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Fortrolige beist: En undersøkelse av forholdene mellom mennesker og store rovdyr i det vestlige India

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Abstract

This thesis explores the complex relationships between humans and large carnivores that emerge from their located histories and socio-biological processes. The aim of my research is to understand how these relationships are constituted by different actors and to highlight the reductionist tendencies of current conservation practices that are based on creating dichotomies, which marginalise humans and non-humans alike. I do this by using a theoretical framework that recognises agency in humans and non-humans, as an ability to act and influence the actions of other actors. Thus, social actors are hybrids of nature and society and can be humans and non-humans. The main fieldwork was carried out in western India and the discussion also draws on data from other areas in India and Norway for comparisons. One of my key findings is that current scientific knowledge on large felids in India is shaped by the dualistic ontological and epistemological framework within which conservation in India is located. The influence of this nature-society dichotomy is evident in the central focus on the biology of the large felids in protected areas, with little insight on their relationships with humans, other than antagonism. Another important finding is that concepts such as 'nature', 'biodiversity' and 'conservation' are not universally understood by everyone in the same way. Instead, they emerge from located histories of shared relations between different actors. Thus, even the framework of dichotomies that organises discourses of modernity and conservation is located in a specific time and place in history. Its application, however, is locally negotiated in the context of variable political, economic, social and biological processes. The thesis illustrates that these processes are not insular and that the resulting negotiations which take place when different ontological discourses interact, lead to varying outcomes including contestation, marginalisation and co option. Human-large carnivore relations are also influenced by the processes of negotiations between different human groups over the use and management of resources. The analysis suggests that if these processes are characterised by discontinuities and contestations, then the relationship between large carnivores and humans may get embedded in these conflicts.

Fortrolige beist: En undersøkelse av forholdene mellom mennesker og store rovdyr i det vestlige India.

Sammendrag

Denne avhandlingen undersøker de komplekse forholdene mellom mennesker og store rovdyr utfra deres stedfestede historier og sosiobiologiske prosesser. Formålet med forskningen min er å forstå hvordan disse forholdene er sammensatt av ulike aktører, og å belyse reduksjonistiske tendenser i pågående vernepraksis som skaper dikotomier som marginaliserer menneskelige og ikke-menneskelige aktører. Dette gjør jeg ved å benytte meg av et teoretisk rammeverk som anerkjenner menneskelige og ikke-menneskelige aktørers agens, som muliggjør handling og påvirkning av andre aktørers handlinger. Sosiale aktører er derfor hybrider av natur og samfunn, og kan være menneskelige eller ikke-menneskelige. Feltarbeid ble i hovedsak utført i det vestlige India, og diskusjonen drar også veksler på komparative data fra andre deler av India, og Norge. Et av mine nøkkelfunn er at gjeldende vitenskapelig kunnskap om store kattedyr (*large felids*) i India er formet av et dualistisk ontologisk og epistemologisk rammeverk, som naturvern i India befinner seg innenfor**.** Innflytelsen av denne natur-samfunn-dikotomien er beviselig i det sentrale fokuset på biologien til store kattedyr i verneområder, med liten innsikt i deres forhold til mennesker, foruten sterke motsetninger. Et annet viktig funn er at begreper som 'natur', 'biologisk mangfold' og 'naturvern' ikke er universelt forstått av alle på samme måte. Disse begrepene springer i stedet ut av stedfestede historier om felles relasjoner mellom ulike aktører. Også rammeverket av dikotomier som setter modernitets- og vernediskurser i system er knyttet til bestemte historiske tids- og stedsreferanser. Anvendelsen av dette rammeverket er lokalt forankret innenfor en kontekst av skiftende politiske, økonomiske, sosiale og biologiske prosesser. Denne avhandlingen illustrerer hvordan disse prosessene ikke er isolerte prosesser og hvordan forhandlingene som foregår når ulike ontologiske diskurser samhandler har skiftende utfall, som inkluderer strid, marginalisering og overtakelse. Forholdet mellom mennesker og store rovdyr er også påvirket av forhandlinger mellom ulike menneskegrupper om bruk og forvaltning av ressurser. Analysen antyder at dersom disse prosessene er karakteriserte av diskontinuitet og strid, så kan forholdet mellom store rovdyr og mennesker bli forankret i disse konfliktene.

