Making Sense of the Forest: A Study in Mexico

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Introduction

When walking down a track into the forest a few local cattle-ranchers rode pass my guide, Lupe, and myself. They were herding a lone cow up to natural pasture, parcels of land used to feed cattle in the forest. One of them had a shotgun slung over his shoulder. As the ranchers knew my companion, one of them asked him if he wanted to borrow his weapon. He repeated the question, and said that as we were heading into the forest on foot Lupe could shoot any deer that we came across. Before Lupe had the chance to decline, or accept, the rancher pointed at me and jokingly said, 'Or is he police?'. We all laughed, and they continued ahead.

Half an hour later the same rancher, having left his two workmates to continue into the forest, returned. He stopped to talk to us, and he began talking about the hunting of deer.

> 'What we need here is regulation. I spent time working on the other side [U.S.A] and I hunted many deer, but there was regulation. In this forest too many people kill female deer, it's a problem, you see? The males all gather around the female, so when you kill her, all the males disappear. There should be more regulation, or the people are going to complete the deer population. Many people kill the females [deer] when they're pregnant. When you do that, you don't kill just one but you kill three! The female and the two cubs! When I go out hunting in this forest, I hardly see any deer, not even a track!'

Lupe and I bid him farewell and we continued walking up the forest track. We began to laboriously climb into the mountains. We had only just begun our long ascent into *La Sierra de Vallejo,* and we had several hours of walking before we would arrive at the ranch of Lupe's friend. It struck me how contradictory my two encounters, separated by no more than half and hour, with the rancher had been. While the rancher hunts deer, he expressed a desire for greater control. While on the one hand he offered his shotgun to Lupe to kill deer, on the other he expressed a frustration at the unregulated levels of hunting. He referred back to his time in the United States, as an anchor of a good model of legal, regulated hunting,

comparing it to his local forest where hunting is both illegal and consequently unregulated.

I came to this area, as I am interested in Community-Based Conservation, an alternative conservation strategy that places local communities as an important factor. Community-based conservation has come to the forefront in recent years because it takes into account that human-use areas have multiple-users, and rather than store biodiversity in 'beautiful outdoor museums', humans must find ways to co-exist peacefully with wildlife. The foundation of community-based conservation is decentralisation and putting the control into the hands of local communities.

Mexico is, on paper, the perfect place to enact community-based conservation as 80% of Mexico's forests are in the control of local communities, or *ejidos* (Klooster 2003: 95). This was the case in my study area, and the local *ejido* is part of the environmental services, *los servicios ambientales*, and also is in collaboration with civil associations for the conservation of the mountainous forest. *La Sierra de Vallejo* is a biosphere reserve that is managed by the rural communities that own the land. Within community-based conservation local control is meant to lead to a better management of natural resources.

An integral part of community-based conservation is incorporating local community values, beliefs and local ecological knowledge. The idea behind this is that by including local values conservation strategies will become incorporated by the rural communities. However local communities are not homogenous units that express a coherent understanding of their local environment, and individual actors, as shown above, may have a dynamic understanding of forests and biodiversity that appear to be contradictory.

As this thesis will show, how people understand situations within forests are not logical, and people adapt how they make sense of the forest in a variety of ways depending on the situation and context.

The research question to this thesis is:

How do people living in Sierra de Vallejo, Mexico, make sense of the forest?

This thesis will add to the debate on how people understand environmental situations in the context of forest management and conservation. Such a study is important to add to the discussion of environmental anthropology in both methodology and theory. The role of environmental anthropology is still evolving, and each new study gives greater understanding and new opportunities for the discipline. Owing to large-scale human dependence on the world's natural resources, the fact that rural communities are coming increasingly in contact with global markets bringing landscapes of biodiversity into commercial-scale use, and the adaptability of animals to adapt to human-modified areas, it is essential that studies shed light on how conservation can deal with the human element in future strategies. Conservationists must fully understand human interactions and relations with natural landscapes before implementing conservation strategies that may not benefit local communities, causing resentment towards conservation organisations and the biodiversity conservationists seek to protect.

Layout

The first chapter will anchor the thesis into the wider context of the role of the social sciences in conservation with a literature review. The chapter will present the discussions of environmental ethics, briefly touching on major works and current debates. The relevance of environmental anthropology will be demonstrated, followed by the academic discourse on two prevalent forms of conservation, Protected Area and Community-based Conservation.

Following on from the literature review, the second chapter will present the theoretical foundation for the thesis. Beginning with a brief examination of studies measuring environmental concern, the chapter will turn to the theories on the expression of environmental values. The aim is to translate what is often used in psychology, environmental values, to anthropological theoretical methodologies, frame analysis, and performance. Frame Analysis, first introduced by Goffman, is a tool to analyse how people make sense of different situations, and how they organise involvement. Goffman's ideas will be presented alongside some more contemporary applications of Frame Analysis, especially focused on the application

to environmental contexts. Goffman's idea of the performative role of individuals in situations depending on audience and setting will also be demonstrated to be inexorably linked to Frame Analysis. Then the theory chapter will move onto the construction and operationalization of a conceptual framework.

The third chapter will present greater detail to the ethnographic case study, and the methodological techniques chosen. When studying how people make sense of situations in the forest it is important to become an embodied part of the situation, and as an actor who shares the experience of others, rather than an entity that affects how other people perceive and make sense of a situation. The justification for the methodology will be expressed, followed by a discussion on limitations faced, how they were overcome, and the ethical issues that were encountered in the study.

The thesis will then turn to the empirical data collected. This data will be presented using 'Thick Description', to anchor the reader in the context of the behaviour by providing a detailed account along with commentary, while interpreting such behaviour and commentary. The first of the ethnographic chapters describes a conversation I had with a ranch-worker about the biodiversity of the forest. The chapter will analyse and interpret the empirical data, describing how people make sense of the forest and express environmental concern in seemingly contradictory ways.

The following ethnographic chapter is similar in this respect, but rather than a conversation, a walk through the forest with three significant events is described and then interpreted. This chapter will place myself, the researcher, into the empirical data. This will highlight how different backgrounds and understandings are crucial in how people make sense of the forest.

The final ethnographic chapter will show how people make sense of forest can have real consequences on conservation efforts toward jaguars. To fully explain this it will first be necessary to present how local ranchers understand both cattle and jaguars. The chapter demonstrates the importance of understanding how people make sense of the forest and its biodiversity in the conservation initiatives of compensation schemes. The analysis will examine how a scheme to protect jaguars by recompensing ranchers for lost livestock actually promotes a negative understanding of jaguars.

The thesis will conclude with a discussion about how the empirical data collected, and the interpretations presented can develop future conservation strategies. As ethnographic environmental anthropology is an evolving discipline, a small presentation of lessons learnt during the study period will be presented to aid any anthropologists wanting to research in a similar setting.

Chapter One: The Literature Review

The following section is a literature review that will begin with a discussion about environmental ethics. This is prevalent in situating where *man* fits into the environment. The literature review will go on to the present the main discussions on two contrasting forms of conservation, Protected Area and Community-Based Conservation. It is necessary to provide an understanding of conservation in order to give context to the empirical data that will be presented later in the thesis.

Environmental Ethics

Environmental Ethics is a part of philosophy that is concerned with 'providing ethical justification and moral motivation' for environmental protection, and for whom the environment should be protected (Kopnina 2015: 122). Environmental ethics has long been a part of philosophical discussion, and was greatly promoted in the last century by such authors as Aldo Leopold and Rachel Carson. Leopold promoted holistic environmental ethics, stating that 'a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it.' (Leopold 1949: 204) Leopold hoped that if humans understood themselves holistically as part of nature, the land would be loved and respected (Leopold 1949: viii). Carson (1962) described the wide, indiscriminate and degrading effect of pesticides on the natural world. Her book Silent Spring was fundamental in the rise of the environmental movement in the 1960s, leading to greater discussions on environmental ethics. The study of environmental ethics must address how humans live in their environment, the equitable distribution of resources, nonhumans and their rights, and protecting biodiversity and ecosystems (Kopnina 2015; Rolston III 2017).

One side of environmental ethics examines the human right to nature. This view promotes anthropocentrism, arguing that natural resources should be protected for the sake of future human generations (Kopnina 2015: 7). An anthropocentric approach views the natural world as having instrumental value to humans, and such an approach is the foundation for many global environmental policies (Palmer 2002: 18). Anthropocentrism understands natural components

such as the atmosphere and oceans as global commons (Kopnina 2015: 123), and that all humans have the right to clean air, soil and water (Rolston III 2017: 277). Crist (2012) criticises anthropocentrism for prioritizing human interests. She interprets this as a worldview driven by the idea of human supremacy that views nature as a resource and 'a domain to be used for our ends' (Crist 2012: 143). Kidner (2014: 466) further denounces anthropocentrism by arguing that it is not anthropocentric at all, but rather a symptom of the human society being 'industrocentric'. He demonstrates that humans have lived in relative harmony with the natural world for centuries, and it is not humans necessarily that have had an ecological impact but rather a promotion of industrialism (Kidner 2017: 123). Kidner (2014: 469) describes money as 'the great solvent', which has reduced the complexity of the world into a metric system. Within this solution the understanding of the world is 'uprooted from the natural order and relocated in the industrial system', making almost everything become a commodity, including human life. Crist (2012: 143) likewise describes how it is so ingrained and normal to see every component of the natural order as a resource, such as soil, water, forests , fisheries and livestock.

Some scholars argue (Crist 2012; Cafaro 2014; Katz 1999; Soule 2013; Naess 1973, 1986; O'Neill 1992) that the environment should be protected for the intrinsic sake of all species, nonhumans and humans alike due to their intrinsic value. Soule (2013: 896) is extremely opposed to the idea of nature as instrumental and argues that due to its intrinsic worth we have an obligation to minimize the 'gratuitous degradation' of nature. Katz (1999) calls upon increased ecocentrism as morally necessary to protect nonhumans and ecosystems outside of utilitarian interests.

Ecocentrism understands all life on earth as having an intrinsic value, and that the extinction of species is a moral wrong (Cafaro 2014). Such a view is well exemplified by the Deep Ecology Movement (Naess 1973) that advocates that; nonhumans should have a value independent to their use to humans; there has been excessive interference by humans in the nonhuman world; policies should be changed accordingly; and that a smaller human population is required. Such a viewpoint argues that the land should not be a resource for humans, and that there must be a 'critical evaluation of human consumption' (Naess 1986: 15).

The study of environmental ethics is important as a basis of understanding how humans behave in the environment, and how the environment should be treated. However it must be remembered that most landscapes and environments have not been left untouched but have long been part of the dynamism that influences humans, cultures, beliefs, worldviews, understandings and values.

Humans, Nature and Landscapes

Most landscapes are not wild nature, but nature linked with people who inhabit these landscapes. Humans transform the natural world around them into desirable forms with often undesired or unintentional degrading affects (Rolston III 2017: 277). Headland (1997: 608) criticises the romantic view that landscapes are 'wild' or 'pristine' and instead states that most landscapes show long-term human modification. Denevan (1992) demonstrates that the majority of the forests in the Americas are anthropogenic, and vast forests such as the Amazon are full of charcoal, pottery shards and other evidence of human modification.

Due to such modification, natural systems and landscapes are not neutral but are 'inextricably entwined' with cultural systems (Rolston III 2017: 277). Anderson (2017: 35) describes that 'how people see the landscape is determined by both social and ecological factors'. For example, an individual from a small-scale, hunter-gatherer group will understand a forest in a very different way to the owner of a large-scale international logging company.

Kopnina (2015: 5) argues that we cannot ignore the human element in the current environmental crisis. Due to the increasing human populations, especially in developing countries, human-nature conflicts have increased rapidly (Kopnina 2015: 84). Sponsel (2013: 138) explains that the human impact on the environment is inevitable, especially given that biodiversity is the 'primary or raw natural resource that all societies rely on for their substance and economy'. It has been suggested that the extinction rate of animals is one thousand times greater due to human presence on the landscape (Kopnina 2015: 1), and the documented extinctions over the past four hundred years include 484 animal species, and 654 plant species (Sponsel 2013: 138).

Human activity in forests that leads to degrading impacts on biodiversity are not jaguar, deer or tree caused problems, but people problems. In this regard it is vital to have an anthropological understanding of how humans behave in environmental and natural situations. It is also necessary to understand how humans express ideas and understandings through behaviour when dealing with natural contexts. Owing to the fact that there is a great extent of ecological dependence and interaction, it is necessary to have an anthropology that emphasises the relation between cultural and ecological factors (Holmes III 2017: 277).

Environmental Anthropology

Environmental Anthropology is a specialisation stemming from Cultural Anthropology that studies past and present human-environment interactions (Kopnina 2017: 3). Kopnina (2017: 4) explains that Environmental Anthropologists are required to study the tensions between local livelihoods and conservation efforts, between wildlife and communities and traditional ways of living confronted with 'modernity'.

The current study of Environmental Anthropology came from the foundation of Ecological Anthropology in the 1960s. Ecological Anthropology views 'human communities functioning as a 'population' within a biophysical environment' (Brondizio 2017: 13), in this way culture is a function within the ecosystem. Rappaport (1971: 238) describes that an ecological population is 'an aggregate of organisms having in common a set of distinctive means by which they maintain a common set of material relations within the ecosystem in which they participate'. Rappaport (1971: 238) also argues that resources are exploited by groups in 'almost entirely' demarcated areas that other human groups are excluded from.

Kottack (1999: 25) critiques this understanding, arguing that environmental anthropology should be on a larger scale. Anthropologists must take into account that people and cultures aren't static. Instead there are merging of different peoples and ecosystems due to the fact that human populations living in

contrasting environmental situations are becoming more connected through the advancement of communication, travel, and technology (Kottack 1999: 26). Kottack suggests that environmental anthropology incorporates this with a shift from researching single communities and cultures,

> 'to recognising persuasive linkages and concomitant flows of people, technology, images, and information, and to acknowledge the impact of differential power and status in the postmodern world on local entities.'(Kottack 1999: 25).

Kottack's description of the complexity that environmental anthropologists face is well exemplified in Anna Tsing's (2005) book *Friction*. In this ethnography on global connections regarding Indonesian forestry and Mining, Tsing (2005) explores how connections and flow have created relationships between global capital, change in life for forager farmers, and the destruction of Indonesian's rainforests.

Kopnina (2017: 6) argues that environmental anthropologists can enhance the understanding of how humans occupy, interact with, damage and sustain the environment. She also advocates that environmental anthropology studies can serve as policy tools in order to combat the current environmental crises.

Environmental Anthropology and Biodiversity Conservation

One such crisis, as Kottack (1999) demonstrates, is that a pressing issue for environmental anthropologists is the issue of biodiversity conservation. This is a crucial issue for environmental anthropologists as tension arises as to whether animals or humans should be placed first. Environmental Anthropologists must deal with issues such as whether it is morally right to exclude people from their areas of natural subsistence in order to protect endangered species (Kottack 1999: 27). Scholars (Kottack 1999; Persha 2010) argue that international development agencies and governments cannot succeed in their goals to conserve biodiversity by trying to impose their goals without having an understanding of the local values

and perceptions of the people that will be affected. It is also important to gain an understanding of how biodiversity conservation will interact with and affect local livelihoods (Persha 2010: 2924).

The conservation of our world's biodiversity depends on interdisciplinary conservation methods that incorporate the social sciences (Setchell 2016). It is increasingly becoming apparent that future conservation strategies must incorporate the sharing of land-use with humans and nonhumans (Boron 2016; Persha 2010; Inskip 2016). Environmental Anthropology should be a crucial part of any conservation strategy. If conservation is related to human activities it is more affective to plan conservation strategies through the examination of the environmental perceptions and understandings of the people that live within regions that are subject to conservation efforts.

Conservation: Traditional Protected Areas

Protected Area conservation has been the dominant form of conservation strategies since the beginning of the twentieth century (Adams 2007: 149). In the last forty years there has been a tenfold increase in the number of protected areas in the world, currently amounting to over 18.8 million square kilometres (Southworth 2005: 87). In 1962 the World Conservation Union defined a protected area as an

> 'area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means' (Hayes 2006: 2064).

The establishment of protected areas is in response to the human mismanagement of natural resources and threat to biodiversity (Ndenecho 2011: 63). In sub-Saharan Africa such conservation strategies have sought to solve problems such as excess poaching, land encroachment and illegal trade by increasing protected areas and improving standards by which species are managed (Ndenecho 2011: 54).

Protected areas are normally located in hotspots of biodiversity and are delineated with large enough boundaries as to protect endangered species (Verburg et al 2006: 154), and the main objective of such areas is the regeneration and protection of ecosystems (Ndenecho 2011: 66).

International Conservation and Governmental Organisations that establish protected areas seek to control when and where people may use the land (Adams 2007: 152). The U.S national park model has been very influential as a strategy in protected area, but as Adams (2007: 153) describes this foundation comes from 'a conception of nature as something pristine that could be distinguished and physically separated from human-transformed lands'. Human communities that remain within protected areas are subject to conservation policies. Nagendra et al (2006: 97) describe that in India, where 5% of the land surface is under protection, many settlements that are within the park boundaries are subject to strict rules and regulations on the harvesting of forest resources, which are an important part of their traditional livelihood. Due to the social ramification of the establishment of protected areas critiques have referred to this type of conservation as 'Fortress Conservation' (Brockington 2002).

