data sheets.

For the sample aliquots set aside for formal-ether sedimentation, we added 750 µl of clean tap water to the sample using a mechanical pipette. We added 500 µl of concentrated sugar solution to help prevent the slides from drying out under the microscope. We mixed the sediment, water and sugar solution thoroughly using a disposable plastic pipette. We then placed two small drops of sediment on the slide and viewed the slides under 10x power to confirm the presence or absence of nematode eggs. We used the same procedure as for the flotation method to view the parasite eggs. We used 40× magnification to capture images of the specimens, as proposed by (Ghai *et al.* (2014).

7.2.4 Limitations of the methods

As a method to investigate disease exchange between humans and baboons or in particular the overlap of gastrointestinal parasites between the two species, the method was limited in that some of the people and in particular school going children were receiving anti-helminths every three months. Therefore, the method might not present a true reflection of parasitism in the human population or the potential for parasite cross transmission between people and baboons.

The capacity to identify most parasite species through faecal examination, even with cultured larvae, was limited. The similarities in size and appearance of the eggs of different species of gastrointestinal nematodes are such that it is extremely difficult to differentiate them. The

majority of our identifications were, therefore, at the level of superfamily or genus. A few samples had sufficiently different third-stage larvae to distinguish between genera.

7.2.5 Data analysis

I first used a MS Excel worksheet for data entry, then imported the data to R® statistical software for data analysis. I used a Fisher's exact test to compare the frequency of parasite prevalence between humans and baboon and within the same species but in different seasons. I considered $p < 0.05$ as significant.

7.3 Results

Both humans and baboons had different levels of infection with different types of helminths and protozoa (Table 7.1). We identified larvae and eggs of several strongylid species but because the eggs are virtually indistinguishable, we classified them all as Strongyloides. We also recorded an unidentified Strongyle sp. The other helminths were *Abbreviata* sp., *Ascaris* sp., *Taenia* sp., *Streptopharagus* sp. and *Enterobius* sp. We recovered eight protozoa, including cysts and trophozoites of *Balantidium coli* that we identified to species level, and four amoeba cysts: *Entamoeba coli, E. hartmanii, E. histolytica/E. dispar* and *Iodomoeba butschlii* that we distinguished based mainly on the morphology of the nuclei, number of nuclei and cyst size. We also identified *Eimeria*, *Cryptosporidium* and *Blastocystis* genera.

Table 7.1 Prevalence of gastrointestinal parasites in human and baboons in Nthongoni, Eastern Kenya, January-August 2018.

Parasite	Prevalence in Humans (%)		Prevalence in baboons (%)	
	Dry Season (*n*=50)	Wet Season (*n*=56)	Dry Season (*n*=57)	Wet Season (*n*=56)
Nematodes				
Strongyloides sp.	4	14.3	96.5	83.9
Unidentified Strongyle	0	5.4	70.2	85.7
Abbreviata sp.	0	0	17.5	66.1
Ascaris sp.	2	0	21.1	51.8
Trichuris sp.	0	3.6	1.8	1.8
Oesophagostomum	0	0	0	3.8
Streptopharagus sp.	0	0	3.5	23.2
Enterobius sp.	8	1.8	0	3.6
Taenia sp.	0	0	7	1.8
Ancylostoma sp.	0	1.8	0	0
Protozoa				
Balantidium	48	37.5	75.4	83.9
Entamoeba coli	42	21.4	84.2	89.3
E. histolytica/dispar	6	0	19.3	89.3
E.hartmanii	0	0	5.3	3.6
I. butschlii	8	1.8	0	10.7
Eimeria sp.	2	1.8	1.8	5.4
Cryptosporidium sp.	0	0	7	0
Blastocysts sp.	4	0	1.8	0

The prevalence of infection was generally higher in baboons than in humans across both nematodes and protozoa (Table 7.1). The prevalence of nematodes *Strongyloides* sp. and unidentified *Strongyle* sp. and protozoa *Balantidium coli* and *Entamoeba coli* was higher than other parasites in both humans and baboons. Human samples showed more protozoa infections than helminths, while baboons showed similar level of infestations of nematodes and protozoa. Except for *Entamoeba coli, E. hartmanii* and *Iodomoeba butschlii*, which exist as commensal parasites in the human gastrointestinal tract, all the other parasites identified in this research are

pathogens of zoonotic interest (Modry et al. 2015; Dixon et al. 2014; Ryan et al. 2012; Gillespie 2006).