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LIST OF PAPERS

This thesis is based on four papers referred by their roman numerals:

Paper I: Sunetro Ghosal, Vidya Athreya, John D.C. Linnell, Pål Olav Vedeld: An ontological crisis? A review of large felid conservation in India. *Submitted to a peer reviewed journal.*

Paper II: Sunetro Ghosal and Nitin Rai: Between the social and the natural: Exploring value paradoxes of the conservation discourse in India. *Submitted to a peer reviewed journal.*

Paper III: Sunetro Ghosal and Darley Jose Kjosavik: Living with leopards: Negotiating morality and modernity in western India. *Submitted to a peer reviewed journal*.

Paper IV: Sunetro Ghosal, Ketil Skogen and Siddhartha Krishnan: Locating human-wildlife interactions: Landscape constructions and responses to large carnivore conservation in India and Norway. *Submitted to a peer reviewed journal.*

1. INTRODUCTION

The collection of people chatting around the groundwater well was anything, but ordinary. The restive crowd mingled in the fields surrounding the well, craning to get a glimpse of the activities unfolding at the well, betraying something was afoot. Immersed in the collective around the well, were local forest officials, policemen and local farmers, including the owner of the well and the fields that surrounded it. In the well, seated on a ledge just above the water level, was a young leopard peering up nervously.

Egged on by his audience, the farmer once again recounted the events of the previous night, when the leopard-in-the-well and a sibling, under the watchful gaze of their mother, had picked a fancy for the farmer's chicken, which are not covered by the state's compensation schemes. This flock of chicken had been trained to spend the night perched high on a tree, while the farmer and his family slept in the courtyard below. Spooked by the leopards, the frightened birds tumbled off the tree, with the cubs managing to grab a chicken each. The cubs' mother watched this drama unfold from the field, while the farmer and his family followed it from the courtyard till the bundle of feathers and spots disappeared into the darkness. Unknown to the farmer, the excitement of the chase was short-lived for one of the cubs who stumbled into an open groundwater well, along with a chicken. The cub managed to scramble onto the ledge in the well but the chicken possibly drowned immediately.

In the morning, the farmer's son arrived at the well to switch on the electric motor to water the fields and discovered the cub. The farmer promptly alerted the forest department, who arrived with the police in tow to keep the gathering crowd at bay. The small group around the well discussed strategies to rescue the leopard. Though these discussions focussed largely on the leopard, it was laced with the humour of a group of people knew each other well. Even as his peers teased the farmer for his habit of keep chicken up on a tree, he offered the only surviving chicken as feed for the leopard but was turned down by the officials.

Finally it was decided that they would wait till dusk before lowering a ladder into the well. The intensity immediately of the conversation eased as they started to prepare the makeshift ladder with material borrowed from the farmer. As they worked, the farmer and his neighbours joked about a past when there were fewer leopards in the area, and when such situations were dealt very differently: by stoning the unfortunate animal to death. When queried on why they did not stone this leopard to death, a neighbour explained: "Well, those were different times...there were fewer leopards around...we were also ignorant about them and some people would get angry [over depredation losses]...but now we recognise that they

[leopards] too are living beings and need to eat. Even the government protects them [leopards] now and we would be arrested if a dead leopard is found in our well!" Around dusk, the cub raced up the makeshift ladder, once it was lowered into the well, and disappeared into the darkness.

This incident took place in the summer of 2008 and provides a glimpse into the complex relations between humans and non-humans. It is located at the crossroads of a specific located history of shared relations between leopards and humans, the hegemony of the state in environmental management and negotiations of change. Similar close encounters with large carnivores in other contexts, as explored in this research, emerge differently with their specific history of relations between humans and non-human actors. In this incident, the leopards were aware of the farmer and his family but did not harm them in anyway and were in turn unmolested by them. The farmer on his part was not vengeful towards the leopard-in-the-well despite the toll it had taken on his flock of chickens. Instead he invoked the state's mechanism to rescue it and also offered the remaining chicken for no material return. These actions emerge from specific moral and political histories of relations that are co-constituted by humans and non-humans.