Protected Area as 'Fortress Conservation'

One of the main critiques of protected areas is that top-down policy making and conservation strategies are often 'inefficient and incompatible with local level norms, values and beliefs' (Kopnina 2015: 90). The interventions and regulations placed on rural communities by NGOs and governments can be disruptive, and local processes become undermined by the 'insensitive impositions of rules or institutions' (Kothari 2013: 12). Conflicts between communities and parks are more obvious in tropical regions where local people have a greater dependence on high biodiversity zones for their livelihoods (Southworth 2006: 88).

The establishment of protected areas is mostly led by international organisations and governments, which impose rules excluding local people from using the land as a place of activity. This generates tension with the local communities and can often lead to their socioeconomic hardship (Reyes-Garcia

2013: 857). Local communities may find international policies banning their normal activities or campaigning by NGOs affecting their local economies (Milton 1993: 5). Often this exclusion from the land depends on the identity of those wanting access, with tourists and researchers welcome within protected areas, whereas locals are excluded (Adams 2007: 159). It is rural people that are most affected by the establishment of protected areas through land loss, restriction to resources, and the damage of crops, property and threat to human life from the biodiversity that conservationists seek to protect (Hill 2002: 1188).

Protected area conservation has a murky history. In the establishment of Yellowstone National Park three hundred Shoshone people were killed in one day in a forced eviction to preserve the area of natural beauty as 'pristine wilderness' (Kaviera 2012). It is estimated (Adams 2007: 157) that there have been between 14-24 million environmental refugees in Africa alone, with 40,000 people displaced from nine protected areas in central Africa. Military style policing of protected areas is commonplace, with military action legitimised 'by the ontological separation between people and nature', and the perception that nature is both valuable and threatened (Adams 2007: 157).

Resistance to adopting new perspectives on the environment may in fact represent 'resistance to the hegemony of the dominant group more than resistance to conservation itself' (Winter 1997: 43). Holmes (2007) explores this with his paper *Protection, Politics and Protest: Understanding Resistance to Conservation*. He describes how due to an exclusion of grazing in Amboseli National Park Massai pastoralists killed wildlife and collaborated with poachers. There have been several incidents in parks such as Calakmul (Haeen 2005), and the Ngorongoro crater in Tanzania (Neumann 2000), in which fire, due to its prohibition by the dominant group, has been purposefully used by local communities. When conservationists pit people against nature in the exclusion of local communities from the land and the imposition of rules, nature will be seen as the enemy. This highlights the need for cooperation with communities when planning strategies, and to reach goals that benefit both the locals and the conservationists.

Hayes (2006: 2065) found in her study of protected areas that there was often continuing environmental degradation and an increase in human-nature conflict. Hayes (2006: 2073) concluded her study by advocating that protected

areas should not be the only way to conserve forests, and that local residents must be involved in conservation processes. While protected areas may be successful in some cases for enhancing forest cover, the social ramifications from prohibiting local communities from access to forest resources raises questions on social justice and equity (Southworth 2006: 90).

By creating 'islands' of protected areas, such conservation strategies promote the western conception of man and nature (Kopnina 2015; Berkes 2004; Adams 2007). Protected Area conservation negates the idea that humans have been a part of natural landscapes for centuries. Instead conservation strategies should adopt a mosaic approach, in which the entire landscape, including human-use areas, is involved in the conservation strategy (Kothari 2013: 12). Scholars (Steinburg 2016; Kolipaka 2015 ; Kolipaka 2017; Boron et al 2016) argue that owing to the fact that many large carnivores easily move out of protected areas into human-use areas, protected area conservation is inadequate for long-term conservation strategies.

As there is a great amount of criticism to the traditional protected area, or 'fortress' conservation, other alternate forms seek to include local populations to make them part of the conservation process. One such form, Community-based Conservation, aims to have local participation in every level of the conservation process (Kothari 2013; Horwich 2007). The cooperation of local communities in conservation efforts can only be favourable (Kopnina 2015: 90), and the longevity of conservation strategies depends on positive cooperation (Berkes 2004: 626).

Community-based Conservation

Owing to the people problem of protected areas community-based conservation is a strategy that aims to work with rural populations. This strategy views local people as potential conservationists, perceiving them as part of the solution rather than the problem (Horwich 2007: 377). Horwich describes that a,

> 'community conservation project is one in which community members or a community-based organisation are involved in efforts

> to protect or conserve the lands and environment they live on or nearby through the highest levels of participation, with the ultimate goal being management of the project by a local community-based organisation'. (Horwich 2007: 376)

With the recognition that only through the support of local communities will long-term conservation efforts be successful (Hill 2002; Kopnina 2015; Berkes 2004), community-based conservation seeks to involve local communities as much as possible. Adams and Hulme (2001: 193) argue that conservation should be participatory, treating local communities as partners in the creation of conservation strategies that also benefit the local economy and promote sustainable livelihoods. This is a shift from an expert-based strategy to that of participatory conservation and management (Berkes 2004: 622). Community-based conservation puts man back in the environment and influences conservation strategies to look at the landscape in a holistic way (Kothari 2013: 12) rather than islands of protected areas. Such strategies have found to be affective in tropical regions (Porter-Bolland 2012), especially in the creation of wildlife corridors (Shahabuddin 2010). Conservation International states on their website that it is their priority to work with indigenous and local communities, as they are on the front line of conservation (Conservation International 2017).

The crucial principles of community-based conservation are the decentralisation of natural resources, the incorporation of local knowledge, understanding local practices and beliefs, and the potential of providing rural communities with sustainable livelihoods.

Decentralisation

The decentralisation of natural resources is a founding pillar of community-based conservation. It stems from the idea that local communities are better placed to regulate resources (Kothari 2013: 12). Rather than top-down implementation of insensitive rules, indigenous peoples and local communities should have a voice in the decision making process (Kothari 2003: 11). Management decisions regarding

conservation should come from a local level (Kothari 2003: 12), because it makes sense for solutions to start at 'the lowest organisational level possible' (Berkes 2004: 626).

Berkes (2004: 626) argues that the goal behind conservation should be 'as much local solution as possible and only so much government regulation as necessary'. He explains that by involving local communities and giving them a stake, rural people will have more incentive to react positively toward conservation efforts. Horwich (2007: 380) demonstrates that by establishing a community-based institution with control over their land, communities will be capable of working collaboratively on an equal basis with international organisations and governments. This will both protect the interests of the local communities and their natural resources.

However it is important not to assume that even if communities are given control will they manage and maintain their surrounding landscape in a sustainable manner. Rural communities are not homogenous units, but have multiple interests, motivations and beliefs (Kopnina 2015; Young 2009). When given control of a forest some members of the community might want to protect the ecosystem and biodiversity, while other members may want to harvest the trees and sell off the land to the highest bidder. It is essential that such nuances and diversity of desires are studied and understood before decentralizing control of ecosystems and putting them in the hands of rural communities.

Traditional Knowledge

A major principle of community-based conservation is that local communities should be treated on an equal basis because of the traditional ecological knowledge they possess. They should be thought of as experts in their landscapes due to generations worth of interactions with their local environments (Kothari 2013: 12). Scholars (Kothari 2013; Wilken 1987; Gadgil 1993; Berkes 2004) suggest that local communities possess a huge wealth of ecological knowledge and manage natural resources in a way that maintains longevity. By working cooperatively and

with respect towards local communities traditional knowledge can build a 'more complete information base' than from scientific studies alone (Berkes 2004: 623), leading to more affective implementations of ecological services and conservation (Gadgil 1993: 156).

In the interaction with their environments many local communities sustainably manage the landscapes through local knowledge and use. Charnely et al (2007: 15-16) demonstrate that indigenous peoples of the Pacific North West of America use the flora of their local forests diversely, for medicine, materials, food and other products. As they have diverse requirements from the forest they are more likely to maintain biodiversity of the forest than forest management strategies that harvest timber for commercial production.

Kelbessa (2013) shows how peasant farmers in Ethiopia are experts in the natural environment, possessing an extensive understanding of the biodiversity that surrounds their plots, and the varieties of soil they farm with. Kelbessa (2013: 144) argues that they have preserved fauna, knowing that such loss of biodiversity would have an impact on their livelihood.

Local ecological knowledge can also be used to aid future conservation efforts. Steinburg (2016: 17) argues that traditional ecological knowledge is a vital part of jaguar conservation in Belize as local knowledge is necessary to identify future jaguar habitat corridors that would not be obvious to outside researchers. Charnely et al (2007: 14) argue that it is imperative that in order to combine invaluable local ecological knowledge into conservation strategies, local communities must be involved.

It is important not to assume that local communities have a deep ecological understanding of their surrounding natural environments that promotes sustainable management of natural resources. The idea that rural people are "ecological noble savages'" that live in harmony with nature is false (Anderson 2016; Sponsel 2013). Rural people are not timeless. They do not all live in a holistic and harmonious way with their surrounding environment, shut off from the outside world. Rural communities are often swept up in global markets and this can be when great damage is done to natural resources (Rolston III 2016: 285).

Understanding Local Practices and Beliefs

In order to involve rural communities in conservation efforts, it is important to have an understanding of their local practices and beliefs. Through an appreciation and respect towards cultural contexts, conservation can become an effective process (Winter 1997: 42).

Local practices can have benefits on the conservation of biodiversity. Hens (2006) demonstrates that the practice of some rural communities in Ghana that promotes the hunting of male and older animals rather than fertile and pregnant females, has direct and positive benefits on sustaining animal populations. Kolipaka et al (2015) demonstrate in their study in the buffer zone of the Panna Tiger Reserve, India, that local people's practices and beliefs can have a great influence on conservation. Rural pastoralists in the buffer zone dispose of dead cattle on the fringes of the forest (Kolipaka 2015: 197) and abandon cattle in the forest when they have an excess, or if the cattle become too old (Kolipaka 2015: 198). This provides tigers with 'a readily available and continuous supply of alternative food source' (Kolipaka 2015: 202). Local belief in forest spirits reduces activity in the forest at night, actively reducing the risk of encountering tigers, which are most active at night (Kolipaka 2015: 200). Kolipaka et al (2015: 206) demonstrate that the human dimension is a greatly linked to the conservation of tigers in multiple use and human dominated landscapes. They argue that such perspectives, beliefs and practices should be assessed as they are significant for conservation (Kolipaka 2015: 206).

Steinburg's (2016) study of people in Belize living outside of protected areas and outside of the sphere of ecotourism, highlights that an understanding of the perceptions of local peoples towards the natural environment around them is vital. His study shows how human conflict with jaguars arises over competition with prey and predation on dogs. Steinburg explains that while no one recalls a jaguar attack on a human, the perception persists (Steinburg 2016: 16). As it has been shown that jaguars can inhabit human modified and disturbed landscapes (Boron et al 2016; Dobbins 2015; Foster 2008), it is imperative to have an understanding of perceptions towards jaguars and why these perceptions exist, in order to mitigate human-jaguar conflict.

If there are to be affective long-term conservation strategies that involve local communities, it is first necessary to build up an understanding of local perceptions of nature. What may be perceived as a threat to rural people may be exactly what conservationists seek to protect. For example Haenn (1999: 485) described a situation in which a foreign researcher proposed, at a local gathering, the radio-collaring of jaguars in the Calakmul Biosphere for the promotion of ecotourism. The locals thought it was a great idea because they would be able to finally track down the jaguars, perceived as dangerous, that were lingering near waterholes and kill them. This clearly shows how it may be the case that local and conservationists perceive the same initiative, in this case tracking jaguars, with completely different understandings. Without a thorough understanding of the local level conservationists could anger local communities, and make them resent the protection of biodiversity.

Providing Sustainable Livelihood

Community-based conservation aims to show the benefits of protecting natural resources by providing local communities a sustainable livelihood. One such method is through the establishment of ecotourism. According to Mendoza-Ramos (2014: 462), ecotourism has a low impact on the environment and it is a method that encourages involvement of the local communities. Scholars (Wyman 2010; Menodoza Ramos 2014) argue that ecotourism encourages environmental responsibility by giving communities an incentive to protect ecosystems.

Steinburg (2016: 18) suggests that by making jaguars a local resource, ecotourism could be one of the only ways to conserve the big cats. He argues that ecotourism would change the perceptions of the jaguar to reduce killing. He suggests tourists could even just search the landscape for the cats, and it would be a 'powerful ecotourism marketing tool'.

Biggs et al (2011) demonstrates that in South Africa, Community-based Avitourism, bird watching, was has had a very positive affect to the income and empowerment of local communities, as well as having conservation benefits. Due to the popularity of bird watching among tourists, avitourism has created cost-

effective jobs for local people as guides, and encouraging locals to play active role in increasing awareness of conservation.

Other incentives given to rural communities to sustainably manage natural landscapes are Payments for Ecosystem Services, in which communal landowners are paid to maintain areas of land that provide hydrological services or biodiversity management (Reyes-Garcia 2013: 858). McAfee argues Environmental Payments are a form of neoliberal environmentalism that separates nature and society only to reconnect them by reconstructing nature so it becomes part of the economy (McAfee 2010: 581).

In this way promoting sustainable development through community-based conservation returns to the dichotomy of man-in-the-environment promoted by protected area conservation. Trying to provide sustainable livelihoods through conservation could be damaging to ecosystems as rural communities may try to sustainably exploit natural resources through ecotourism, and focus too much on making economic benefits rather than conserving ecosystems and biodiversity. Moreover it is one thing for communities to receive payments for ecosystem services, and quite another for them to abide by the regulation. In my own research in Mexico, I observed how although communities received environmental payments not to treat the forests as natural pasture, in order to conserve the forest and the biodiversity, they still used the forest to corral their cattle.

Conservation is not 'One-Size fits all'

Both Protected Area and Community-based conservation can be affective, but conservation strategies should not be 'one-size fits all'. Protected area conservation should not exclude but involve local groups of small-scale indigenous forest foragers with deep ecological knowledge. The importance, but not assumption, of traditional ecological knowledge is shown to have huge benefits on conservation, and as a necessity to include local communities in conservation strategies. Small impact, groups, with extensive knowledge, managing natural resources in sustainable ways should be respected and included, not subjected to

the western dualism of ‘man’ and ‘nature’ through exclusion to their traditional landscape.

Equally community-based conservation efforts must have complex strategies to include groups that perceive the large-scale commercial harvest of wood, and mass-killing of biodiversity, into conservation strategies. It would be complex to incorporated local practices and understandings of commercial logging and illegal hunting into long-term conservation goals.

Expanding human populations and continued dependence on biodiversity makes it is essential to have an understanding of the perceptions, beliefs and values of local communities before establishing conservation strategies. This is reinforced by the fact that animals are able to adapt to human-use and modified areas. This is where environmental anthropologists must step in. To enhance our understanding of local communities in their local environments, ethnographic studies, and cooperative work are necessary to develop long-term conservation strategies.

Chapter Two: The Theoretical Framework

How people make sense of the forest is manifested in environmental behaviour. Environmental behaviour is behaviour that 'changes the availability of material or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere itself' (Stern 2000: 408). In order to study how people make sense of the forest in La Sierra de Vallejo, it is necessary to present current studies from sociological and psychological debates on the factors that influence environmental behaviour. By creating a conceptual framework from current theories, it will be possible to operationalize the concepts to provide a theoretical methodology to study how people make sense of the forest.

The New Ecological Paradigm

The New Ecological Paradigm, or NEP, developed by Dunlop and Van Liere (1978), is a scale used to measure environmental concern. It is used in environmental studies where behavioural differences are believed to be explained by underlying worldviews. Through the use of fifteen statements the NEP is designed to measure environmental concern (Dunlop 2008: 10). If the respondent endorses the NEP then the individuals have a more ecocentric understanding. On the other hand, if the informant doesn't agree with the statements then the respondent reflects the Dominant Social Paradigm, DSP, which places humans above nonhumans (Hunter 2004: 518).

The New Ecological Paradigm is the most widely used socio-psychological scale of its kind due to it being the 'most reliable multiple item scale' that measures 'people's beliefs towards the natural environment' (Lundmark 2007: 330). The NEP survey has been criticised for only partly reflecting the current debates on environmental ethics. It also fails to adequately cover ecocentrism with too much of a focus on an anthropocentric worldview (Lundmark 2007: 342-343). In addition, due to the wording of the survey it is unsuitable to be used outside of the Western Sphere (Dunlop 2008: 12).

Dietz and Stern's (2005) Value-Belief-Norm theory demonstrate that values are cognitively more important than both worldviews and environmental concern in causing behaviour. Dietz and Stern (2005: 338) describe that values influence decisions and these decisions are 'consequential in shaping individual, and ultimately group, behaviour with regard to the environment'. They show that values influence worldviews, which influence beliefs regarding the environment, which influences perception, which then results in an influence on action (Dietz 2005: 356). This suggests that the values an individual possesses are a better predictor of behaviour than either worldviews or concerns.