7.3.1 Variation in parasite prevalence in different seasons

The prevalence of infection with Strongyloides sp. in humans was higher during the wet season than it was during the dry season (Table 7.1). Likewise, we detected unidentified *Strongyle* sp., *Trichuris* sp. and *Ancylostoma* sp. in the wet season but not in the dry season. However, *Enterobius* sp. showed higher prevalence in the dry season than in the wet season while *Ascaris* sp. was present in a small percentage of human samples during the dry season but absent during the wet season. The majority of the protozoa recorded in humans were also more prevalent during the dry season than during the wet season (Table 7.1). Except for *E. coli* (df=1 p=0.035) and Eimeria sp. (df=1 p=0.001) the difference in prevalence of the other parasites between the two seasons was not statistically significant: *Balantidium coli* df=1 p=0.432, *Iodomoeba butschlii* df=1 p=0.186). The prevalence of *E. histolytica/dispar, E. hartmanii, Cryptosporidium* sp. and *Blastocystis* sp. were too low for statistical tests.

A seasonal pattern was more evident in baboon samples, particularly for the prevalence of helminths. Except for *Strongyloides* sp., that had slightly higher prevalence during the dry season compared to that recorded in the dry season, and *Taenia* sp. that had higher prevalence in the dry season than that recorded in the wet season, all the other helminths exhibited higher prevalence during the wet season than the dry season. However, the prevalence of the helminths was statistically independent of season for *Strongyloides* sp. (df =1; P=0.029), *Abbreviata* sp. (df =1, P=0.363), Trichuris sp. (df =1, P=1.000), but not for Taenia sp. (df =1, P=0.001),

Strongyles sp. (*df* =1, *P*=0.001), *Ascaris* sp. (*df* =1, *P*=0.001) and *Streptopharagus* sp. (*df* =1; *P*=0.002). Prevalence of *Oesophagostomum*, *Enterobius* sp. and *Ancylostoma sp.* were too small to allow for a statistical test.

The prevalence of protozoa in baboons followed a similar trend as for helminths with majority of the protozoa having higher prevalence in the wet season compared to the dry season (Table 7.1). However, *Cryptosporidium* sp., *Entamoeba hartmanii* and *Blastocystis* sp., were slightly more prevalent during the dry season than during the wet season. Statistically, the difference in the prevalence of *Entamoeba histolytica* was highly significant between the two seasons (*df* =1, *P*=0.002). However, the prevalence of the other protozoa was independent of season: *Balantidium coli* (*df* =1, *P*=0.350), *Entamoeba coli* (*df* =1, *P*=0.580), and *Eimeria* sp. (*df* =1, *P*=0.363). *Iodomoeba butschlii, Cryptosporidium* sp. and *Blastocystis* had very small frequencies.

7.3.2 Coprocultured samples

For coprocultured samples, there was a higher prevalence of *Balantidium coli* in humans than in baboons in both seasons (Figure 7.1). However, the prevalence of *Strongyloides* sp. was lower in humans during the dry season than in the wet season. A higher percentage of the of baboons were positive for *Strongyloides* sp. during the dry season than during the wet season. A small percentage of baboons were also positive for *Oesophagostomum* sp. during the wet season, but the dry season samples were negative for the same genus.