1.1 The Research Problem

As illustrated by the incident above, the relations between humans and non-humans are complex and dynamic. These relations have been theorised in multiple ways ranging from conflict and coexistence to dominance and trust (Ingold 2000; Woodroffe et al. 2005). Inherent in these relations are both threats and opportunities to manage biological diversity, which is the key challenge for environmental conservation efforts around the world (Adams 2004; Herda-Rapp & Goedeke 2005; Rosenzweig 2003; Woodroffe et al. 2005).

One of the central narratives of the formalised conservation efforts is one of a 'modern ecological disaster driven by human activities' evident in the concerns voiced by Carson (1962) and Leopold (1966). This has resulted in a diversity of policy measures and strategies to protect biological diversity including species protection, demarcation of protected areas (PAs), trophy hunting and wildlife tourism (Adams 2004; Brockington et al. 2008). These measures are located within specific histories and discourses with their ontological and epistemological assumptions on the relationship of humans and nature. The discourses of modernity are organised around Cartesian dichotomies, including nature/society and traditional/modern (Ingold 2000; Latour 2004). This has laid the foundation for the

development of market-based capitalism, where nature is objectified as a resource for exploitation and simultaneously requires protection from human actions (Brockington et al. 2008). However, this is one expression of these relations and authors like Ingold (2000) and Haraway (2008) argue that there are numerous others, which emerge from their located histories.

This recognition of plurality does not suggest that these alternative relations are benign in relation to their modern counterparts. For instance, in some discourses of modernity, traditional ecological knowledge systems have been romanticised as being sustainable and ecologically sensitive ('noble savages') in contrast with the ecological destructive tendencies of modern societies (Ingold 2000; Robbins 2004), while others seek to modernise them by relocating them from 'natural' areas (Karanth 2005). However, as pointed out by Berkes (2008), traditional ecological knowledge can also be based on ecologically destructive practices just as others may be ecologically benign. Scholars such as Diamond (2005) illustrate this with case studies, though he has been critiqued for being rather reductionist and deterministic (Robbins 2004). Science too is a body of knowledge, which has dominated discourses of modernity and its efforts to manage (and modernise) human-nature relations (Latour 2004; Robbins 2001). However, despite the privileged position enjoyed by science in governance and policy, it continues to be contested through debates on ontological and epistemological assumptions as well as the inherent politics of knowledge generation (Foucault 1980; Foucault 2008; Haraway 1991; Latour 2004; Robbins 2004).

In this research, I problematise these discourses of power, development and knowledge production, which constitute an important influence on the history of relations between humans and large carnivores. The different cases, from which I draw inputs, were carefully chosen for their location on the intersection of different discourses on human-nature relations. For instance, conservation practice in India takes two forms: landscape-level protection through creation of protected areas (PAs) and legal protection at the species level. However, environmental change and conservation are located within unequal distribution of relations of power, especially between the state, its representatives and different actors (Guha 2003; Paulson et al. 2003; Robbins et al. 2009). The conservation discourse itself is contested by different claimants, with elite (and largely urban actors playing a key role) actors playing influential roles as scientists, activists, policy makers and tourist operators, while politically and economically marginalised communities are increasingly sidelined (Chhatre & Saberwal 2006; Guha 2003; Jalais 2005; Rangarajan 1996; Robbins et al. 2009; Skogen et al. 2008; Vasan 2005). As a result, these discourses function selectively to provide access to protected

areas for resource extraction for capital accumulation including tourism, mining and industries, while localised claims are marginalised (Gupta 2010; Robbins 2004; Saberwal & Rangarajan 2003; Saxena et al. 2010). Not only is access to resources and land use patterns at stake here but also the located histories of relations. In time these relations too change as marginalised communities are integrated into discourses of modernity to exploit natural resources and in turn be exploited by powerful groups.