Environmental Values

Schwartz's (1992; 1994) research on values is one of the most widely recognised and used value typology in psychology (Steg 2012: 3). Schwartz (1992; 1994) describes values as a set of guiding principles in the life of individuals or groups. He describes values as having a functioning role that judge and justify human action. They are acquired through 'socialisation to dominant group values' and through the 'learning experience of individuals' (Schwartz 1994: 21). Steg and De Groot (2015: 11) describe values as a set of general beliefs that reflect 'stable dispositions that structure and guide specific beliefs, norm and attitudes'.

Schwartz (1994: 21) demonstrates that a set of values that are held by an individual or society are in response to three universal requirements. These needs are related to the needs of the individual, the goals that a group deem desirable and the requirements that allow the function and survival of groups (Schwartz 1994: 21). Scholars (Gratani et al 2016; Schelhas 2009) describe environmental values as a deeply rooted set of principles that affect individual and collective decisions about the environment. Schwartz (1994) identifies 56 different values from which Steg and De Groot (2008) have adapted three values that are relevant to environmental values. These are:

1. Egoistic values

2. Altruistic values
3. Biospheric values

Egoistic values reflect a concern for the individual self. Altruistic values are focus on the welfare of others. Biospheric values are concerned with the environment and nature (Steg 2008: 333). An individual with such values would promote a greater importance for the protection of ecosystems and nature for their intrinsic worth (Steg 2015: 6). Steg and De Groot (2008: 347) found that individuals that exhibited altruistic values were more likely to donate money to humanitarian charities, whereas those that possessed more biospheric values would donate the money to environmental organisations.

Xu and Bengston (1997) identified four values that are common in how people value forests:

1. Economic/ Utilitarian
2. Life Support
3. Aesthetic
4. Moral/ Spiritual

The first two values are related valuing forest ecosystems as instrumentally. Valuing forests instrumentally promotes the view that a forest is something that has a utility for humans. In this way trees are seen as timber, a useful material that increase human well-being (Xu and Bengston 1997: 46). Life support values are also instrumental as it views forest ecosystems as providing necessary environmental functions and services, that without which the human race would not survive (Xu and Bengston 1997: 46).

The values identified by Xu and Bengston (1997: 46) as aesthetic and moral/spiritual are intrinsic in that the qualities of the forest do not have to benefit humans, and that they are valued morally. In this way forest ecosystems should not be deconstructed into harvestable yields for the economic gain of humans but rather respected as something of intrinsic beauty and worth.

Scholars (Steel et al 1994; Vaske et al 1999) have attempted to study and measure environmental values by placing anthropocentric orientated values and biocentric orientated values at either end of a continuum. Such a continuum has been designed because biocentric and anthropocentric values are not mutually exclusive (Steel et al 1994: 140). Rather an individual may express a degree of both anthropocentric and biocentric values. For example while at the anthropocentric end of the scale a forest manager might only view a forest instrumentally, a commodity to harvested and sold, a similar forest manager might also view a forest intrinsically as a social being. The second forest manager is still able to do his job because even though he thinks of the forest as having an intrinsic worth, this does not pull him far enough to the biocentric end of the continuum. Thus he is has no difficulty in continuing his role as a forester and harvesting wood.

The continuum understands that people often express a the mixture of values, but in reality when people are presented with an environmental situation the values they express are not a static mixture, but are dynamic and adaptable to different contexts and settings. Dietz (2005: 356) suggests that values may only be consciously referenced in novel situations, and not when a decision or activity becomes routine. Dietz (2005: 338) also explains that people's expressing of environmental values in behaviour may be affected by factors out of their control such as access to public transport, or factors such as what people's neighbours do.

Maoi et al (2001: 141) found that if people are unable to reason or justify their values 'spontaneously when the values are challenged' the impact of values on behaviour will be reduced. They explain that an individual must generate reasons and concrete examples as to why behaving and reflecting certain values is justified (Maoi 2001: 141). This demonstrates that an individual's behaviour can be affected when another individual challenges their values, suggesting that people may express values depending on whom they are with.

These two studies suggest that current research into how values predict behaviour have insufficiencies, as in reality peoples' valuing, how they make sense of a situation and how they behave are affected by external factors such as other people, setting and context. Taking this into account, it is necessary to examine other theoretical ideas that will add to a framework to study how people make sense of forests.

Performative Valuing

Goffman's (1959) famous essay The Presentation of Self in Everyday Life describes how individuals strategically perform certain roles, like a theatre actor, to the other individuals that are present. Goffman (1959: 32) describes that individuals 'define the situation' for the others that are present observing the 'performance'. As well as the audience, the setting, or stage, influences how an individual will perform. The individual will normally perform in accordance with the values of the community (Goffman 1959: 45), but in moments of crisis a performer may act out of character, forgetting his lines, and exposing the whole dramaturgical performance (Goffman 1959: 167).

With this in mind it is reasonable to suggest that people express values and make decisions while performing to the audience present. To examine how actors perform and express different environmental values depending on the setting and the audience present, I would like you to imagine a hunter.

This hunter talks about how much he loves the forest and how much he loves the animals and the social life of the ecosystem that exists in the wood. He is a member and a donor of several environmental organisations, one that protects the forest and another that protects native species. He is talking in his living room, the walls of which are full of the stuffed heads of a variety of native species. His fridge is full of deer meat. Each Sunday, because of his love of the forest and native species, he dons his camouflage jacket, picks up his hunting rifle and heads into the forest. He waits in peace and quiet, listening to the sounds of the forest life, the birds tweeting from the branches and the squirrels rustling in the leaves. A deer comes into sight, plucking its nimble way through the trees. The hunter observes its beauty, the way it nibbles at leaves and nuts, the way it pricks its ears as it senses something is amiss…a bang and a bullet passes between the deer's eyes. The hunter returns home, safe in the knowledge he will enjoy fresh meat without having to go to the supermarket, and having enjoyed his Sunday in his beloved forest with his favourite pastime of killing wild animals.

When this hunter is in the meetings of the environmental organisations he must take on a different role. He would not want his fellow members to be aware that he goes into the forest, which they all want to protect, on Sundays to hunt. In

order to fit-in with the other members he must perform a role and express values and ideas that are in accordance with those of the environmental organisation. The role he performs when he is in the forest hunting is contrasting to when he is in these meetings. In this role he has no problem killing the native species of the forest.

How can we make sense how this hunter performs different roles, and how he adapts his values to different situations? It is necessary to use an analytical tool that takes into account the complexity and contradictory way in which people understand, value nature and perform in environmental contexts. For that, this study seeks to use the theoretical methodology of Frame Analysis.

Frame Analysis

Frame Analysis, first introduced by Goffman (1974), is a way to analyse how people make sense of different situations and involve themselves. Goffman used the concept of *framing* to describe the moment when an individual is presented with a situation, makes sense of it and then organises involvement (Goffman 1986: 354). Framing is a concept that analyses how people understand and make sense of different situations in order to respond, act and involve themselves in the situation.

Goffman explains that frames are constructed of primary frameworks. Primary frameworks provide a way of making sense of an event while recalling previous knowledge and experience (Goffman 1986: 25). These frameworks give an understanding to what would be a meaningless context by using previous knowledge and experience as a foundation upon which to act.

Laws et al (2003: 173) describe framing as a way of representing knowledge and as a guide for doing and acting. Galli and Wennersten (2013: 64) describe frames as being 'cognitive shortcuts constructed by individuals to make sense of complex information'. For example when someone comes up to a zebra crossing, they see white lines on the road, but rather than waiting for a light to tell them to cross, they know, because they have crossed a zebra crossing many times before, that any approaching cars must wait for them to act, involve themselves and cross the road. Thus previous knowledge guides the person into crossing the road.

George Lakoff (2010: 77) writes that frames must be built over time, inferring that people frame situations in ways that are known to them. He explains that in order to understand a context correctly, one needs the right structures, or frameworks (Lakoff 2010: 74). Lakoff (2010: 73) explains the ease that American conservatives have communicating their political ideals through slogans, as they have been building up frames in people's understanding for decades. This suggests that people make sense of a situation that is familiar to them. Galli and Wennersten (2013: 64) support this by describing that frames are constructed to translate complex phenomena in ways that are consistent with their worldviews.

Lakoff (2009) describes that 'framing systems are organised in terms of values, and how we reason reflects our values'. This suggests that how people make sense of a situation is a reflection of their values, and that these values are given meaning within a specific framework. This suggests that the organised involvement, or behaviour, in a situation is a reflection of values.

Framing can be used to analyse how different actors understand situations, contexts and objects in contrasting ways. For example when a forester goes to cut down the trees in a forest to sell wood as a commodity, he understands the forest as a resource to be sold for economic gain. In this particular case the 'primary framework' of the forest is what I identify as the 'instrumental framework'. He frames the forest instrumentally as an economic resource that provides him with his livelihood.

Within this framing it makes sense to understand the forest as a collection of harvestable materials that varies in economic value depending on quantity and quality. It also makes sense to view the forest in terms of annual yields and maximum output. However it doesn't make sense to let the forest stay untouched, uncut and aging as it gathers moss. Thus the forester reflects instrumental values in how he makes sense of the forest, or frames, and how he subsequently acts, or organises involvement.

Contrastingly a conservation organisation would understand the forest as an ecosystem and a place of biodiversity that should be protected. This framing of the forest is what I call the 'intrinsic framework', a framework in which the forest is seen as something aesthetically beautiful and as something that should be protected independent of its use to humans. This highlights how researchers may

use framing to analyse behaviour and how an analysis in terms of framing makes sense of the different understandings of one and the same thing.

Goffman (1986: 25) suggests that when an individual understands a situation they are likely to use more than one framework. This is exemplified in the story of the hunter, as while at first it appears that he enjoys hunting the native species of the forest, understanding the situation with the 'instrumental framework', he is also a member of organisations that seek to protect both the forest and the species. In this regard he also understands the forest with the 'intrinsic framework'.

Laws et al (Laws 2003: 174) describe that frames are not stable and that people can *reframe* situations. Reframing happens when actors are presented with a different understanding of the situation. This causes 'a struggle that generates effort to make sense of changing situation and to coordinate action' (Laws 2003: 174). Reframing will take place if an actor is present in a situation with another individual, or an audience. This directly relates to Goffman's theoretical idea of how actors perform to the audience present. Individuals reframe a situation depending on their audience. This permits actors to be able to conceal the 'back region' and to expose a performance that they want the audience to see. For example when a known conservationist goes to a rural village to talk to people about jaguars and preventative techniques to curb predation on cattle, the villages may readily explain how many cattle have been eaten by jaguars, but it is unlikely that they will tell the conservationist that they have also been vengefully killing jaguars. In this way the villages reframe their understanding of jaguars to the conservationist in order to conceal that they have actually been killing them, as they know the conservationist will make sense of such information in a different, perhaps angry way.

Conceptual Framework and Operationalization

I will be using framing as the analytical concept, or tool, that will be used to interpret how people make sense of the forest and its biodiversity. How an

individual makes sense of a situation is how they understand it. The understanding is the process of organising involvement. The process of organising involvement is demonstrated in Fig.1.

Frames are constructed of pre-existing 'frameworks' that an individual has. Rather than a person having a mixture of instrumental and intrinsic values, such as in a continuum, it is better to think of it as two separate frameworks that co-exist and that go together to construct a particular frame. Framing is the subconscious process of understanding a situation and organising involvement and action.

Frames are constructed of frameworks and are also affected by the setting and the audience. In this way the process of organising involvement depends on the context and any other people present. People are constantly reframing depending on the setting and audience, and it is only in regular activity that frames will be consistent.

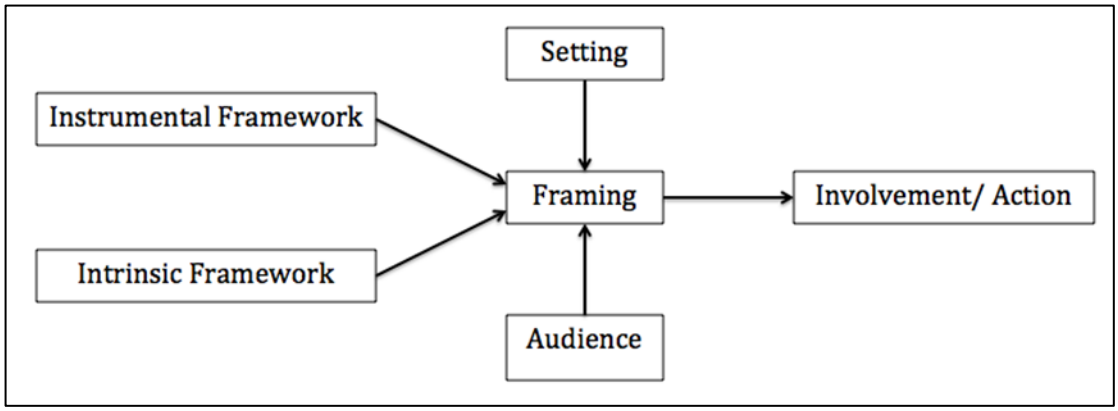

Fig.1. The Conceptual Framework (Author's own image)

Values may influence beliefs and worldviews, but they are not significant in themselves to fully construct frameworks. Frameworks are built up of past knowledge, experience (previous frames), worldviews, beliefs and values. The frameworks give meaning to a situation that otherwise would be meaningless. The behaviour, or involvement, that results from the process of framing is a reflection of the components that construct the frameworks.

The hunter in the story has an understanding of the forest with the 'Instrumental Framework'. This framework may be constructed of altruistic values, thinking what he can get out of natural resources, past experiences, such as killing deer, anthropocentric worldviews, understanding the natural world to be

exploited, and knowledge, knowing that by killing deer he can provide himself with meat.

At the same time – and within this particular framing of the forest as instrumentally valuable – the hunter engages in an alternative, seemingly contradictory framing of the forest, namely the 'intrinsic framework'. He sees the forest as a social entity, and believes that the world would be less beautiful without it. Biospheric values within this framework influence him to donate his money to the cause of protecting the forest he enjoys spending time in. He spends time in the forest because he finds is aesthetically beautiful, along with the animals he encounters on his Sunday walks.

In this way the hunter temporarily merges frameworks by understanding the forest both in terms of inherent beauty (intrinsic framework) and as a place to hunt (instrumental framework). However on some occasions these two ways of understanding the forest rick clashing.

When the setting is one where he attends meetings of the environmental organisations the way he understands the forest on his Sunday walks is challenged. He does not want to give the impression that he enjoys hunting the native species because it would not sit well with his fellow group members. He knows that they would not appreciate his enjoyment of killing animals, for sport and meat, within the forest. Instead he reframes his understanding of the forest in performance to his co-members. He strategically only talks about how the forest should be protected as a social being, a home to animals and a place of beauty and peace. He conceals his other understanding of the forest as a perfect place to go hunting on Sundays. By performing, and revealing one understanding, the 'intrinsic framework', he remains a valid and respected member of the group. In this way the audience, other individuals present, have a major influence on how an individual makes sense of a situation, or frames it.

If an individual understands that the others present have similar frameworks, their frames will be constructed similarly. If an individual makes sense of those around them as having different understandings or values then the individual may make sense of the situation differently. In this way the individual reframes the situation to conceal particular frameworks. By only exposing a certain framework the individual may avoid any conflict. It may also be that the individual

misjudges how the others make sense of the situation and they expose a framework, or frameworks, that cause the frames to clash. In such an incident one of the other parties may be influenced by the other, and make sense of the situation in a different way. In this way someone reframes the situation, incorporating a new experience into a reframing, aligning his or her frame to the one of the other present. Also neither party may reframe so their frames remain clashed, and tension may arise.

The story of the hunter shows the complexity of how environmental values, worldviews, knowledge and experiences are expressed in different understandings and how people may perform and express certain values over others due to their audience. The conceptual framework will provide the theoretical methodology to aid this study in explaining how people make sense of the forest in complex ways.

Chapter Three: Localising the Study and a Presentation of Methodology

Conservation in Mexico

Community-based conservation has been the dominant strategy of conservation in Mexico in the form of Biosphere reserves. Since the Mexican revolution at the beginning of the 20th century 80% of the forests have been in the control of the local communities, *ejidos*, rather than the state (Klooster 2003: 95). Klooster (2003:95) argues that the 'enhanced ability' for *ejidos* to control and benefit from forests has had more success in 'improving rural social and environmental conditions' than those that restrict rural communities. Since 1974 and UNESCO's Man in the Biosphere Programme, Biospheres have been created in Mexico in order to promote community-based conservation (Young 1999: 365). Biospheres in Mexico are intended to demonstrate benefits of protecting areas for rural populations through local involvement (Young 1999: 371). These Biospheres are described by the Mexican Environmental Ministry, SEMARNAT, as an area of human settlements that work for the sustainable development of natural resources (Tamargo 2006: 140). With the introductions of Payments for Ecosystem services, in which communal landowners are paid to maintain areas of land that provide hydrological services or biodiversity management (Reyes-Garcia 2013: 858), the acceptance of Biosphere reserves has increased, expanding areas of community-based conservation (Reyes-Garcia 2013: 858).