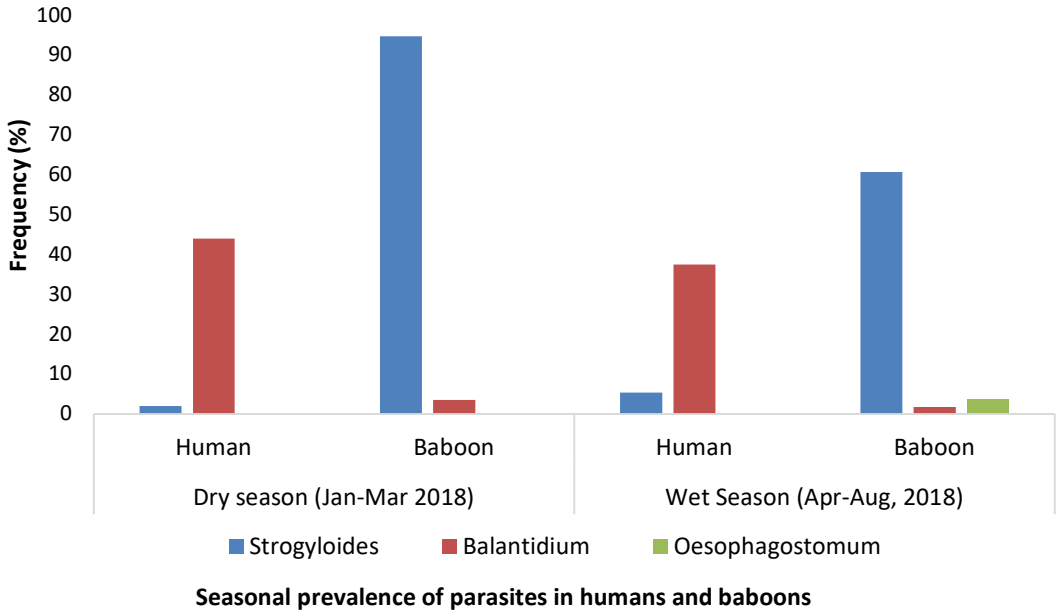

Figure 7.1: Prevalence of parasites in coprocultured samples

7.4 Discussion

This study investigated the occurrence and prevalence of gastrointestinal parasites in human and baboons that interacted across park borders in Nthongoni, Kenya. We recorded nematodes such as *Strongyloides* sp., *Trichuris trichiura,* and *Enterobius vermicularis* and protozoa such as *Balantidium coli, Entamoeba coli, Entamoeba historytica/dispar* and *Eimeria* sp in both humans and baboons. Numerous reports have similarly documented the presence of the same parasites in humans and or nonhuman primates in shared environments (Nissen *et al.*, 2012; Mafuyai *et al.*, 2013). In particular, similar parasites have been recorded in baboons that interacted with humans in Kenya (Munene *et al.*, 1998; Hahn *et al.*, 2003; Akinyi *et al.*, 2013) and in other parts of the world (Ghandour *et al.*, 1995; Murray *et al.*, 2000; Gillespie and Chapman, 2006; Weyher, Ross and Semple, 2006; Bezjian *et al.*, 2008). However, most of these studies relied on samples

collected from animals that interacted with humans not samples collected from both humans and animals. My study analysed samples collected from humans and baboons in a shared environment and therefore strongly indicates a possible cross transmission of parasites between people and baboons.

The evidence provided in Chapter 5 and 6 of this thesis illustrates an interaction between humans and baboons that is close, but not intimate like in the case of humans and domestic animal or humans and their pets. However, there is spatial and temporal sharing of food and water at shared water points or when baboons break into houses in search of food or water or scavenge on the rubbish dumped by people. Baboons also drop leftover crops and fruits that people then consume. There is also instantaneous contact when people hunt, kill and butcher baboons, or when baboons scratch or bite people. There is possible human contact with baboon faecal material when people are farming. Likewise, baboons are likely to come into contact with human wastes when baboons are foraging. Notably, a large proportion of the human community do not have toilets and therefore defecate in the bushes (Chapter 6). Open defecation is a potential source of contamination for water, wild vegetables and the environment in general. These are likely to be some of the ways through which the water and food consumed by both people and baboons is contaminated, leading to a possible exchange of parasites.

Protozoan parasites are easily transmitted between animals and humans through faeces-contaminated food and water (Ryan *et al.*, 2012). We found *Balantidium coli, Entamoeba histolytica/dispar* and *Entamoeba coli* in both human and baboon faecal samples. Although *Entamoeba coli* is not pathogenic unlike the other two, it gives an indication of faecal

contamination of food and water and is therefore of public health significance (Gillespie, Chapman and Greiner, 2005; Hussein, 2011). *Balantidium coli* in nonhuman primates is particularly associated with frequent contact with a domestic environment (Ryan *et al.*, 2012).

Entamoeba histolytica/dispar is a known zoonotic parasite. It is reported as the causative agent of amoebic dysentery and colitis in humans and is the second most common parasite infection in humans for morbidity worldwide, causing up to 100,000 deaths in humans annually (Laughlin and Temesvari, 2005; Ackers and Mirelman, 2006). *Entamoeba histolytica/dispar* is also shown to cause hepatic and gastric amoebiasis and death in nonhuman primates such as the redtail guenon *Cercopithecus ascanius*, red colobus *Piliocolobus tephrosceles* and black-and-white colobus *Colobus guereza* (Loomis, 1983). Although it is morphologically difficult to distinguish *Entamoeba histolytica* from *Entamoeba dispar*, a non-pathogenic species, the recording of *Entamoeba histolytica/dispar* in both humans and baboons in the current study is an indication of a possible prevalence of a zoonotic *Entamoeba* sp in the area. This calls for further research into identification of the two species. There is also a need to investigate symptoms and signs of amoebiasis in both humans and baboons in the area.

The high prevalence of *Balantidium coli* and *Entamoeba coli* compared to helminths in humans may be due to a deworming campaign that had been taking place at the study site for the past 3 years and continued at the time of this research. The campaign, which is run by the County Government, involves mass deworming of school-going children and awareness-raising in the other members of the community, through churches and village meetings. Deworming normally targets helminths and this might explain their lower prevalence in humans, compared to the

prevalence of protozoa. Protozoa, in particular *Balantidium coli*, can reproduce directly in the host, and thus increase rapidly even after a single infection event (Maizels *et al.*, 1993). This implies that *Balantidium coli* is likely to re-establish itself in the host a short while after treatment, if the host is still exposed to it via the immediate environment.

Moreover *Balantidium coli* growth is favoured by a host diet that is rich in starch (Noble *et al.*, 1989). As shown in earlier chapters of this thesis, maize, sorghum and cassava are the staple foods in Nthongoni for people and baboons forage on these crops extensively. Being rich in starch, these may have contributed to the high prevalence of *Balantidium coli*, particularly in humans but also in baboons. A similar observation was made for crop-foraging baboons in Nigeria (Weyher, Ross and Semple, 2006). Although the results of the current study may infer success of the deworming campaign in so far as helminths in humans are concerned, baboons might continue to serve as a reservoir for the parasites. They may also play a role in the spillover and spillback of the parasites to nonhuman primates and other wildlife in the parks and to the humans the baboons interact with (Mossoun *et al.*, 2015)..

Many studies have found seasonal differences in prevalence of parasites, with wet conditions increasing the intensity and prevalence of gastrointestinal infections in baboons (Ghandour *et al.*, 1995; Ryan *et al.*, 2012). We recorded a high prevalence of the majority of the nematodes in the wet season in baboons. However, *Strongyloides* sp. was more prevalent in the dry season than in the wet season. Nevertheless, the difference in prevalence was statistically independent of season except for *Ascaris* sp. and *Steptopharagus* sp. In humans, no major differences were recorded between the wet and the dry seasons. However, *Entamoeba coli* had a statistically

significant higher prevalence in the dry season than in the wet season. Generally, the results followed no distinctive seasonality pattern. Studies by McGrew *et al.*, (1989) and Müller-Graf, Collins and Woolhouse, (1996) yielded similar results. This implies that factors other than seasonality might influence the prevalence of individual parasites in humans and baboons in Nthongoni. For example, two baboon groups that ranged in similar habitats with similar rainfall patterns showed a significant difference in total helminth load (Warren, 2003). The researcher concluded that crop-foraging, which was the only major difference between the ecology of the two troops, might have caused the difference in helminth load.

This study had some limitations. We focused on people and baboons that had close contact with each other. We did not investigate prevalence in people and baboons that did not interact, to establish whether parasite prevalence was different or the same as in these groups that interacted. Further study of humans farther from the park boundary and baboons that forage inside the parks and don't interact closely with humans is needed to help to establish whether the level of interaction influences the prevalence of parasites. Future studies should also investigate the role of livestock such as cattle, goats and donkeys and domestic animals such as dogs, in parasites' transmission.

Morphological analysis of parasites as presented here has limited diagnostic power. Most nematode eggs are similar in size and morphology and therefore difficult to identify (Murray *et al.*, 2000). *Oesophagostomum* sp., for example, is difficult to diagnose based on eggs alone since they are rarely found in faeces and when they are found, they are difficult to definitively distinguish from hookworm eggs (*Necator americanus*) (Weyher, Ross and Semple, 2006). To

ameliorate this, I incubated a portion of each sample to allow eggs to hatch into larvae. We also engaged the services of an experienced medical parasitologist to help with identification as suggested by Modry *et al.*, (2015). Nevertheless, we could not identify most of the parasites beyond genera level. Moreover, some parasites such as *Trichuris* sp. were still difficult to diagnose as their eggs do not develop to the L3 stage in copro-cultures (Bezjian *et al.*, 2008). These challenges call for a more effective method of parasite analysis to ascertain if the parasites prevalent in humans are the same strain as those in baboons. Prevalence of same parasite species in both humans and baboons would mean that the parasites are exchanged between the two species which may imply that the two species serve as parasites' reservoir for each other.

7.5 Conclusion

Our results show that similar parasites infect humans and baboons in Nthongoni, eastern Kenya. We detected a high prevalence of known zoonotic parasites such as *Strongyloides* sp., *Trichuris* sp, unidentified *strongyle* sp., *Entamoeba hystolitica* and *Balantidium coli*. *E. hystolitica/dispar* and *B. coli*. The presence of nonpathogenic *Entamoeba coli* and *Entamoeba hartmanii* may represent public health and conservation concerns as they are indicators of faecal contamination of food and water. The prevalence of parasites in both humans and baboons implies a possible exchange of parasites, considering the high level of interactions between humans and baboons in Nthongoni, and the close phylogenetic resemblance of the two species. To the best of my knowledge, this is the first study to investigate the presence and prevalence of gastrointestinal parasites in both humans and baboons in Nthongoni. As such, the data provides a basis for future studies. The study highlights the gaps in information in the possible role other animals sharing the same environment with humans and baboons may play as reservoirs or agents of transfer of

parasites. Further, the study highlights the challenges inherent in morphological identification of parasites. Future studies may benefit from use of molecular analysis to test for a true exchange of parasites between people and animals.

Chapter 8: General conclusion

This thesis is an integration of an ethnography of multispecies relations in a post-colonial conservation context, and a biological investigation of gastrointestinal parasites of humans and baboons. I adopted a multidisciplinary approach to explore human-wildlife interactions, focusing on how interactions between humans and other animals are configured by colonial and postcolonial politics and global and local structures and economic systems. Further, I focused on how all these factors combine to shape the health and wellbeing of the species involved in the interactions. As a window onto broader human-wildlife and nature-culture relations, I focused on the entangled lives of humans and baboons at Nthongoni, Kenya, to examine how the two species not only share space and interact on day to day basis, but actively participate in constructing and shaping one another's life: sharing food, water and (potentially) microbes.