In Mexico there have been great lack in studies as to the extent of the mismanagement of natural resources, such as the forest of La Sierra de Vallejo. In an official document the Mexican Environmental Ministry states that there have been no widespread studies as to the extent of the damage of 'natural resources' in Mexico (Tamargo 2006: 129). It is only possible to make tentative claims. One such claim by the Nation Institute of Ecology found that many *ejidos* have an overload of cattle on pastures, with 95% of natural pastures, such as forests, thought to have

been affected. In fact they state that the only unaffected areas within Mexico are deserts (Tamargo 2006: 129).

In Emily Young's (1999) Local People and Conservation in Mexico's El Vizcaino Biosphere Reserve she discusses a number of shortcomings with the Mexican model of conservation. She explains that agendas and rules are defined top-down from environmental and governmental organisation (1999: 371), and that often people are quite unaware that they live within a Biosphere area, or they show a misunderstanding of the goal of the reserve (1999: 377). Furthermore Young demonstrates that no community is homogenous, and that there is a plethora of varying motivations and desires, making it difficult for a community to become organised behind one set of objectives in the management of natural resources (Young 1999: 372).

It is vital that more studies within Mexico provide greater understanding of the effect on forests and natural resources. As forests and natural resources are in the control of rural-communities it is imperative to provide understanding of how they make sense of, and use the forest. It is also apparent, according to Young, that there are some failings and confusion within community-based conservation in Mexico. Therefore it is essential that there are studies that reveal how local communities interact with their surrounding natural environments.

Making Sense of the Forest: A Study in Mexico

This Case Study will examine how environmental situations in relation to a forest and its biodiversity are understood, through studying how these understandings manifest in behaviour.

In order to illuminate how the forest is understood, I, as the researcher, had to try to become embodied in the study and the community. An embodiedment means that the researcher embodies traits of the community, such as activities and how members communicate, such as use of language, in order to be perceived more as a community member and less as an outsider. It is essential in such a study that the researcher becomes integrated with communities so that the locals do not make sense of situations with a researcher present, but as they would in day-to-day

life. The researcher is a tool of the research, but also the behaviour and commentary of the researcher has direct implications on the informant's understandings of environmental contexts.

This study will add to the discourse on how people make sense of the forest and organise involvement. This study will highlight the importance of audience and setting in how individuals organise involvement adding to anthropological discourse. By developing an understanding of how people make sense of the forest, this study will also aid conservation organisations wanting to work with local communities.

The Study

The study took place over three months, between January- April 2017. I stayed with and visited rural people that live next to, and perform activities within, the forested mountains of La Sierra de Vallejo, Nayarit, Mexico. I stayed primarily in one town, *El Colomo*, and used this as my base. I stayed with a local family, and while the hustle and bustle of living with 12 members of a family in a house was somewhat chaotic, it was nice to call somewhere 'home' during my research period.

El Colomo is a town of around 2000 people, and economic subsistence is primarily based on working in tourism on the coast, as construction workers, or through cattle ranching and agriculture. Many people, who work on the coast or in construction, also have small parcels of land for either cattle or agriculture.

I spent time with a range of people from conservation organisations, the president of the *ejido*, cattle-ranchers, mountain-men, hunters and the local youth. I experienced a range of unfamiliar activities such as cattle herding, milking goats, watching cockfights and bull riding to harvesting beans. I threw myself in and tried to get involved in activities as much as possible, even playing football for El Colomo's over-90kg team. In wanting to understand how people make sense of situations it was important not to be viewed as a researcher. In order to fulfil that it was necessary to employ a set of techniques that built relationships with the locals that meant I was not perceived as a researcher. A factor that helped reduce

perceptions towards me as a researcher, and an outsider, was the relationship I had with one informant, *Julio*, who fulfilled the role of the gatekeeper.

Methodological Techniques

The Gatekeeper

Both at the time of research, and in reflection, I think that having an informant, or friend, in the role as a gatekeeper was indispensable for my research. The director of a conservation organisation first introduced me to Julio the first time I arrived in El Colomo. A week later as I was walking alone between fields, our paths crossed as he headed on his motorbike to a plot of maize. I asked if I could help and I joined him. We spent the afternoon talking about a variety of things from his environmental ideas, to his two-year sentence in prison for possession of an unauthorised weapon.

Julio is the owner of the El Colomo's tortilla business, producing tortillas from both imported and local maize grown. He delivers tortillas twice a day, at 7am and 2pm around El Colomo but also to *Coatantes*, and the more rural towns of *Fortuna de Vallejo* and *Nuevo Ixtlan*. Only at 7am does he go to the latter two towns, so his more rural clients buy enough tortillas for breakfast and lunch. As he visits his clients at least once a day, and is the provider of their tortillas and milk, he is well known and appreciated.

Julio took an interest in my project and he urged me to join him on his tortillas runs so as I could converse with and meet more people. Having Julio as an intermediary was an extremely good way to become introduced to people. As I often went with Julio on his deliveries, I became recognised and people, growing in confidence in me, would talk freely. Even if I had just met someone for the first time, due to the presence of Julio, a familiar figure, we would discuss sensitive issues. After having such conversations, Julio and I would discuss them on the way to the next delivery, so I could make good notes. This was an excellent way to regularly meet people, make myself known and break down the outsider-insider

barrier with the help of a local. By having this intermediary I was able to get to know people and then visit them again by myself.

As well as an intermediary, Julio became an invaluable 'informer' to 'back region' information. Even when I wasn't with him, he would ask people about their experiences in the forest, and tell me what he had seen or heard. For instance he once explained to me how, early in the morning, he had seen two of his clients covered in blood holding a cooler. They claimed they had a couple of small animals, but Julio told me, that with that amount of blood it was more likely a deer. Julio and I built up a strong relationship and this led to him revealing a lot of information to me about the life in El Colomo, and how people interact with the forest.

Language

The ability to speak Spanish was the backbone to the methodological techniques I employed. Although many people I interacted with had worked in the U.S.A, the English in the rural communities was very poor. Fortunately I had previously spent a year living in Spain and I am very confident with the Spanish language. However it was not as simple as 'I can already speak Spanish so I'll be fine', I had to spend time learning new vocabulary and tune my ear into the regional accent.

For three weeks before I entered the rural communities while spending time at a conservation organisation's office I learnt the names of the wild animals, and other vocabulary that was specific to my study area, (E.g. *Ganado* – cattle, *becerro* – calf, *tigre* - jaguar). During these three weeks I made Mexican friends, chatted, joked and practised my Spanish, fine-tuning it for research in the rural communities. This was an invaluable use of my time, as I think that if I had entered the communities straight upon arrival in Mexico I would have struggled in understanding what was going on.

Language is a crucial part of ethnographic fieldwork, and I am very content that I did not have to at any point rely on a translator. As Fabian (1971: 41) explains the study of people must be "communicative" not simply "observative", and knowledge of the communicative context, i.e. language, is vital in order to have dialogue, exchange of meaning, between researcher and participant. When

research is simply observative rather than communicative makes it harder for the researcher to be able to see how people usually make sense of situations. Similarly Geertz (1973: 24) explains that studies of culture must be semiotic, in order that the researcher has access to the conceptual world of the subjects they study.

Malinowski highlights the importance of language knowledge, as when he first entered the field he was unable to have a detailed conservation with the Pacific Islanders (2012: 70), and so struggled in the beginning of what would be some of his most famous work.

Another practicality of language knowledge is the ability to be independent and able to rely on language ability. By doing research with a third-party, an interpreter, my informants would have had a different understanding of me, and consequentially they would have made sense of the situations that we shared differently. The first time that I visited a ranch that was 3 hours hike into the mountain I went with a guide. After staying the night I became friendly with the owner, and I decided that I would go back. My guide told me he would show me the way again the next time I returned, but I decided that I wanted to stay with the owner of the ranch alone to get an understanding of the way in how he made sense of the forest, and to build up a relationship. The next time I went to his ranch I hiked up by myself, getting lost a couple of times, in order to have one-on-one conversations with the ranch owner. I would not have been able to do this if I did not have the ability to verbally communicate with the rancher. In addition to the benefit of going to the ranch alone, I think the owner was somewhat impressed that I had found the way, thus building up rapport.

Building Rapport

A main part to my methodology and fieldwork was the building of rapport. I needed to build rapport in order to observe how the rural people understand environmental issues, especially how they made sense of illegal activity, such as hunting or killing jaguars. To achieve this I made myself known among the cattle ranchers in the surrounding rural communities. During my stay there were a number of *jaripeos*, a rodeo-like event when cowboys attempt to ride bulls with few

rules and less protection, in the build up to a village's festivities. These events were an ideal platform to chat, drink and meet with different cattle ranchers. A method I used to break the ice with these cowboys was by telling a story that involved me trying, and rather dangerously failing to ride a horse. This story brought the laughter onto me while discussing something that was extremely familiar, if not second nature, to them. Over the course of the research period I told this story several times, normally to be met with guffaws of laughter, and the barrier between stranger and friend chipped away. This method of getting drunk and bantering with the ranchers allowed them to see me as a non-serious, easy-going, likes-a-beer kind of guy, and thus as someone who they are comfortable to be around. The comfort of my presence allowed for them not to see me as a researcher but as an equal, and a friend.

Even though I talked along with them and as an insider, I was still an outsider. This strange situation when you are admitted into a community but still as an outsider is a good position in which to study how people make sense of situations and the behaviour that results from this. When one is an insider, often one can be so involved that it is difficult to take a step back to observe what may be interesting and unusual behaviour. The researcher being admitted into parts of insider life, but remaining an outsider, is able to view behaviour that may not be novel to locals in an analytical way.

Interviews

Throughout my fieldwork I hosted a number of interviews, recorded with verbal consent. I found these interviews very useful to reflect on something that had happened in the past or to discover about the initiations and objectives of an organisation. These interviews were also very useful to understand the different understandings people had regarding different species of animals.

However, while the interview was a useful technique at times, I felt uncomfortable in them. I found that in this setting the participant and the researcher are separated, not only in roles, but by the blinking lights of a dictaphone between them. I also found that when holding interviews I took on a

different role, I became 'professional', and I felt that I had to force this unnatural conversation to get what I wanted from it.

When studying how people make sense of the forest, I do not think that interviews are the best setting, as the participant adapt their answers and story to make sense of the situation of being in an interview. The interviewee is aware of the fact that they are in an interview setting talking to a researcher. As such the interviewee constructs a particular understandings of the environment that fits into the context of the interview.

In order to understand the lived experiences of the environment of my informants I needed to utilise more embodied forms of data collection such as conversations, participant observation and context driven conversation.

Conversations

Conversations rather than interviews allowed me, at times, to collect more relevant data on how people make sense of the forest. These were best when the informant was in a comfortable setting, just chatting away. This would be well highlighted with my conversations with one informant, which we had laying back in hammocks taking slugs from a bottle of tequila on his ranch. He was relaxed, in his environment and without the intimidation of a being in a researcher being present. While I still 'led' the conversations, they were held in the natural environment of my informants, making them less affected by a research setting.

Context Driven Conversations and Participant Observation

I had to become embodied in the context to be able to observe the process of the organisation of involvement in environmental situations. It is not simply enough to talk to people about how they treat the forest, or what they think of jaguars but to be part of real situations, experiencing it with informants, and then talking about it in context driven conversations. An example of this was when I was hiking with an informant deep in the mountainous forest, and we came across a jaguar track in the path. This was the perfect setting to talk about jaguars, and to ask him what we

would do if a jaguar came up onto the path in front of us. In this moment we both shared the exhaustion of having been hiking all day and the excitement of walking along the same path that a jaguar had used not long before. This shared experience allowed my informant not to see me as a researcher, but as another person who also had the ability to walk deep into the forest, and had an equal thrill of finding a jaguar track.

Another common instance of context driven conversation in participant observation was riding on horseback herding cattle, conversing about the value of livestock and threats to cattle with ranchers. The methods of participant observation and context driven conversations are essential in the study of how people understand the forest. As a researcher it is invaluable to be present and involved in environmental situations and to observe how a participant reacts and acts when their environmental understandings are challenged. Without also being embodied in the context of the situation with the participant, it is impossible for the researcher to understand behaviour in environmental situations.

Context driven conversation such as these are not possible, or at least very difficult, to fabricate, but I believe that the answers by participants were closer to their experiences without a researcher present. Moreover the responses of the informants in these conversations are not as forced as in an interview setting. In context driven conversations the participant and the researcher share an experience that helps extinguish the researcher-participant barrier. It is also worth noting that without language or building up of rapport, context driven conversations such as I experienced during participant observation would have been impossible.

Attitude

When I entered the field I knew next to nothing about cattle ranching, the use of the forest, and the perceptions towards the environment of the rural communities. I think that if I had acted like an expert and in an arrogant manner I would not have been able to build up such strong rapport or make friendships. It was important to be humble and to understand that the participants I was with were the experts in

this field and that I was a student that had to learn from them. When I was being shown how to milk livestock, shoot a rifle, prepare tortillas, collect river shrimp, tying up a gate or riding a horse, I watched my participants perform these acts, learning and asking questions exhibiting respect to their knowledge. By showing participants that I was eager to learn, and that I was new to the situations, I think that mutual respect was built up, and this in turn allowed participants to be comfortable with my presence and demonstrate how they understood environmental situations as in everyday behaviour.

Limitations: Problems Encountered and Overcome

Association with Conservationists

As I first entered the rural communities with a Civil Association that works for the conservation of the jaguar, a challenge I faced early on was distancing myself from the stigma of association that was attached to me. Obviously I didn't walk around the rural community wearing a 'Save the Jaguar' t-shirt, but nonetheless the director of the conservation organisation had introduced me to some members of the community, and this may have given them the impression that I worked as a conservationist. I felt it necessary to distance myself and to avoid any stigmatisation as protector of jaguars in order to enter into sensitive conversations that normally a conservationist would not be exposed to. For example, it is highly unlikely that if I had been wearing my "Environmental Vigilante" baseball cap, would someone I had only just met have divulged information to me about how one goes about killing a jaguar that is predating on livestock.

I distanced myself from any stigma caused from association with the organisation by explaining that my project was separate to the conservation organisation, and in the way I talked about jaguars. I heard the cattle-ranchers refer to them as '*pinche jaguars*' ('fucking jaguars'), so when conversing about predation of livestock I also used this descriptive term of the jaguar as a pest. Using such a

way to describe jaguars allowed the cattle-ranchers to talk to me about jaguars in a different way to how they would when talking to a conservationist.

I reflected on if this would raise issues and promote negative sentiments towards jaguars, but I concluded that while I am sympathetic towards the cause of jaguar conservation, it was not the reason for me being there. I wanted to understand how people make sense of the forest, and I felt that in order to do this it would be useful to talk about jaguars as the ranchers do. This was important so I could observe how ranchers would express their understandings of the forest to another rancher rather than to a conservationist.

Note-taking

I wanted to keep situations with participants as close to their daily experiences as possible, so I rarely carried a notepad. I felt like a researcher taking on an authoritarian role when writing down what participants were saying in real time. I found myself to be more on level with my participants if I didn't take notes in front of them. This had its advantages in that they discussed particular topics without thinking of me as a researcher, but it made it difficult for me to remember everything that was said, especially as I was working in Spanish. On tortilla runs with Julio one way of dealing with this was to discuss the conversations, we had with his clients, in the truck while driving. However this luxury of recounting conversations with a trusted informant was not always possible, and often conversations were held while walking in the forest or in remote locations. To overcome this I decided to record some conversations with my phone and to use these recordings to aid my notes in reconstructing conversations at a later stage. I used this method several times, and it proved very useful for listening back to conversations and to construct well-informed notes. This method allowed me to be 'natural' in front of participants so they made sense of situations without thinking of me as a researcher. As these recordings were only used to help me reconstruct conservations, I did not ask for consent. Consequently I will not quote directly from them but present reconstructed conversations translated into English.

Being a Researcher

Before I entered the rural communities I worked with a conservation organisation and interviewed a number of directors from other similar organisation. When interviewing such people it was necessary to explain that I was a researcher in order to legitimise why they should spend time talking to me. In this respect it was useful being able to 'play the researcher card' because it gave me access.

When I first entered the rural communities I had to present myself to the president of the *ejido* of El Colomo. I presented myself as a researcher, and explained that I was study an Anthropology Masters at Leiden University. I wanted to be honest to people, so I always upon asking questions or presenting myself I explained why I was there.

When I began visiting the smaller, more rural communities farther into the mountains this was also my intention, but while in Julio's truck on our way there he told me he thought that it would be better if I didn't mention explicitly that I was a researcher. He told me people in the smaller towns were suspicious of researchers and often associated universities with the government, and that I was unlikely to receive a warm welcome, nor would they reveal sensitive information to me.

Some informants also told me that a researcher from the Environmental Services had told them not to kill rattle-snakes because they, like trees, add to the oxygenation of the atmosphere. Some of my informants believed this, and why wouldn't they? They were told by an 'expert' working for the environmental services. I think that this is abuse of an authoritarian role, and I did not want to be understood in the same category, as many rural people perceive researchers as abusive of their position as 'experts'.