Nthongoni is an area of human-wildlife interface bordering Tsavo and Chyulu Hills National Parks in Eastern Kenya. Human-baboon entanglement occurs in spite of the separation that has been instituted by the parks and which is partly marked by a large fence. In this regard, the thesis contributes to debates on the depth to which 'natural world' and 'cultural world' are entwined and inseparable. Further, by exploring the potential overlap of microbes between humans and baboons, the study moves beyond ethnographic attention to symbolism, ideologies and social interactions and provides microbial evidence on how humans and animals may be entangled in each other's biological health and wellbeing.

The study brings human-nonhuman interactions under the lens of both the anthropology of conservation and medical anthropology – or anthropology of health more generally – and makes

use of a novel methodological combination of social and biological sciences including laboratory technology to reimagine health and wellbeing through a post-human scholarship.

The thesis builds on studies of 'Fortress Conservation', a model based on the belief that conservation of biodiversity can be best achieved when ecosystems function in isolation from human disturbance (Brockington, 2002; Duffy, 2014). In particular, I highlight Spence's (1999) work on 'dispossessing the wilderness', that illustrates how forceful creation and protection of 'pristine wilderness' in the USA in the late nineteenth century became the model for conservationist efforts and native dispossession in other parts all over the world. The model depicts a global conservation agenda that manifested as colonialism in most developing countries. Fortress conservation articulates a form of colonial reconceptualisation of nature, landscape, and society that allows indigenous people to be colonised, dispossessed and displaced (Brockington, 2002). The study has demonstrated how Tsavo National Park, like most protected areas in Kenya, was created by the colonial government through a conservation approach that Dunlap and Fairhead, (2014) and Cavanagh, Vedeld and Trædal (2015) liken to a paramilitary endeavour. Similarly, although Chyulu Hills National Park was established by the Kenyan government after independence, the process adopted a postcolonial conservation strategy that echoed a colonial history of dispossession and violent evictions. Despite claiming independence and sovereignty, national or regional governments have often co-opted global conservation discourses and policies that end up negatively affecting the local people (Haraway 2013). This is also the case in Nthongoni, where the government of Kenya has used the conservation agenda in ways that dispossess and displaces people and alienates them from economic opportunities produced by conservation areas. My thesis argues that present

conservation problems – such as human wildlife conflict and environmental degradation cannot be understood without considering the distant – both in space and time – power structures and political influences that configure them. Good conservation demands attention to a broad conceptualisation of the global and local political and economic influences.

Researchers have questioned conservation endeavours that seek to protect some species and in the process cause harm to others. Reflecting on practices for the insemination and breeding of endangered whooping cranes in the United States, for example, Thom van Dooren (2014, 91) talks about forms of 'violent care', highlighting the ethical concerns that practices to save a particular species might raise. Bocci (2017) observes that to conserve an endangered species, conservation can advocate for interventions that result in local extermination of another species. The evidence I have produced in this thesis illustrates the myriad ways in which conservation of Tsavo and Chyulu Hills National Parks resulted in, and continues to cause, overwhelming suffering to an ethnic group that indigenously lived in the parks, and now occupies the land adjoining the parks. I have highlighted how these people were dispossessed of and violently evicted from their land and how this instilled in them a socialised fear of similar evictions in the future. This makes the people subservient and voiceless. I have illustrated how a neoliberal land ownership approach that the people were exposed to has served to exacerbate their poverty. I have also showed how lack of ownership documents makes people vulnerable to the extent that they are unable to make long-term investment in their land. Although I have argued that seeking the issuance of title deeds for the portions of land that the people now hold is tantamount to accepting and formalising their dispossession, I nevertheless consider the move as the lesser of two evils: acknowledging dispossession or living in constant anxiety and fear of uncertainty.

Use of violence during the creation of the parks and subsequent militarisation of the parks means that local people associate conservation with what Cavanagh et al., (2015) refers to as militarisation of conservation. In Nthongoni, this has rendered many residents indifferent to conservation efforts, particularly given that they also suffer when wild animals come onto their land and forage on their crops and kill livestock. I theorise that owing to the unfavourable experiences that local people have with wildlife and in particular with wildlife managers, most of them are unlikely to participate in conservation activities or to provide intelligence on what conservationists consider as illegal activities.

This thesis has borrowed from multispecies ethnographic frameworks such as 'naturalcultural borderlands' (Kirksey and Helmreich 2010, p. 548), 'natureculture encounters' (Fuentes, 2010) (Fuentes, 2006, 2010) and 'ethnography of encounters' (Faier and Rofel, 2014) to help us visualise and understand the blurry boundaries between nature and culture in Nthongoni, and to illuminate how human and baboon lives and worlds are naturally and culturally entwined. Through a semiotic baboon called *mumo* I have showed the liminal position that animals might occupy in human social and spiritual life, and how this serves to link people with both the living and the departed ancestors. In trying to theorise and understand such forms of entanglement, I have used Donna Haraway's post-human focus that centres on multispecies sociality and situates humans and nonhuman others as active participants in coproducing life, health and wellbeing for each other (Haraway, 2013). Multispecies actants generate possibilities for each other when they are living together or when they encounter one another.