I took Julio's advice and when talking to some people in the smaller rural communities, where I then went off to stay in a very rural ranch, I explained to them my reasoning for being there was that I enjoyed the outdoors, that I was interested in finding out about their way of life, how they live and use the forest, because their life is so different to mine back in England.

While I was implicit about my role as a researcher, I talked freely and openly about my life and how we live in England. This was a topic that they were especially interested in because, I do not think, many of them had ever met anyone from

England. Many conversations we had were an exchange of information between what life was like on their ranch in the forest, compared to what life was like in England. While I stayed at the ranch I built up a very friendly relationship, and I revisited them a couple of times.

I don't know how I would have been greeted or treated if I had been explicit about being a researcher, but I preferred being on a similar level to the people that I spent time with. In this way I was not distinct from them by claiming to be an 'expert', or a researcher, from a university, but I was just someone interested in how they live.

Ethical Issues

Presentation of Myself

As just described I was not always explicit about being a researcher studying a masters for a university in the Netherlands. My role in the field was as a researcher, but if I had exaggerated the role of a researcher studying how people make sense of the forest I would not have been able to gather convincing empirical data. By announcing oneself as a researcher already you influence someone's understanding of a situation differently. At times I had to downplay my role as a researcher and be in the role of someone who was not concerned with the exploitation of the forest and the killing of jaguars. I had to become embodied into the communities, so it was not appropriate to be explicit about my role as a researcher. By being explicit in a role as a researcher you severely reduce the understanding of how people really make sense of environmental situations, thus making it difficult to enhance the development of effective conservation strategies.

This implicit description of myself as someone interested in how they live in the forest is justifiable because it is necessary to know how people make sense of environmental situations for the development of conservation. As I said that I was interested in how rural people live in the forest they could process that information and still decide whether they would reveal or conceal information to me. Some people are suspicious of researchers, and present a different understanding of the

forest, concealing sensitive topics. By being implicit in my role I was able to gather data that could lead to the advancement of the relationship between conservation organisations and rural people, thus improving the situation for both the humans and the biotic community that share the forests of La Sierra de Vallejo.

Recordings

The recordings I made with my phone weren't made with consent, and therefore have only been used to reconstruct conversations. It is justifiable to have recorded the conversations in such a manner to help reconstruct conversation because it was for a legitimate reason, furthering the understanding of how people make sense of environmental situations and therefore to aid conservation strategies. The recordings allowed me to provide myself with extremely detailed notes, and much more accurately than if I had tried to write-up conversations reflexively sometime after they took place. It has never been my intention to use the recorded conversation to 'catch people out' or to share the information with conservation organisations. I was aware that if I had shared the recordings with conservation organisations, they might have wanted to use such information as evidence against these people. That is why, after having reconstructed the conversation, I deleted the recordings. I have also changed the identity of those presented in the study because I do not want any repercussions for them. Moreover the conversations presented are not word-for-word reproductions but edited and translated versions. This also means that the conversations presented cannot be used against anyone who has expressed thoughts of illegal activities, e.g. the hunting and the killing of jaguars.

I am aware of the potential ethical ramifications of the recording of conversations in such a way, and that is why I have taken steps to ensure that no harm will come to the informants because of my methodology. Rather the data collected has the potential to improve relationships with conservation organisations and local people in the future.

Giving something back

After having spent 3 months in Nayarit and being helped by the rural communities I feel like I have a responsibility to provide some form of writing for them. Before I went to the area I had the idea of writing a piece for the locals in mind, but now I feel honour-bound to do so. Julio once asked me in front of a crowd of people for me to provide a written report and I agreed. I do think that it is important to 'give something back' to the community I worked with. I think that it is unfair to write papers that are locked within the academic anthropological community. I think that having put-up with ethnographers for a matter of months, the studied people deserve a piece of writing for themselves. Therefore I plan on writing an accessible piece for the rural villagers I was with. By accessible I mean both in language and content. It would not be appropriate to present them with a paper on how people make sense of environmental situations, but rather it would be better to present an article on the problems I encountered there – overgrazing, unregulated hunting, miscommunication of conservation efforts and the overall situation of the biosphere reserve. Then the writing can be used as they like. An important aspect of this accessibility is that I will write the article in Spanish. This is vital as very few people I was with spoke English, and those that did had a limited understanding.

On Presenting Data

Concealment of Identity

As much of the information presented in this paper is of a sensitive and illegal nature, the names of the informants that are presented discussing such issues have been changed. In Mexico it is common to refer to people in respect to their appearance. It's not meant to be insulting, but more a term of endearment. A lot of my friends and informants in Mexico did not refer to me as Tom, but *el güero*, 'the whitey'. To honour this naming tradition, the characters presented talking about illegal issues will have their name changed in such a manner. To further the

concealment of identity I will not use photos that show the faces of the people that discussed sensitive topics with me.

Chapter Four: 'But they're not in danger of extinction!'

This chapter is a the presentation of a conversation I had with an informant, *Prieto*, regarding his differing perceptions of which animals it was legitimate to hunt, and those, which he felt, should not be killed. As we shall see individuals have complex understandings of animals, and they may not perceive all animals of the forest in the same way. Diverse values held towards different animals can be expressed seamlessly without notice of the potentially contradictory statements being presented. Different observations and perceptions of animals can lead to unexpected expressions of environmental values. We must remember that animals have varying relationships with humans. Some might behave in a way that has a great impact on livelihoods, such as animals that eat crops or predate on livestock. Other animal populations might be struggling and at low levels, prompting concern for them. In order to have a greater understanding of how people make sense of the forest, it is important to analyse how people regard and classify different animals.

Fig 2. Prieto relaxing before installing the water tank (Author's own image)

After having just helped install a large tank on a paddock that was going to provide water for cattle that we would herd there the next day, Prieto asked me to walk

with him to his plot of land as he needed to fill one of his cattle's watering spots. We left his boss, *Jefe*, and started heading over.

I had met Jefe while watching a rodeo at a town's festivities, and he welcomed me to stay on his ranch after I explained to him I was a researcher, and the aim my project. I had met Prieto at the same rodeo. In between explaining to me which were the good riders we drank a few beers and laughed as he tried to convince me to ride a bull. Prieto clearly itched to get into the ring and dig his spurs into the flanks of one of the bulls, but he could only spectate. While he had previously ridden bulls, he had a wife and kids now so he couldn't risk getting injured and not be able to work in order to support his family.

Prieto was a dark skinned cowboy, and on the day we walked to his land he was dressed in black jeans, leather boots, a grey t-shirt emblazoned with 'Rodeo Roundup', and a dirty white cowboy hat. As we walked towards his parcel of land his spurs clinked on the hard ground. Around us was a landscape of pasture, with a backdrop of forested ridges that steadily rose and turned into the mountains of La Sierra de Vallejo, forming an impressive horizon.

While we were waking, we discussed the different animals you could find in the area. I was interested to know if he had received any kind of formal education about the wildlife and the forest of the area at the school he had attended. He explained that all he knew about the animals he had learnt while walking and working in the fields and the forest. After a while I asked Prieto if he had ever hunted in the forest.

> 'Yeah, sometimes me and my friends go hunting in that forest there.
> Just recently I was there with my friends and we killed three *tejones*.
> We made chicharrones from the meat.'

Tejones, or *Coati*, are a type of racoon that inhabits the forest. The females live in large groups with their young, and they make quite a sight jumping and hopping up trees and between branches. The males spend most of the year solitary, and are known to be quite dangerous, especially to dogs. In fact Jefe's dog had been killed by one the week before, when they were in the forest checking on cattle. *Tejones* are a good animal to make chicharrones, crackling, from because the meat is very

oily. Others had told me before that the meat of *tejones* is unique and incredibly delicious. Prieto continued,

> 'I think we saw about twenty *tejones*, but we only killed three because the others went for the branches, and so they escaped.'

> 'Do you only hunt *tejones*?' I asked.

> 'Well once I also shot a deer, but a long time ago, and only because a dog had taken it by the leg.' Prieto replied.

> 'Are there people here who think you shouldn't hunt *tejones*?'

> '*Tejones* here are a plenty, alright, so it's fine to hunt them!'

Prieto understands the context of *tejones* in the forest as an animal that is ok to hunt. They are, for Prieto, an animal with a fatty meat that he can kill in order to provide himself with meat, and more specifically a way of producing *chicharrones*. Prieto sees that the *tejones* are in large groups, so the killing of them is appropriate because there are many. He went on,

> 'Look before there were many deer. We own that paddock over there, daily I used to go, and I used to see two, three deer there eating. Then one guy from here, and a man from San Juan, started to come and kill them, daily they killed, one, two…Then the population ran out, now you don't see them, not even tracks. It was the same with wild boar. There used to be loads of them around here, but this guy who came back from working in the States started to hunt them daily. He would kill up to eight in a day to sell. He did this for about a year, and now you don't see them anymore.'

Here Prieto has an understanding that the deer and wild boar were over-hunted. It wasn't like with him and his friends who went out to shoot a few out of a group of

tejones for themselves, but with deer and boar people came and hunted them commercially and daily. Prieto makes sense of the fact that you can't see many deer or boar anymore, because there had been overhunting. While *tejones*, deer and wild boar are all animals, in Prieto's understanding, it makes sense to kill *tejones* but not deer or wild boar. Although he once killed a deer, Prieto had a change in attitude towards this species as it came in a moment when a dog was attacking it. In this situation Prieto reframed how he made sense of deer to make the killing of the animal legitimate, when normally, as he told me, he would not kill them.

It may be that ordinarily he would kill deer but he was only telling me that he would not because he thought I would not like it due to the small population, and the fact that he knew I was there to research how people behave in the forest. However I think that he normally understands deer as an animal he wouldn't hunt, otherwise he wouldn't have revealed to me that he had once killed a deer. Furthermore it is illegal to hunt *tejones*, suggesting that Prieto was exposing the understanding of the forest he would with the friends he hunts with.

> 'But don't you think that the *tejon* population is going to go down as well?' I asked him.
>
> 'No man, these guys…how to explain…look, these guys, the *tejones* give birth to up to six little ones, they mate every two months…imagine how many *tejones* there are!'

Prieto justifies the hunting of *tejones* because he observes that there are many of them. Prieto's reasoning is constructed from the idea that they give birth to a litter of six, several times a year, thus making the *tejon* population number sufficiently strong and stable. In Prieto's understanding of a well-stocked population of *tejones* it is legitimate to go into the forest with friends and shoot three out of the twenty that they find. In frame analysis, this understanding is part of the construction of an 'instrumental framework'. This expression towards *tejones* suggests that Prieto instrumentally values them.

> ‘Also *tejones* are very damaging to people because they eat the maize plants. I’ve killed them here and over there (pointing to different maize plots) at night, or early during dawn…that’s when they go to eat maize.’

Here, Prieto further justifies the hunting of *tejones*, because they cause damage to maize plants. The *tejon*, then, in Prieto’s understanding is also a pest who’s killing is legitimised by the fact that they eat maize. If he didn’t kill them they would be a greater pest, and eat many maize plants. This would then have an effect on the owners of the maize. By killing the *tejones*, Prieto reduces the threat that they pose to the people that cultivate maize. This understanding further adds to the construction of an ‘instrumental framework’. Within this framework dead *tejones* provide meat, and the production of *chicharrones*, whereas living *tejones* come into the maize plots and steal peoples’ crops.

I presented Prieto with a hypothetical question, asking if he would continue to hunt *tejones* if they were in danger of extinction. Due to his distaste in how he explained the over-hunting of wild boar and deer I expected Prieto to pause momentarily and think over the question before answering. However he fired back straight away,

> ‘But they’re not in danger of extinction! There are so many *tejones* and they give birth a lot. When all the other animals run out, there will still be *tejones*. Anyway there aren’t many people that like the meat. Those of us that like it [*tejon* meat] are few.’

In Prieto’s perception there are so many *tejones* that even when the other populations of animals become exhausted, there will still be *tejones*. Therefore it is appropriate to kill them. As he sees many *tejones* and has an understanding that they populate rapidly, he does not perceive them as an animal that could ever go extinct. In this way Prieto’s framing of *tejones* is constructed with an understanding that they are not, nor never will be an endangered species. Of course *tejones* aren’t in danger of extinction, as Prieto well knows, just as he knows that they reproduce in great numbers and that in his experiences he has always come across many

tejones in the forest. Moreover Prieto explains that the humans that like the meat are few in number this further legitimises the idea of going out to the forest to hunt *tejones* with his friends.

Prieto has very different understandings between wild boar, deer and *tejones*. As he has observed the reduction of both the wild boar and deer population he classifies them as something that should not be hunted. Perhaps if the wild boar and deer numbers were also healthy, Prieto would be happy about hunting and turning these species into *chicharrones*. However, as Prieto obverse, they are not, so it is not legitimate to hunt them. In such a way it appears that Prieto expresses different values towards the three species. This is manifested in his appetite to hunt *tejones*, but his reluctance to hunt deer and wild boar. In the following section this contradictory way of valuing animals will be further exposed, as it is much more apparent in how Prieto understands jaguars.

Jaguars

Earlier the same day, in the morning, Prieto and I had been with his boss driving up to the ranch. Jefe had been telling me how when a jaguar kills a calf they usually put poison on the carcass in order to kill the carnivore. This is common practise, and it is local knowledge that when a jaguar makes a kill it only partially eats the prey. The following night the jaguar will return to finish off the meal. If a rancher possesses this ecological knowledge then it becomes relatively easy to kill a jaguar. All one has to do is lace poison on the meat of the dead animal and wait for the jaguar to return the next day to continue eating.

Prieto and I had walked across the pastures to turn on a fuel-powered pump that fed water onto his land. We arrived at his parcel of land and sat down on large tires, which were his cattle's water hole, as the water pumped from the well to fill them up. We were sitting in silence when Prieto brought up the conversation that I had had with his boss while we were in the truck that morning.

> 'You know when Jefe was talking earlier about killing jaguars? I don't like it when people kill them just for having killed a calf…I mean,

they've got to eat but I don't think that it's fair to kill them. There are people that steal the cows too, and some who kill the cows for meat. They try to make it look like it was a jaguar by cutting into the meat. We've had cows stolen this way before, we call these thieves 'jaguars with a brown head'. But why don't we kill the people because they rob cows? If the jaguars no more than eats a calf and already…'

I was surprised at Prieto saying this, and expressing aversion to jaguars being killed for having predated on livestock. I thought that potentially he was telling me this because he knew my role was as a researcher. However considering that he had just explained to me that he does hunt, illegally, in the forest, I think that the sentiments that he expressed towards jaguars came from an honest understanding.

Prieto understands the jaguar as an animal that has to eat. In this understanding it is not justified to kill them for predation on calves. While the killing of *tejones* for stealing maize might be valid, killing a jaguar for hunting calves is not. Even though the loss of a calf is much more significant than the loss of maize, Prieto does not frame a jaguar with the same construction as he does with *tejones*. He frames the jaguar with the 'intrinsic framework'. It is a species that regardless of the affect is has on human livestock, should not be killed. It is only natural that a jaguar should kill a calf. In this way Prieto perceives the jaguar as a nonhuman that has a right to a meal, and although it predates on cattle, it should not be vengefully killed.

In Prieto's understanding he makes a direct comparison between jaguars stealing cattle and people stealing cattle. The nonhuman and human theft of cattle is the same for Prieto, and if one species is punished with death for predation on cattle, why not the other? Prieto does not perceive the thievery of cattle as a justification for killing jaguars. If it were logical, then according to Prieto, it should also be reasonable to kill human cattle thieves. While people also steal maize plants, I do not think that Prieto would think it appropriate to shoot people and turn them into *chicharrones* if they were caught stealing maize cobs.

'Yeah well, the jaguar doesn't have an owner,' I said.

> ‘That’s what I say’, Prieto replied, ‘but we should take care because if the people keep on killing jaguars they are going to run out. In fact in this forest there were many, but then the people began to kill them. Now you don’t see them.’

Prieto’s understanding of the jaguar is that if they are killed the population will become exhausted, and there will no longer be jaguars. He knows this because when he was younger, before people started killing them, there were many, but now the population is much smaller. This adds to Prieto’s understanding that it is not legitimate to kill a jaguar.

> ‘I think that if there were more deer and wild boar the jaguars wouldn’t kill cattle. They [jaguars] started to eat the calves because the people made the deer run out, and the wild boar. The people know this, but they’re idiots… you’ve got to realise that before there were many deer, wild boar, so that is what the jaguar ate. Before there were almost no problems, but when the deer ran out, they (jaguars) started with the calves. When the calves run out, it’ll be same, they are going to eat the cows, and when the cows run out, they’ll eat the people…and so it goes…’

Prieto recognises that due to the reduction of deer and wild boar the jaguars have less food, and because of the reduction in their natural prey they started to predate on calves. This further legitimises Prieto’s understanding that jaguars should not be killed for predating on calves. Prieto explains that humans are responsible for the reduction in deer and wild boar populations, thereby justifying the predation of jaguars on calves. He understands these animals as something that should be outside the sphere of human-activity and exploitation because their population numbers are low. This understanding and knowledge is part of the ‘intrinsic framework’ that constructs the framing of a jaguar killing a calf.

Prieto makes sense of a jaguar killing a calf because he perceives it as an animal that has to eat. As an animal that must eat it is only rational that after the populations of deer and wild boar ran out, the jaguars turned to hunting calves. In this natural progression, it will make sense that when the calves run out the jaguars will start hunting cows, then humans. Prieto denounces the other rural people, calling them 'idiots' for having depleted the population of animals, and it is something that he is clearly unhappy about.

Prieto apparently expresses intrinsic values toward jaguars. He has observed that the reduction in both the jaguar population, and their prey, deer and wild boar, as a consequence of human action. Due to this Prieto seems to values jaguars intrinsically as having an independent moral worth outside of the sphere of human-use, even though jaguars predate on cattle.

Conversely Prieto values *tejones* instrumentally, they are a pest that steal maize plants, with a large population and a delicious meat. Although presumably Prieto realises that they are also nonhuman and have eat too, due to his different understanding and observation of *tejones* he expresses contradictory values towards them. In this way different observations and experiences are fundamental to how Prieto makes a distinction between his behaviour towards *tejones*, and his behaviour towards jaguars.

Perhaps Prieto thinks that jaguars are a more impressive animal than *tejones*, and that is why he is concerned about the vengeful killings. However Prieto appears to express similar understandings of deer and wild boar, in that he does not think it is legitimate to hunt them. These understandings must surely come from observations of population depletion by human action. This shows that observation and knowledge are important components in how Prieto makes sense of the animals of the forest.

We can observe in this example that people can attach different understandings towards different species of animals, thereby creating constricting classifications of behaviour towards them. While deer, boar, *tejones* and jaguars are all animals of the forest; the distinction that Prieto places on them is different.

There are complex meanings placed on the natural world, and how different animals of the forest are understood is not universal. Rather 'frameworks' are constructed with understandings, knowledge and experiences. These frameworks

therefore differ completely depending on the animal. It would be logical to expect that if an individual kills an animal for stealing crops, they would also want to kill an animal that predates on cattle, but this is not the case. As Prieto has experienced, from observing since he was younger, the reduction in animal populations such as deer, wild boar and jaguars, his framing of them is constructed in a way that makes it illogical to hunt them. Distinct experiences and understandings cause Prieto to express contrasting environmental values mediate through his differing behaviour towards *tejones*, deer, wild boar and jaguars.

Chapter Five: A Pigeon, an Eagle and a Vulture

I woke up under the vast canopy of the forest, with shafts of sunlight beginning to stream in through the leaves. *Grandi* and I had made a makeshift camp in a partially cleared area, finding the flattest spot we could to unroll our blankets. As I rubbed the sleep from my eyes I looked around to see Grandi crouching by the fire in the dawn light to get it flaming again in order to warm up some tea. We had to head off to find some food, and Grandi also wanted to show me a special viewpoint. So after a cup of capomo bark tea, a medicinal drink that also provides you with uplifting energy, and a few biscuits, we grabbed our gear – water, rifle, camera- and set off uphill, finding the way in our *huaraches*, traditional Mexican footwear.

Fig. 3 Grandi in the forest (Author's own image)

I was fascinated by Grandi's extensive knowledge of the fauna and flora of the forest. While Grandi and I come from very different backgrounds we got on well. He shared this knowledge with me, while we walked through the forest he plucked fruits from trees to hand to me to eat, and the previous night he had taught me how to hunt river shrimp.

I grew up on the outskirts of an English city, whereas Grandi has spent much of his life living in a ranch in the middle of the forested mountains. Consequently we both have very different experiences, knowledge and understandings of a forest. This would have profound implications on how we would make sense of three situations that we were going to face.

We were walking deep in the forest, and up here the cattle are fewer in number than closer to the towns, so there was a lot more vegetation that we had to navigate through. Grandi didn't use his machete to cut down any plants, as it would give away our presence to any creatures nearby. The going was tough, weaving and ducking between the undergrowth while simultaneously trying not to make too much noise to startle away what could be our breakfast. I was surprised that even up here I didn't see, or hear, as much wildlife as I imagined one should be able to.

We could hear *chachalacas*, a pheasant-like tree dwelling bird, making their distinct grinding call, but they were far away and higher up the mountain. After half an hour of walking up hill Grandi silently beckoned me to come by him on a rock and pointed through the vegetation.

He had spotted a *chachalaca* sitting on a higher branch about twenty yards away on an opposite slope. I was about to take aim when it flew off. My stomach grumbled, but then I noticed that a fat wood pigeon was perched not far from where the *chachalaca* had been just moments before. I crouched on the rock, getting myself into a comfortable position, bringing the butt of a .22 calibre rifle into my shoulder. I calmly used my left arm to align the barrel to the unaware pigeon. I slowly took aim, aware of Grandi's impatience next to me. I was sure that I wasn't going to hit the pigeon, it was a small target and it was quite far away. My only experience hunting had been with an air rifle and rabbits more than a decade before. I did have some training in shooting and I took what I had learnt about rifle alignment, from having been an army cadet when I was a young teenager, into the aiming at the pigeon. Earlier, when trying out the aim of the rifle, I noticed that the

alignment of the sights was slightly to the left. Taking this into account I held my breath, took my final aim and released the air from my lungs as I squeezed the trigger. I shot with little confidence, but as much to my surprise as Grandi's, the pigeon fell off the branch, wheeling and fluttering in the air, unable to fly, in shock and surprise at having suddenly been hit by a bullet. Grandi darted off to collect it. I followed and soon he was returning with the panting, terrified pigeon in his hand. The pigeon was very similar to those found in England, but with darker feathers. Almost complacently Grandi picked up a stick and began to bash the bird's head to kill it. As soon as it was dead Grandi started pulling out the feathers with expert skill and speed.

'I didn't think that you were going to hit it!' Grandi exclaimed.

'Me neither!', I replied.

'Great job Tomás!'

I put the naked carcass of the pigeon in my bag and we kept on walking uphill. Throughout the process of spotting the pigeon to storing the carcass, both Grandi and I had a mutual understanding of what the pigeon meant to us. It meant meat, a meal, and nothing more. The meat that I had just put in my bag would later provide us with sustenance to continue on our long hike.

We were heading to a viewpoint that Grandi assured me was rather spectacular. It was difficult finding a path, I was sweating heavily, and at times the loose forest floor made the going very slow. After an hour of trudging uphill the tree line gave way, and I could see the desired peak that we were heading for. Up in the sky I saw a circling eagle catching the mountain air currents to soar with as little effort as possible. I admired its grace, and the contrast of the white feathers with the bright blue of the clear sky. Grandi noticed the eagle too, and having been impressed with my previous shot he challenged me to shoot the eagle.

'You see that eagle up there, have a shot at it!'

'I don't want to kill it, why would I? We wouldn't eat it.' I replied.

'Oh we're not going to eat it, aren't we? But it kills the other birds we do eat!'

I let the eagle be. Maybe my behaviour was illogical to Grandi, after all I had just shot a pigeon, which is also a bird. In our perceptions of the eagle, both Grandi and I had a clash of understandings. But as I had been the one in the position to shoot the eagle and I objected, the eagle went on soaring outside the sphere of human wants.

We continued climbing, finally to make it to a peak of long grass, with incredible views of the coastal towns below, and in the other direction pure mountains and forest. It was an incredible view. We sat down in the grass and spread ourselves out. Grandi took out his metal dope pipe, and put in some of his fresh, forest-grown marijuana. He took a few drags and offered me the pipe and a lighter. I thought that out of all the places to have a smoke, this must be one of the best. I had some hits from his pipe and took in the magnificent view.

'You can see the ranch down there. From here to the ranch is my kingdom', Grandi said with pride.

We were at the edge of the land belonging to Grandi's family, and a great parcel of land it was. I could only make out the ranch due to the stony hillock that it was next to. Their land is vast and right in the heart of the mountains.

Grandi explained to me that he comes here sometimes and sits for hours looking out. He said that it was a special place to be, because only he and jaguars come up here. He pointed up at a higher ridge top and told me that he had found jaguar tracks even up there, and I think he was somewhat in awe of the jaguars mountain walking abilities, I certainly was and rightly so.

After looking out at this view for about half an hour I asked Grandi if we could head off back to the camp. It was approaching late morning and my stomach was reminding me that we hadn't had a proper meal yet. We started heading down the peak back to our camp. The going was much easier downhill, though at times a

bit hair-raising having to clutch onto trees due to the steep slope, whilst making sure that the trees were not the prickly kind likely to puncture your hand.

Fig. 4 Grandi filling his pipe, with the spectacular view behind (Author's own image)

We got back to camp at noon, and I went off to get some more water. Grandi waited for me to come back before preparing the pigeon so I could see how it was done. While I was gone he placed the river shrimp that we had caught the previous night into a pot with water to stew, and squeezed some limes picked freshly from a tree by our camp. Our meal had the makings of a small forest feast about it.

When Grandi cut into the meat of the pigeon he revealed a rich dark red, almost purple meat. He cut the breast open then removed the head. When cutting through the pigeon's neck he found four small fruits that the creature had been in the process of swallowing when it got hit by my bullet.

> ‘Look what it [the pigeon] was eating when you shot it! Now we can enjoy them.’ He said with enthusiasm.

He cleaned the fruits with some of the fresh water I had just collected, and handed me two of them. These were a tasty, slightly bittersweet fruit, and it was quite surreal finishing off the pigeon’s last meal. After having prepared the bird, Grandi skewered it on the end of a pronged and sharped stick and placed it to cook above the fire. While we waited Grandi served out the shrimp stew into our mugs. This we sipped and fished the rosy pink river shrimp out with our fingers, de-shelling them to enjoy the delicious meat. When the pigeon was ready Grandi took it off the fire, cut it in two and handed me half. The meat was moist, dark, rich and extremely enjoyable to eat. I nibbled the meat, picking between the bones making sure to eat every last scrap.

It was one of the most satisfying meals that I have ever had, made more delicious by the fact that Grandi and I had collected all of the food, apart from the tortillas, from the forest around us. We discussed what we should do after the meal. Grandi explained that if we had brought more tortillas with us we could have gone further into the forest to see his marijuana plantation, but as it was we would have to return to the ranch. I would have loved to have continued hiking and spent another night on the forest floor, but the soles of my feet felt like fire, so I agreed that we should head back.

This was easier said than done, and I remembered that we had a large ridge to go over before the downhill slope towards the ranch. After the meal we grabbed our stuff and headed off. My body was tired, and I was not all too talkative on the way back. My legs were aching and I wanted nothing more than to rest them in one of the many hammocks back at the ranch.

An hour or two into our return journey we were walking along a path that snaked along the contours of a hill. We were out of the trees and up above I saw a vulture flying not too high up. These vultures were a bird that I had seen a lot of in this area; it was commonplace to see a 20-strong wake of sinister looking vultures perched silently in a single tree. Fresh in my mind was Grandi urging me to shoot the eagle. I also remembered a video game that I used to play, *Red Dead*

Redemption, in which, as a cowboy, one would shoot circling vultures to practise the virtual aim.

'Shall I try and shoot down that vulture?' I asked Grandi.

'The vulture? No! You shouldn't kill those birds; they are the cleaners of the forest. The vultures makes sure that the forest stays clean, and besides their meat isn't good to eat.' Grandi exclaimed.

'Fair enough.' I said.

I shouldered my rifle and we continued on our way. As Grandi had encouraged me to shoot the eagle, I thought that he would also advocate using a vulture to practise my aim. I actually thought that he would be more in favour of shooting the vulture as I thought of it as an ugly and sinister bird.

Another two and a half hours of trudging and we made it back to the main ranch, our approached was met with a flurry of noise and activity from the dogs, cats, turkeys, chickens and donkeys. We put away our things and joined Grandi's father in the collection of hammocks swinging from the beams. I waited in silent satisfaction for Grandi to explain how I surprised him by being able to shoot the wood pigeon and give us a meal.

Fig. 5. Lounging in a hammock after returning from the walk. (Author's own image)

The Pigeon

As I looked at the pigeon through the sights of the rifle, and Grandi intently stared at it, we both understood the situation within the 'instrumental framework'. Within our common understanding, the pigeon was a meal with wings, and that if I had a good aim and was able to shoot it, it would subside our hunger. I aimed, shot and killed the bird in order to cook and then eat the animal later. I had previously shot and killed rabbits and had then skinned and cooked them in a stew. The killing of an animal in this way was logical as I was going to eat it, and therefore it made sense to kill it.

As an omnivore I believe that if one is going to eat meat then they should equally be able to kill the animal that provides them with that meat. By shooting the pigeon I understood it as merely the beginning of the process of having a meal. We did not perceive the pigeon as a nonhuman that has a value outside the sphere of human use. In this moment of mutual understanding killing the pigeon was no different to picking up and buying a cellophane packaged chicken in a supermarket.

Grandi wanted me to shoot the pigeon to see how good my aim was. He could have shot the *chachalaca* as he first saw it, and he then could have shot the pigeon, but he wanted to see if I could do it. He understood the wood pigeon as a meal sitting on a branch. He continued to make sense of the bird in this way as he ran off to collect the injured bird, kill it and begin to pluck out its feathers. Evidently from his expert and nimble fingers it was not the first recently killed pigeon that he had de-plumed. As a meal, the pigeon's feathers for Grandi were in the way and therefore were subconsciously and habitually taken out to reveal the meat below.

Both of our actions involving the pigeon expressed a mutual understanding of the pigeon as having an instrumental value. Our mutual understanding of the pigeon remained constructed of the 'instrumental framework' from killing the bird

to when Grandi de-feathered it, prepared and put it on a stick to roast over the fire. Nor did our collective understanding change as we picked the meat off the bone and ate it alongside a shrimp stew and tortillas.

The Eagle

Despite the fact that I had just killed a pigeon, I did not consider killing the eagle. Although it is a bird as well, it means something completely different to me. When I gazed up to see the eagle circling the situation was understood within the 'intrinsic framework'. I understood the eagle as aesthetically appealing, and as a beautiful sight. Until fairly recently birds of prey were heavily persecuted in England, mainly to stop them hunting pheasant and grouse, so humans can hunt these game birds instead. Therefore I do not commonly see eagles, and for that I was even more entranced in the way the bird glided effortlessly on the wind. I perceived the eagle in this context as having independent moral value, outside the use of human consumption. In understanding the eagle intrinsically, as a beautiful creature independent of human use, using the bird for target practice did not make sense.

Contrastingly this use of the bird did make sense in how Grandi understood the situation. His understanding of the eagle circling above our heads was within the 'instrumental framework'. In this framework, there is no significant difference between a pigeon and an eagle; both are flying animals that can be shot out of the sky. Firstly he understood it as an opportunity to test if I am really a good shot or whether it was just luck that led me to shoot the pigeon. Secondly he saw the eagle as something with which he is in competition for the other birds of the forest. He justifies the killing of the eagle, as there would be one less predator, and competitor for food in the forest.

The context of the eagle highlights how the construction of frames is dependent on previous experiences. Grandi might not have understood the eagle soaring up above as a moving target, and a way of challenging my marksmanship if I had not already shot the pigeon. I might not have understood the eagle with the intrinsically if I did not enjoy seeing them so much in England.

Our difference in how we both understood the eagle shows that the same scenario can be framed using a construction of different frameworks. Furthermore this example shows that although we had a shared understanding of the forest in how we mutually saw the pigeon, it became apparent in a following situation that actually we both had a very different perception of the forest. While it might have been logical for Grandi that I having shot the pigeon would then want to shoot the eagle, this was not the case.

The Vulture

When I saw the vulture I thought of it as a common and ugly bird. I viewed it as a sinister symbol of death, and a scavenger. I thought about it in reference to a video game, and as a way of challenging my shooting ability. Therefore, in this particular moment, I understood the vulture as only having instrumental value. I wanted to show Grandi that I could shoot it. How I understood the previous two situations, in that one should only kill if one is going to use the carcass, did not enter into my understanding of the vulture. In this moment I made sense to use it for target practise, and to show-off my marksmanship to Grandi.

Grandi knew that this particular vulture was one of many cleaners of the forest. Grandi's understanding of the vulture shows how two frameworks that, although contradicting, can co-exist in the same framing of a situation. In terms of Frame Analysis, there is a combination of the 'instrumental framework' and the 'intrinsic framework'. Grandi understands the vulture as existing in a role that is beyond having a meal or as target practice, that neither the pigeon nor the eagle are capable of. This role influences Grandi to understand it with the 'intrinsic framework' as it has a moral worth, independent of human use – the cleaner of the forest. Simultaneously, and in the same framing, the 'instrumental framework' is present. It is useful to Grandi that the vulture cleans the forest, but it would not be of practical value to kill the vulture simply for target practice. Not only would it be killing a cleaner of the forest but also the meat is foul and would not be suitable to eat. The role of the bird as the cleaner of the forest gives it greater instrumental and intrinsic value than having solely instrumental value as target practice.