My thesis has espoused a posthuman scholarship that helps us to see animals not as mere subjects in human-animal interactions, but as active participants. This scholarship also invites us to attend to the ways in which animals respond to changes brought about by global and political influences. In this study, I have illustrated the subjectivity and agency of baboons as active participants in the semiotic cultures of the people of Nthongoni, and in constructing people's socioeconomic dynamics through crop-foraging, livestock predation and injuries caused through bites and scratches. Moreover, people have to guard crops, and in the process learn and interpret baboon language. Semiotic beliefs such as those conveyed by the stories of *mumo* determine what happens in the lives of the people at a given moment, and thus actively shapes the everyday lives of the people. For example, *mumo's* visit to Nthongoni communicates the message that rains are coming soon and therefore people must start cultivating their land in readiness for planting.

Although to kill a baboon was a taboo in Kamba traditions, this tradition is slowly changing owing to changes such as sedentary agriculture that emerged alongside fortress conservation. People now kill baboons in retaliation for damaged crops and livestock depredation. People also talked about embracing Christianity, which has served to diminish the influence that semiotic attributes accorded to *mumo* had on people: as a mediator between the people and the world of the spirits, and as a force that protected the society from moral decadency. In a study by Bulleitt (2005), colonial and postcolonial governmentality was blamed for commodifying animals to the extent that animals no longer exhibited any spiritual significance for humans. Although the current research has identified a possible decline in the social and spiritual significance of *mumo,* a strong part of the evidence reveals a people who have still retained essential religious and

spiritual connections with *mumo*, despite being alienated from the parks. Using baboons as a case study illustrates the centrality of animals in change and development of human sociocultural and spiritual life.

Another theme that emerged from this thesis is that of alienation of the people of Nthongoni from the economic potentials the National Parks provide. I have illustrated how the people were pushed to the periphery of the parks and marginalised not only physically but also socioeconomically. I have argued this as a proliferation of economic governance where the parks allow new economies to emerge, but the local people are unable to compete effectively, having been deprived of resources. Poverty has denied the local people access to a good education and hence they do not have the necessary knowledge and skills to compete for the jobs offered by the parks. I argue that this form of economic marginalisation and alienation of people living alongside the park and affected by them, is another form of failed wellbeing.

Although Faier and Rofel (2014) have suggested that human and nonhuman lives and worlds mutually emerge through multispecies relationships, some of the encounters observed between people and baboons in the current research are not mutual. Instead, they are new forms of encounters that are configured by colonial and postcolonial processes. For example, dispossession and displacement from the parks, and alienation from the economic opportunities generated by the parks made the local people engage in livelihood activities such as maize farming and charcoal burning that are otherwise considered incompatible with conservation. By switching from hunting and gathering to sedentary farming such as growing of maize, people have made baboons more attracted to their farms which has, in turn, made humans and baboons

vulnerable to one another, inadvertently exacerbating human-baboon conflict. Following this, consumption of baboon meat in Nthongoni, which was traditionally taboo, is becoming increasingly common. Residents claimed that people are turning against baboons, killing them and eating their meat in retaliation for crop foraging, and because the government doesn't compensate them for crop damage. This demonstrates the role politics and power play in configuring conservation, which in turn reconfigures cultures and institutes change in traditional activities. I argue that certain cultural attributes and changes in the same, are not necessarily an inherent trait of a community but outcomes of multispecies interactions that reflect the historical, political, economic and ecological circumstances that the species involved in these interactions have been exposed to.

Following up on the dynamic nature of cultures, this study has illuminated changes that reaffirm that cultural values are not static. Rather, they are porous and evolve to reflect the material, political, economic and social realities and inconsistencies of people's lives, including, for example, the emergence of diseases such as HIV. Although baboon meat is taboo in Nthongoni, cultural fluidity is evidenced by the use of baboon bones and eyes to treat joint and eye problems, respectively. Furthermore, the emergence of HIV and AIDS has introduced new trajectories: people in Nthongoni believe that baboons do not succumb to disease because they have certain powers, skills and knowledge that helps them to diagnose and treat their own diseases. The people believe that this power is in part ingrained in baboon liver and as a result, they are using baboon liver as treatment for AIDS.

Chapter 5 and 6 of this thesis demonstrated the forms of contact and sharing of resources that may produce opportunities for pathogen exchange between people and baboons. These include sharing of water, left-over maize, fruits and wild vegetables. Killing, butchering and consumption of baboon meat, and injuries such as bites and scratches are other forms that may cause disease transmission. Chapter 7 provided laboratory evidence that show similar trends in human and baboon gastrointestinal parasitism. For example, helminths such as *Strongyloides* sp. and protozoa such as *Balantidium coli* and *Entamoeba coli* were highly prevalent in both baboon and human faecal samples. Likewise, helminths such as *Trichuris* sp., *Streptopharagus* sp., *Taenia* sp., and *Ancylostoma duodenale* and protozoa such as *Eimeria* sp., and *Entamoeba hartmanii* had low prevalence in both baboons and humans. Although this does not necessarily imply the actual exchange of the parasites, it indicates that human-baboon encounters might provide opportunities for disease exchange. Moreover, the presence of same parasite morphotype in both baboons and humans is an indication that beyond sharing of space and symbolism, baboons and humans in Nthongoni might be sharing other elements that constitute that space, including microbes. The possibility that humans and baboons might share parasites invites us to reimagine health and well-being as more than human concern.

This study established that people in Nthongoni and particularly school-going children regularly received anti-helminths. This might explain the low prevalence of helminths recorded in humans. The fact that anti-helminths are not active against protozoa may also explain why protozoa such as *Balantidium coli* had relatively high prevalence in human stool samples. The results may therefore infer success of the deworming campaign in so far as helminths in humans are concerned. However, considering the potential for baboons to serve as a reservoir for human

parasites (Mossoun et al., 2015; Mafuyai et al., 2013), this study provokes debate around the effectiveness of health interventions that target one species in an entangled multispecies landscape.

As demonstrated in this research, social and biological research approaches can be complementary to investigate multispecies interactions, and the health and wellbeing of the species engaged in the interactions. This points to the kind of anthropology that is possible when we use approaches such as multispecies ethnography, that allow us to break from a framework of analysis that is exclusively human (Kohn 2007) to attend to other species that are entangled with humans. Moreover, the approach allows a focus on historical, political and economic forces that leverage multispecies engagements, to the extent that they determine the viability of conservation and health initiatives in human-wildlife interfaces. As an interdisciplinary study, my research integrated social anthropology and ethnoprimatology to enhance our understandings of multispecies interactions. It used an anthropology of health approach, to enrich our understanding of the complexities of the health and wellbeing of a more-than-human environment. Combining multispecies ethnography and perspectives from ethnoprimatology enabled me to triangulate observed baboon behaviour and people's perceptions of baboons to come up with concerted and all rounded realities of human-baboon interactions.

Using ethnoprimatology and a multispecies approach, I convey that wildlife and people of Nthongoni have suffered from similar forms of oppression from colonial and postcolonial legacies of conservation. I convey that thinking about humans and baboons in their everyday encounters in Nthongoni: ideally separated yet held together by complex material-semiotic-

social practices, brings us to think about the ideas of nature and culture, and humanity and animality. I convey that animals are ‘good to think with’(Levi-strauss, 1962) when we want to relook at the contexts within which multispecies encounters occurs, and how the encounters affect the health and wellbeing of the species involved in the encounters. Finally, I convey that an integrated multispecies approach is good for breaking away from some of the challenges that are inherent in conducting an ethnography of humans and of animals.

Appendices

Appendix 1: Research authorisation from NACOSTI

NATIONAL COMMISSION FORSCIENCE,
TECHNOLOGY ANDINNOVATION

Telephone: +254-20-2213471,
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Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No **NACOSTI/P/17/65489/17861**

Date: **6th September, 2017**

Danson Kareri Mwangi
Durham University
United Kingdom.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"One health at the borderlands: human-baboon interactions in Nthongoni, Eastern Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Makueni County** for the period ending **5th September, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Makueni County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Makueni County.

The County Director of Education
Makueni County.

Appendix 2: Research clearance permit

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.
8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 15569

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MR. DANSON KARERI MWANGI
of DURHAM UNIVERSITY, 0-0 Durham,has been permitted to conduct research in *Makueni County*

on the topic: *ONE HEALTH AT THE BORDERLANDS: HUMAN-BABOON INTERACTIONS IN NTHONGONI, EASTERN KENYA.*

for the period ending:
5th September,2018

Permit No : NACOSTI/P/17/65489/17861
Date Of Issue : 6th September,2017
Fee Recieved :Ksh 2000

.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

Appendix 3: Research authorisation from the Kenya Wildlife Service

KENYA WILDLIFE SERVICE

ISO 9001:2008 Certified

KENYA WILDLIFE SERVICE RECEIVED 06 JUL 2018 Box 71 Mtito Andei Tsavo West National Park

Ref: KWS/4001

15th May, 2018

Danson Mwangi
Conservation Biology
Institute of Primate Research
P.O.Box 24481-00502
NAIROBI

Dear Sir,

REQUEST FOR PERMISSION TO INTERVIEW SENIOR STAFF AT TSAVO WEST AND CHYULU HILLS NATONAL PARKS

We acknowledge receipt of your letter dated 14th May, 2018 on the above subject matter.