I did not understand the vulture in the same way because I was unaware of this bird's role in the forest. In this way frames are built on previous knowledge and experience. By how Grandi understood the vulture, my understanding became undermined. The justification of the vulture as a cleaner of the forest is a better reason for not killing it, than my reasoning for shooting it. In this moment when the two frames clashed, my frame became superseded by how Grandi framed the situation, and thus I made sense of the vulture differently, incorporating the 'intrinsic framework' into my understanding of the situation. This reframing meant that I shouldered my rifle without complaint and let the vulture continue in its role. This shows how when someone makes sense of a situation, the framing can adapt to new situations, and contexts can be reframed by taking in a new understanding or experience. It also shows that if someone's reasoning for involvement is weak, then their understanding an easily be challenged.

The three different situations encountered and the resulting involvement, or lack-of, further shows that past experiences and knowledge are central in the organisation of involvement. By having a diverse range of experiences, knowledge and understandings, individuals can make sense of situations from the forest in vastly different ways.

Depending on the context different values merge and form to adapt to specific situations. On the surface it might appear that individuals have a similar understanding of the forest, and only when presented with a range of situations does it become apparent that they actually have completely different perceptions.

Frames aren't stable and in spontaneous interactions if frameworks are not constructed from solid foundations, it is possible for frames to become superseded. An individual can be directly affected while processing involvement, causing them to make sense of a situation in a different way. This new experience will then become part of the construction of frameworks and will help to build future frames.

Chapter Six: Compensation Schemes and Vengeful Killings

The previous two chapters have highlighted that people make sense of the forest in complex, and unpredictable ways. We will now turn to examine that how people make sense of the forest and its biodiversity is vitally important in conservation initiatives. The objective of this chapter is to present and examine how a compensation scheme motivated by compassion to protect jaguars, actually reinforces a negative instrumental value of jaguars in how ranchers make sense of the loss of livestock through predation.

From my experiences with the ranchers that use the forest as a natural corral in La Sierra de Vallejo, livestock, especially cattle, mediate the relationship they have with jaguars. The human-jaguar relationship reaches tension when a jaguar kills a calf, goat or other livestock. This is when the compensation scheme emerges, because the ranchers are supposed to receive reimbursement for lost livestock. In order to understand how ranchers perceive jaguars within this context, it is first important to present how they perceive livestock, more specifically cattle.

Cattle

Cattle are a very important factor in the conservation of forests and biodiversity in Mexico, and La Sierra de Vallejo. Many forests are treated as natural corrals for the majority of the year. In the rainy season the cattle are herded down from natural pasture of the forest to lowland pastures. As mentioned earlier, 57% of Mexico's land surface is used for cattle ranching, and up to 95% of natural pastures are thought to have been affected (Tamargo 2006: 129).

I met one ex-cattle rancher, *Chico*, who having seen the affect his cattle was having on the forest decided to sell them. The director of a conservation organisation introduced me to Chico, and he was happy to help in any way he could

with my project. Chico was a quiet, kind, intelligent, soft-spoken man, who never wasted words. He told me that since he was a child he had always loved the forest. In an interview he explained to me,

> 'We realised how the forest became clean, without plants, without new trees. Furthermore a business like traditional cattle ranching, well it's not a business, truly, you look at how we do cattle ranching in the region, well you need to have two hundred beasts or more, at least one hundred, but how can you afford that? The majority of people around here have thirty to forty cattle, but we had about seventy. However in smaller quantities, cattle ranching is not a business. It's also a very absorbent economic activity that takes up a lot of time, and attention, yeah. Above all, we didn't like how we saw the deterioration of the forest, and so we sold the cows. We still had the land, so we were thinking what we would do with the land right….'

He received a grant for ecotourism from the Ministry of Agriculture, and built an eco-ranch that included a restaurant and a watchtower. The ranch is also used as an area for releasing rescued wild animals into a conserved area, such as; armadillos, ocelots and *tejones*. Chico tries to use his ranch as an example to more a harmonious way of living with the forest. Tours from schools visit, and he explains to them how the eco-ranch functions in a sustainable way by using solar power and by having dry-toilets.

I camped in this ranch by myself for a week, working with Chico in the day doing chores such as cutting wood, and helping him prepare the eco-ranch for an *ayahuasca* ceremony. Unfortunately, the eco-ranch Chico owns is struggling. The money to transform the dirt road from the highway to a cobbled one, promised by the Ministry of Agriculture never arrived, leaving his eco-ranch isolated from the many tourist in Puerto Vallarta, just an hour's drive away. Chico was contemplating selling two-thirds of his land, eighty hectares. He explained to me that his heart told him not to sell, but that he needed money to replace the palm leaf roofs of his eco-ranch before the summer rains came.

Chico tries to bring in extra cash through hosting spiritual ceremonies, inviting shamans from home and abroad to lead the rituals. He also has a small-scale brand that processes the nut from the capomo tree. The nut makes a drink similar in taste to coffee; it is a natural relaxant and famous for helping mothers struggling to milk their babies. Chico and his wife, Luz, collect capomo nuts from their one hundred and twenty hectares. They only take what they need, leaving sufficient for the regeneration of new trees, and of course the deer, wild boar and other forest animals. The capomo tree grows very slowly, and it only produces nuts after ten years of maturing. Chico tries to make sure they grow, but often he competes with cattle that make their way onto his land. He showed me trees he had planted by the restaurant, that, after having matured for seven years, were eaten by a few intruding cattle.

Chico clearly understands the forest intrinsically as something that should be protected for its beauty and as a home for the native biodiversity. He disliked the clear effect on the forest by using it instrumentally as a corral, and in his own way he tries to conserve the forest.

Fig. 6. Chico's land on the left, compared to a natural corral on the right (Author's own image)

It was a joy walking with Chico through the forest on his land. The space was full of plants jostling for sunlight, and the forest floor was completely covered with leaves. There was a great amount of biodiversity in his conserved parcel of land, and after waking up at dawn I would creep along the small swept path to watch *tejones* jumping and playing between the trees in the early morning light. The difference between Chico's land and land used as a natural corral is quite clear in the photo. The fence, that attempts to keep cattle out, is the border between a jumble of native species, left to grow, as is their want, and land use for the corralling of cattle.

Other than Chico I only met one rancher who decided to bring his cattle out of the forest. He told me that all his cattle ended up being was food for mosquitos and ticks, so keeps them in a lowland pasture all year round.

Julio explained to me that when a conservationist urged the rural communities to bring the cattle out the forest and onto lowland pasture, to prevent human-jaguar conflict through livestock predation, he was met with fierce resistance. Some of the *ejidos* even receive money from the Environmental Services as compensation and incentive to not put their cattle in the forest, however I observed while walking in these areas that there were still cattle kept there.

Most cattle-ranchers do not contemplate taking their cattle out of the forest and do not like being prevented from doing, what is thought to be, their traditional economy. Cattle ranching is perceived to be a very important part of the rural livelihood, especially keeping cattle in 'traditional' natural pastures in the forest. Keeping cattle in the forest is thought to be very good business, as the ranchers don't have to worry about feeding them for a large part of the year.

'It's more secure to have money invested in cattle than in the bank'

One day I went with Demetrio up into the mountains on horseback. He is the *ejido* of El Colomo's cowboy and is responsible for maintaining the herd of 450 cattle that are kept on the *ejido's* common land. The herd consists of both cattle owned by

the *ejido* and by people who are two old, or unable, to take care of their cattle. Our trip into the forest had been organised by the President of the *ejido*, Victor, who had explained to Demetrio about my project, and that he wanted me to see the forests of the *ejido*, and how their traditional economy worked.

Our mounts carried us on steep paths, snaking between trees, climbing uphill. Demetrio's mule was flanked with white sacks containing salt. The objective behind our journey into the forest was to give salt to the cows in the natural corral of the forest. The cattle love to lick salt covered rocks, and are aware that when a cowboy comes into the forest shouting, he is likely to have salt. Rather than having to search the forest for cattle, they congregate in one place. Eventually, when the rains start, having the cattle gather in one place for their dose of salt makes bringing them down to pastures much easier.

We passed many sets of cattle, and the spots where Demetrio left salt were also areas with many capomo trees. The cattle ranchers exploit the knowledge of the tree; the leaf is extremely nutritious for cattle, and the nut is a useful component in cleaning the bovines' stomachs. Such Capomo woods as we passed through are ideal areas to keep cattle, and are called *majadas*.

The cattle streamed between the trees, pushing and shoving each other to get to the salt covered rocks. These cows are massive animals to be so close to, and often one would be shoved and press against my leg, but my experienced mule stayed calm in the midst of all the chaos.

After having left salt at the final *majada*, we tied up the mules and headed on foot uphill. Demetrio wanted to show me where a jaguar regularly crosses a stream, and where it is possible to see *guacamayas*, military macaws. Where we arrived to was like a 'Y' where two streams merged to become one. Cool gusts of air came through the small valley, whistling through the trees, but as for the wind there was no other noise. Demetrio assured me that normally there were macaws here, and he was surprised that we couldn't see any.

Fig. 7. Demetrio feeding the cattle salt (Author's own image).

As we sat there eating our lunch, cooled by the fresh air coming down the valley, Demetrio talked to me about the value of cattle, and the importance this value has to the people in the area. He explained to me that each cow is worth between 20,000-30,000 pesos (€950-1,500) and every bull values at about 60,000 pesos (€3,000). He told me,

> 'People value cattle greatly, in fact people think that it's more secure to have money invested in cattle than in the bank.'

He informed me that currently cattle ranching is a very good business, but five years ago the price for cattle was very low. So people didn't sell, they waited, and retained their investment until the value increased. Not only is cattle economically important, but it is also understood as a more stable way of storing money than putting it in a bank account.

In Demetrio's understanding the people in the area think that it is better to have money invested in cattle rather than in a bank account. This treatment of cattle as a sound investment, or a secure way of storing money, was explained to me many times by different cattle ranchers. I was told that when you need money, you sell a cow. Starting with a calf, a cowboy raises it and looks after it so it has greater economic value. Once I was shocked at how the thinking of cattle purely with economic value manifested itself.

'A Cow is Money'

I had been staying at the ranch of Jefe for a few days. One morning we went out on horseback to lead a herd of about fifty cattle to another pasture. I was riding a female mule, and for the first time I had been given spurs to put on my boots. Before I had only been using a stick to whip the beast's behind to make it go faster, but this time Prieto, had decided that I would ride like the other cowboys. As we came up to the cows many of them were sitting, scattered across the paddock. We

had to herd them out of the gate, so trotting along behind the herd, and wheeling our mounts we got the cattle standing up and moving in the desired direction. I saw a cow begin to walk the wrong way, leading others with it. I shouted '*Andale'* to my mule and dug the spurs into its belly, causing it to race over to the cattle. I came over to the right side of the cattle, wheeling the mule round to face them, all the while shouting 'Cow, where are you going!'. These few cattle turned around to follow the rest of the herd. Prieto shouted 'Well done Tomás!', and together we began following the cattle behind, sometimes having to shout at stragglers. As the whole herd move out I noticed that there was a white cow unable to stand, breathing heavily in the heat of the morning sun. I was told, upon asking Jefe, that the cow was sick and unable move. I was surprised that it hadn't been moved into the shade, or had any feed place next to it. I asked,

'What will happen to that cow?'

'It'll probably die soon', Jefe complacently replied.

'Aren't you going to feed it?'

'What's the point, it can't give birth anymore and we can't sell it'

I was taken a back at the brutality of this. The idea that as the cow had lost its economic value, it wasn't seen has having enough worth to even place her in the shade or be given some food to ease her suffering. In this understanding the cow is understood as having only economic value. When this value is lost, it is logical not to take care of it.

In reflection I realised I was only shocked at this due to my lack of exposure of such behaviour. Those of us that live in cities in the 21st century western sphere have vastly different relationships with animals. We make sense of domesticated cats and dogs, as animals we should care for, and occasionally panic when a 'wild' bird flies through an open window. The harsh brutality of the production of meat and instrumental treatment of livestock is mainly hidden from us, and this is why I was shocked at the treatment of the old, and dying cow.

‘A Calf is worth more than a Jaguar’

One day on a tortilla run with Julio we were in one of the small rural communities. This town is too far away to commute to the coast for work, and too hilly to farm, so the main economy is cattle ranching. I was talking to a rancher who was recounting to me how his friend had recently killed a jaguar for predating on his livestock. He finished the story by telling me,

> ‘Well a calf is worth more than a jaguar.’

When understanding the forest as a natural corral it is a fact that a cattle is worth more than a jaguar. In the business of selling cattle as an economic resource, cattle have more value than a jaguar. You cannot, legally, sell a wild jaguar, but you can quite easily sell a cow. A cow can be bought, sold and provides. A jaguar does not.

One friend explained to me in an interview,

> ‘Their wealth isn’t huge, look, most of these people have about 10 calves in their piggy banks. A child becomes sick, they sell a calf. They want to have a celebration, they sell a calf. They want to buy clothes…because it is what they have to live from. But you tell them that a jaguar has killed one of their calves, well, for you the jaguar is very important and the calf is not, but for them the jaguar doesn’t value anything and the calf is an important part of their livelihood.’

A jaguar can’t help you pay medical bills for a sick child, but a cow can. When understanding cattle instrumentally as an economic source, it makes sense to say that ‘a calf is worth more than a jaguar’. In this understanding it is does not make sense to have jaguars. A cattle rancher who thinks their livestock is threatened by jaguars sees no benefit in having them in the same forest as his cattle.

‘What is the benefit of having them?’

In an interview with Chico he explained to me that the only time he had ever seen jaguars was when he was seven years old. He had come out of school into the square, to be met with the sight of three dead jaguars. They had been placed there by a hunter, who had shot them for predating on cattle, for the townspeople to see.

I often heard stories of the killing and poisoning of jaguars, or coyotes, for having predated on, or been spotted eating, cattle. I was told one such story by a couple of greying cattle ranchers, and how after seeing vultures circling, one made a bet to the other that there is where they would find the jaguar. Sure enough, the winner explained to me, there they found the poisoned and bloated carcass of the jaguar. After telling me that story, one of the ranchers explained to me how the government release jaguars into the forest. Then he asked me,

> ‘What is the benefit for the government by releasing jaguars? What is the benefit of having them?’
>
> ‘I think’, his friend started, ‘that the benefit is no more to have them in the forest.’
>
> ‘But why?’, the other cowboy replied.

Within the cowboys understanding of the value of cattle, and the threat that jaguars pose, it is illogical to release more jaguars into the forest. What is the sense in having animals nearby that kill your livestock? The jaguar is understood as something that the government wants to have in the forest, despite the fact that it predates on livestock. The forest is understood as a natural corral, and within this understanding it does not make sense to protect jaguars, let alone increase the population.

These two cowboys also told me how the jaguars released by the government are loaded with special chips that track their location. If a jaguar is

killed, the government is able to see, via the chip and satellite imagery, who the killer was. This tall-tale is told in a bid to try and prevent the killing of jaguars. However when I first met Jefe at the rodeo, he wisely told me that in order not to be spotted killing a jaguar via satellite imagery, all you have to do is lace meat with poison.

I asked several conservationists about whether it was true that there had been government supported liberation of jaguars, but according to them it is just 'Chinese whispers' and gossip. They told me that in 2004 there was a jaguar moved from one area to another. The jaguar was moved into a different part of the forest and given a radio-collar because it had been killing cattle. I think that this combined with the fact that conservationists frequently tranquilise jaguars and give them radio-collars is where these 'rumours' have emerged from. Rumours or not, the local understanding of the rural people is that the government are releasing jaguars into the forest, and that the government wants them to be there.

The Compensation Scheme

Conservationists are also aware of the local ecological knowledge of how easy it is to kill a jaguar, and because of that a compensation scheme has been established in the last 10 years to pay ranchers the value of any livestock lost to jaguars to prevent vengeful killings. However as shall be discussed in this section, the existence of the compensation scheme encourages ranchers to make sense of livestock loss due to jaguars with an instrumental understanding. Combined with an ineffectiveness of the compensation scheme, this creates problems for conservation efforts and puts jaguars in greater risk of vengeful killings.

The official statement of the compensation scheme, as explained to me in an interview with the director of a conservation organisation, is that the rancher must first report the death by calling a special number within 72 hours of the kill. The person they talk to will ask basic information about the kill, the name of the rancher, location, time of day etc. They will also ask for the UPP number, the official number that all livestock should be registered by. Then someone will come to check the carcass and cross check the story of the death with that originally made

in the telephone call. If possible the rancher should take photos that clearly show the bite marks and of any jaguar tracks there are near the carcass. If the animal is far into the forest the rancher should cut out and nail the skin that has the bite marks and the ranch brand onto a board, and take the UPP number. Then when all the evidence is gathered and it is conclusive that a jaguar made the kill, the rancher should receive compensation for the dead animal.

After spending three months in the area, and talking to countless ranchers, at festivities, baptisms, or out in the forest, many claimed to have had their livestock killed by jaguars but not one had ever successfully received compensation for lost livestock. The general consensus, among those I talked to, was that the compensation scheme was a farce, made more so by the belief that one needs to take a photo of the jaguar eating your livestock in order to receive the money. One such rancher, *Viejo*, I went to visit, and we had a conversation on his experience with jaguars predating on his livestock, and his attempts to claim compensation.