Your request for permission to interview Senior Staff at Tsavo West and Chyulu Hills National Parks as a partial fulfillment for your phD studies on Anthropology of Health while conducting a research on Human-Baboon interactions and the potential for disease exchange in Mtito Andei area has bee a proved. We note that the interview will touch on Parks' managements and issues of Human Wildlife interactions and conflict.

By a copy of this letter the officers in charge of the mentioned Parks are requested to prepare for the interview end of May or June, 2018.

Yours sincerely,

Edin Kalla,'ndc'(K)
FOR: DIRECTOR GENERAL

Copy:-. Senior Warden – Tsavo West National Park
Warden – Chyulu Hills National Park

P.O Box 40241-00100, Nairobi, Kenya. Tel: +254-20-2609233, +254-20-2609234
Wireless: +254-020-2379407-15. Mobile: +254-735 663 421, +254-726 610 508/9. Fax: +254-020-2661923
Email: kws@kws.go.ke Website:www.kws.go.ke

Appendix 4: Research authorisation from State Department of Education

REPUBLIC OF KENYA

Tel: 044-33318
FAX: @gmail.com
Email:cdemakueni@gmail.com
When replying please quote

County Director of Education Office,
P.O. Box 41,
MAKUENI.

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EDUCATION

MKN/C/ED/5/33 VOL 11/70 **17th October 2017**

Danson Kareri Mwangi
Durham University
United Kingdom

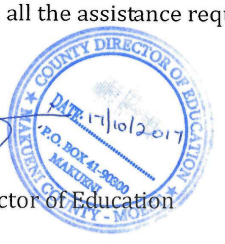
TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION –DANSON KARERI MWANGI

This is to confirm to you that Danson Kareri Mwangi of Durham University has been authorized to carry out research as per letter dated **6th September,2017**,Ref **No. NACOSTI/P/17/65489/17861** on**"One health at the borderlands: human-baboon interactions in Nthongoni,Eastern Kenya makueni County"**for the period ending **5th September,2018**.

You are however expected to ensure that you conduct the exercise professionally.

Kindly give him all the assistance required.



A.M Njoka
for County Director of Education
Makueni.

ISO 9001:2008 CERTIFIED

Appendix 5: Research authorisation from County Government, Makueni County

THE PRESIDENCY
MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telegram:
Telephone:
Fax:
Email: *makuenicc@yahoo.com*

COUNTY COMMISSIONER
MAKUENI COUNTY
P.O. Box 1-90300
MAKUENI

Ref: MKN/CC/ADM.6/1 VOL.II/129

18TH OCTOBER, 2017

Danson Kareri Mwangi
Durham University
UNITED KINGDOM

RE: RESEARCH AUTHORIZATION

Reference is made to Director General/Chief Executive Officer National Commission for Science Technology and Innovation letter **Ref: NACOSTI/P/17/65489/17861** dated **6th September 2017.**

You are hereby authorized to undertake research on ***"One health at the borderlands:human-baboon interactions in Nthongoni, Eastern Kenya,"*** for a period ending **5th September 2018.**

By a copy of this all the Deputy County Commissioners Makueni County are requested to accord you the necessary assistance for the success of your research work.

FLORENCE OBUNGA
FOR: COUNTY COMMISSIONER
MAKUENI COUNTY

CC
County Director of Education
MAKUENI COUNTY

All Deputy County Commissioners
MAKUENI COUNTY

Appendix 6: Research authorisation from County Department of Health, Makueni County.

REPUBLIC OF KENYA

GOVERNMENT OF MAKUENI COUNTY
DEPARTMENT OF HEALTH
OFFICE OF THE COUNTY DIRECTOR OF HEALTH
P.O. BOX 89-90300 MAKUENI
Website: makueni.go.ke Email: countyhealthmkn@gmail.com

GOMC/DOH/CDH/GEN.III/(142) 9th February 2018

Danson Kareri Mwangi
Durham University
United Kingdom

RE: AUTHORIZATION TO CARRY OUT RESEARCH

Following your application for authority to carry out research on "One health at the borderlands: human-baboon interactions in Nthongoni, Eastern Kenya", I am pleased to inform you that you have been authorized to undertake research in Makueni County – Department of Health for the period ending 5th September 2018.

By a copy of this letter, all Subcounty Medical Officers of Health and Medical Superintendents are asked to give the necessary assistance.

COUNTY DIRECTOR OF HEALTH
MAKUENI COUNTY
09 FEB 2018
P. O. Box 89 - 90300, MAKUENI
Email: countyhealthmkn@gmail.com

Dr. Kiio S. Ndolo
Director of Medical Services
Makueni County

cc
ECM Health Services - Makueni
Chief Officer Health Services – Makueni
All Subcounty MOHs
All Medical Superintendents

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