Local Knowledge of the Compensation Scheme

Early one morning I hiked three hours through the forest to stay at Viejo's ranch. Although I had only previously been there once, I decided to risk losing myself and walk up alone. I wanted to talk to Viejo one-on-one without having another person present as a distraction. I became lost quite badly once, but I double-backed and continued on a different path. I eventually made it to the ranch but I was disappointed to find that no one was there. The donkeys and the main dog, *Negro*, were also missing, so I figured that the household must be out and about in their land.

It was a Sunday, and I hoped that they all hadn't gone into one of the towns. I had not eaten much yet so I nibbled at some cookies I had in my backpack, hoping someone would come back soon. I walked up to the rocky outcrop above the wooden buildings, to sunbathe and take in the beautiful view of the forested mountains that stretched to the bright blue Pacific Ocean. After a while I decided I was going to have to try and cook something in the rustic kitchen, but upon descending the outcrop I noticed one of the missing donkeys was now present.

Then I saw that Viejo, the old ranch owner, was back, and when he noticed me he gave me a great shout.

'Eeeeuuu Tomás!'

Viejo has been living on this ranch for over forty years. He originally came from Michoacán to grow marijuana, but after a government crackdown on the forest plantations he ended up in the state prison in Tepic. When he came back from imprisonment, his was the only family of nine left at the ranch, but they decided to stay. Over the years he bought the land from the other families and now he owns a parcel of land of one thousand hectares.

Viejo is a short, grey-haired man, with a loud laugh and a cheeky glint in his eyes. In the ranch he wears a large dark grey, worn out car-mechanic's shirt, loosely buttoned revealing his sunburnt, blotched and wrinkled skin below. For trousers he wears lose, cut-off blue chinos. His dirty feet protrude from cloth *huaraches*. On his ranch, Viejo is master. There is no one to judge him, he does what he wants. He often explained to me how much he relished this kind of freedom, which one can't experience when you live in a town.

He told me he had been at the banana plantations, and I explained to him how I'd gotten lost on the way up. He found this very funny, and he was extremely curious as to which path I had taken. Viejo knew his land well, and could imagine exactly where I had taken a wrong turn. He was impressed that I had made it all the way on my own, but he told me I should have shouted when I was lost as I was not too far from where he was at his plantations, and he would have been able to hear me.

Viejo beckoned me over to pick a hammock so that we could chat. Talking appeared to be one of his favourite pastimes, and often we would spend hours in the afternoons conversing. On this afternoon the conversation focused the killing of livestock by jaguars, something that I knew Viejo had experience in, but which I had never discussed with him personally.

I had previously found out, just as I was about to leave after my first visit, from Viejo's wife that a jaguar had been killing their goats, and after the third goat, a donkey was killed. She explained to me that she had told him to kill the jaguars to

prevent further loss to their livestock. This was in my mind as Viejo and I lay swinging in the hammocks. So I asked him about the possibility of receiving compensation if a jaguar predates on livestock. Viejo responded to my query,

> 'Well, there came a time when the government announced that it was going to start paying for livestock killed by jaguars, but the government never paid anything. When there was a jaguar killing my goats, I went to a man that was in charge of the compensation. He told me "Look, don't kill the jaguar, don't kill it, we're going to pay you". But the jaguar continued killing, and I never receive any money. So I one day I went and I told him "look man, are you going to pay me a thousand pesos each for my animals or what?"
> "No" he said, "look, buy yourself a camera…buy yourself a camera and when the jaguar is about to attack the animal you take a photo!"
> I told him, "You know what mate fuck off!"
> I was there in his office, I thought we were going to have a fight! But no, he didn't get angry. He said, "alright I've seen the stupidity, how would you be able to take a photo at night while the animal is eating, how will you see it?"
> I told him, "How do you think I would be able to buy a camera to take a photo of the fucking jaguar? You know what fuck off, there's no way!" So I used poison. There were two jaguars! It had been two jaguars that were hunting my animals. The next time an animal was killed, I saw that a piece of it had been eaten, so I laced the meat with poison. The next day, in the morning, I went over and I saw that they [the jaguars] had eaten again, and about 25 or 30 metres away from the carcass there they [the jaguars] were, side-by-side, male and female. And it was over.'

The conservationist promised Viejo that he would receive the compensation, but after several attempts at trying to receive it Viejo never did. This clearly angers Viejo, especially as the conservationist suggested buying a camera to take a photo of the jaguar eating his goats. The understanding of Viejo's goats as an economic

resource is reinforced by the promise that he will receive compensation. Viejo then continues to make sense of a jaguar killing his goats as something that has negative economic value. Therefore as Viejo was being promised money for his goats, but never received it, when the killing of his livestock continued, it made sense to put poison on the carcass of one of his dead animals. By doing this he ended the problem of losing goats. Unfortunately this also led to the death of two jaguars, but as far as Viejo was concerned, the issue of losing livestock was over. Viejo continued,

> 'I haven't had any more problems. But you realise this government are pigs, they say there are going to pay but they never pay for an animal. If they had paid me then I wouldn't have killed them. I would have cared for my animals without killing the jaguars right? But if they were paying. The government didn't pay… Look Tomás, a goat, or a cow is money. The government could have these animals [jaguars] but if they paid! The jaguar has to eat right? It has to hunt by law, but they [the government] never paid. If they had paid we would lock-up our animals in a corral. In the day they [the livestock] are free, in the day the jaguar doesn't eat, it eats at night. So you put your animals away at night, and in the morning you release them, but if they [the government] are paying you. But if they don't pay you, why would you have this problem?'

Viejo rationalises the fact he killed the jaguars because he wasn't receiving compensation. If he had received compensation he would do the extra work of putting his animals away at night, but as he does not, why bother? If he laces poison into the carcass of killed animals, the problem of predation ends. Viejo also understands the presence of jaguars as something the government wants. Viejo recognises that the jaguar has to hunt, so it is an animal that by natural law will predate on his livestock. However in his understanding of the jaguar as an animal that predates on his livestock, his property, it is not logical to protect them.

> ‘How is protecting these animals [jaguars] going to be good Tomas? It isn’t a business. The jaguar doesn’t have a value, they don’t extract any product from them. What do they get from them? For what are they paying? They don’t get anything, it’s not like having so many animals [livestock] right? So they don’t get anything, nothing…why are they protecting them? It is not a luxury or a beautiful thing to have jaguars here because with one of these animals, well what can you get from it? Nothing! Although locked-up yes, because people can go and see them, that’s true. But free, what the fuck do you get?’

Viejo understands that the jaguar only has value if the government pay the promised compensation. Viejo compares the jaguar to livestock, ‘productive’ animals, and due to this it does not make sense at to why the government would protect them. Viejo does not perceive the compensation scheme as something that tries to protect the jaguar because of intrinsic value. He understands the jaguars as something the government wants, which in his mind is an illogical desire. The jaguar, or a 60 kg pest, affects economic livelihood by killing something that for Viejo is instrumental to him, through its economic value. Therefore jaguars affect his economic stability. If money is received for the value of the cattle then a Viejo will not vengefully kill the jaguar, but if not, it makes no sense to have jaguars roaming around free in the forest.

Viejo suggests that perhaps there is one product you can get from the jaguars, but only as something to be looked at in a cage. He doesn’t understand them as something of value when they are walking free in the forest. In this understandings jaguars are not perceived as having independent moral value outside of the human sphere.

The understanding of cattle as having more value than jaguars, and that jaguars are a nuisance, is legitimised by the existence of the compensation scheme. The motivation behind the compensation scheme is of compassion, as conservationists want to promote the jaguars as something of intrinsic value that should be protected. However by employing the compensation scheme, conservationists acknowledge that livestock are of economic importance and that cattle, or goats, have instrumental value to livestock owners. The conservationists

understand that this economic source, cattle, is at times affected due to the predation of jaguars.

How the compensation scheme displays the jaguar, reinforces how a cattle-rancher understands the negative economic value of having jaguars in the forest. In terms of frame analysis the compensation scheme reinforces the 'instrumental framework', and consequently how rancher make sense of a jaguar predating on their livestock. This becomes an issue for the conservation of jaguars when the promised compensation for the lost commodity doesn't arrive. When the money doesn't arrive it is perceived as the government, who want jaguars, failing to pay. When a rancher does not receive the compensation the jaguar is still framed negatively within the 'instrumental framework'. With such a framing of jaguars, when compensation doesn't arrive, the logical decision is to kill the jaguar. By doing so the problem of losing an economic resource comes to an end.

This highlights how it is important to understand how people make sense of different situations within the forest. Something designed to reduce jaguar killings can actually have an adverse effect due to how it enhances a negative understanding of jaguars. This shows that conservationist must think very carefully about how they promote understandings of jaguars, especially when there is a problem with the ranchers receiving the compensation.

Conclusion: Practical Considerations for Conservation

This study has shown that the way in which people make sense of the forest is not always coherent or logical. People may appear to make contradictory statements, and express apparently contrasting environmental values in how they talk about, or involve themselves with the different animals of the forest. People have complex understandings of the biodiversity of the forest, with expression of different values stemming from different perceptions and observations of animals.

Experiences guide people in how they make sense of the forest. Observations of the depletion in animal populations cause people to categorise and understand animals differently in ways. This leads people to express, what appear to be, illogical behaviour towards animals. For instance, one would expect that if *tejones* are killed for stealing maize, it would be logical that the same person would advocate the killing of jaguars for predating on cattle, an important economic resource.

Different understandings, or knowledge, have profound effects on how two people perceive the same situation. This only becomes apparent after the same two people have experienced several situations, as with the case of Grandi and me. This further demonstrates that knowledge has an important role in guiding a person in the organisation of involvement.

How people understand and make sense of the forest is incredibly important for conservation policies and strategies. Conservationists must take care as to what kinds of understandings are being promoted. This is essential because, as this research has shown, people not only make sense of the forest and its biodiversity in complex ways, but also ways that are familiar to them. This is well exemplified at how ranchers make sense of the compensation scheme designed to reimburse lost livestock. This scheme reinforces the understanding of jaguars as an animal of negative economic value, and as something that has little place in a forest full of cattle. Due to the perceptions that the government releases jaguars in the forest,

combined with the belief that the government is meant to be paying the compensation, when the money doesn't arrive, ranchers choose what for them is the logical choice, resulting in the death of jaguars.

'Quick-Fix' Solution

If conservation strategies want to quickly achieve conservation aims and work with local communities, then they must adapt their understanding of the forest to that of the locals. By that I mean, if local communities understand the forest instrumentally, as a place to corral cattle, and that jaguars have an negative economic value, then conservation organisations must find a way of incorporating these understandings into their strategies. One way to mitigate human-jaguar conflict would be for conservations to demonstrate to the ranchers that jaguars have an economic value greater than cattle. If conservation organisations can show local communities that the forest is more valuable when cared for, and that jaguars have an important economic value, for example through ecotourism, then a positive understanding of the forest will promoted, but in a way that is familiar to the local communities, instrumentally. By promoting an understanding of jaguars in a familiar way, as a productive animal, conservationists may be able to influence rural ranchers not to understand jaguars negatively, but positively with instrumental and economic value.

This strategy is a 'quick-fix' solution. It does not change the ranchers understanding of jaguars. The instrumental understanding is merely shifted to perceive jaguars as having positive, rather than negative, economic value. Over time this may lead to a greater appreciation of jaguars, and a desire to protect them for more than just economic value. However, rather than merely adapting how people make sense of the forest, it would be better to construct pro-environmental worldviews over time so that people value jaguars intrinsically, and for their independent moral worth.

Long-term Initiatives

This study has shown the importance of the construction of understandings in how people make sense of the forest. Some people express environmental concern to animals known to have struggling populations, but not to other species. These two different understandings produce contrasting ways in how people organise involvement within the forest.

With this in mind, conservation organisations should promote environmental classes at the rural schools. Wider environmental issues should be taught, as well as local level problems. I observed a limited understanding of the animals in the forest by some of the people I met, and this is down to a lack of formal education. Rural people may work in the forest and build knowledge through experience, but many locals work away from their towns, and at the coast, rarely visiting the forest. Creating a large community wide appreciation of the forest is essential in building pro-environmental understandings that can construct how people make sense of the forest.

At the moment many people think that it is the government that want jaguars to be in the forest. Through education, building understanding, and environmental awareness, rural people may come to appreciate the jaguar as a beautiful and precious component of the ecosystem of their forest, that is intrinsically valuable.

Conservation strategies must identify the importance of building up understandings over time, rather than expecting rural communities to understand a situation in a novel way directly. Without long-term construction of understandings conservation strategies will continue to scratch the surface and not affectively change how people make sense of natural beings and landscapes. It is essential that there is a motivation to increase such efforts as human populations will continuingly be involved and interacting with ecosystems and biodiversity.

Role of Traditional Ecological Knowledge

This study has shown the importance of understanding traditional ecological knowledge to reveal how people make sense of animals. The role that an animal plays in the forest may cause some to understand it intrinsically, such as the role of the vulture. The vulture is a part of the life of the ecosystem, as a cleaner of the forest, and Grandi's understanding of this influenced him to treat it as having independent moral worth. This demonstrates that it is vital to have an understanding of local ecological knowledge, in order to understand the nuances of how people make sense of the forest.

Of course, and as demonstrated, local ecological knowledge is not always positive to conservation efforts. Nonetheless it is important for conservationists to be aware of the reasons why and how people enact local knowledge. The local understanding that jaguars return to the kill the next day, puts jaguars at a high risk of being poisoned. The awareness of this local knowledge should promote conservationists to try to decrease the time when someone from the compensation scheme goes to visit the kill site.

One idea would be to establish *paraecologists* in the rural communities. A paraecologist is a member of the community that bridges the gap between the scientific conservation organisations, combining local ecological knowledge with scientific understanding. Such a person would be able to visit a kill site quickly, and as a trusted member of the community they would have more chance of deterring any poisoning. Such a role would work well if combined with a better functioning compensation scheme that paid ranchers for their lost livestock.

The Role of Cattle

Another policy that could reduce the human-jaguar conflict in the loss of livestock would be to influence a change in treatment to dying cattle. There is an importance placed on cattle as being economically valuable, but this value is lost when they reach a state in which they can no longer function in their role. Conservationists should exploit this attitude and try to influence the ranchers to leave their dying and unproductive cattle on the fringes of the forest. Old cattle could be placed together in one parcel of land by the forest, providing jaguars with an alternative food source and mitigate predation on economically valuable

cattle. This strategy takes a local understanding of livestock, and therefore it should not receive too much criticism from the local ranchers.

Lessons for Environmental Anthropologists

As environmental anthropology is still an evolving discipline it is important to present a few methodological lessons for future environmental anthropologists.

The environmental anthropologist seeking to study rural communities interacting in their environment must be ready to put their body through enduring activities. Rural people are used to working, walking and living in the forest, and if, as a researcher, you want to understand how they use or live within a forest, you must be prepared to put yourself through uncomfortable situations.

The environmental anthropologist must be respectful and not act like an expert. I was often asked where England was, and met with surprise when I explained that it was not north of North America, but rather over the ocean to the east. I did not smirk, or behave like I was more intelligent than them. It is important for anthropologists to be humble. After all in a rural environment I was a student, not an expert. I did not know how to hunt river shrimp, herd cattle or milk cows and goats. If you are not an expert in a rural environment, do not act like one. Be respectful, patient and seek to learn from your informants. This will open you up to a whole new range of knowledge, while hopefully building up rapport with rural communities.

It is important not to be squeamish. Rural communities have much more involved relationships with animals, and environmental anthropologists must be prepared to see a very different treatment of animals. Relative to the norms of the communities, this treatment is not necessarily wrong. While some actions can be questioned, it would be out of place and disrespectful for a researcher to denounce them. In this way the environmental anthropologist should be prepared to kill an animal. If building up rapport is an important methodology, and it is ordinary to kill an animal in the community, then it should also appear ordinary for the researcher.

The environmental anthropologist researching in rural settings must listen to the advice of their informants. In many rural areas there is drug trafficking, and in

my research area there were cartels operating. When I first arrived in the rural community the area was swarming with soldiers looking for a cartel member. I did not panic, but I listened to my informants when they told me where not to go, and who not to talk to.

While the environmental anthropologist may want to involve himself or herself as much as possible in their communities, it is important to remember that rural communities often have very different perceptions of safety. The environmental anthropologist should not be convinced to do anything that puts them in harm's way. More than once I was encouraged to ride a bull, and I genuinely considered doing it, before realising what a foolish thing it would be to do just to build a stronger rapport with my informants.

Concluding Remarks

This study has shown the role that environmental anthropology can play in the study of how local communities interact with their surrounding environment, and how they perceive conservation initiatives. The study has highlighted that environmental anthropology studies are invaluable to providing greater understanding of how people make sense of the natural environments, such as forests. With expanding populations and continued reliance and use of biodiversity, it is essential that environmental anthropologists step into these settings to provide greater understanding of the local level, and how rural people interact with their environment. It is only through understanding the human element will long-term conservation efforts be successful. Conservationists must work, and involve local communities. They must provide clarity as to why certain species are being protected. If long-term conservation efforts are to be successful, then rural communities must be understood as part of the solution.

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Illustrations

Title image. Author's own image

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