A lot of literature has focussed on the intensification of existing inequities through the working of such conservation discourses (Baviskar 1994; Chhatre & Saberwal 2006; Cronon 1995; Jalais 2005; Neumann 1998; Saberwal & Rangarajan 2003; Shahabuddin & Rangarajan 2007). In this context, Robbins (2001) provides an insightful discussion on the complexity of land use patterns that do not fit the simplistic divisions of nature and society. Even the so called 'natural' spaces in protected areas cover less than 5 percent of India's landmass and a significant share of its biological diversity probably lives outside this network. It is in the context of these inequities of power and the potential presence of large carnivores outside the PA network that I explore the relationships that emerge between humans and non-humans in different located histories. Thus, this research is located in the conceptual borderlands where discourses of conservation, science, society, development and politics mix together. The following section sets out the objectives and research questions explored for this study.

1.2 Objectives and Research Questions

The overall objective of this research is to understand how the relations between large carnivores and humans emerge and are influenced by different discourses, policy and knowledge systems. These relations emerge from discourses of science, policy, economics and power. In this research, I ask: *How do different discourses shape the emergence of relations between hybrid actors like large carnivores and humans*?

Given the complexity of this relationship, there are several different themes and responses to this question, of which I explore some in this thesis. For instance, one sub objective is to review and characterise scientific knowledge about large felids in India. This body of knowledge is an integral part of the conservation discourse, providing it with legitimacy and strengthening its 'regimes of truth'[1]. I explore the patterns of knowledge

[1] The concept of 'regimes of truth' is derived from Foucault (1980), who argued that 'truth induces regular effects of power' through mechanisms of costraints and discourses of value on what counts as 'true' and 'false' and social status of those charged with saying what counts as 'true' (p. 131).

production and analyse the ontological assumptions of scientific knowledge of large felids in India to highlight potential knowledge gaps.

*Research question*s:

1. What significant patterns emerge from the scientific discourses of large felid conservation in India and why are these patterns evident?
2. What are the management implications of these patterns, especially in terms of critical knowledge gaps?

A second sub-objective is to explore the functioning of the conservation discourse in establishing conservation, political and economic priorities for spaces, human activities and animal populations. This sub-objective addresses the functioning of different discourses in the context of relations of inequity, within which human-animal relations are also embedded. I explore the impact of the conservation discourse on these inequities by comparing the relations that emerge from different practices of resource management and political negotiations.

*Research question*s:

1. What kind of relations emerge between different actors through the practices of the conservation discourse?
2. What are the political dynamics that shape the outcomes of contested ontologies of human-nature relations India?
3. Why do different relationships emerge between humans and non-humans within the same policy framework?

A third sub-objective is to explore the heterogeneity of power relations that emerge through the located histories of relations between different actors. This addresses the functioning of different ontological frameworks that anchor these discourses and the context within which they interact, influence, compete and assimilate each other. It explores the overlaps between political and economic inequity, located histories and pluralistic relations of actors.

Research questions:

1. What relations emerge between humans and leopards through different ontological practices of ‘nature’?
2. How is power negotiated in relationships between human and non-human actors?

A fourth sub-objective of this research is to explore the heterogeneity of social constructions of landscapes and its implications for the relationship between large carnivores and humans. Social constructivism has been critiqued for its dualistic ontology, which is incompatible with the theoretical framework used by this research. However, as Castree and MacMillan (2001) argue and I elaborate later, it is possible to reconcile these two frameworks, without resorting to dualisms. This sub-objective explores this reconciliation by discussing the impact of located history on relations between different actors.

*Research question*s:

1. What are the social constructions of large carnivores?
2. How is the landscape socially constructed by the people who use it?
3. What impact do landscape constructions have on relations with large carnivores?

1.3 Structure of the thesis

This thesis is comprised of four independent papers and an introduction which provides the overarching theoretical framework and context. The thesis is organised in two sections.

The first section provides a background discussion on human-nature relations to contextualise the thesis. More specifically, it locates conservation discourse in India, within specific political histories, with a diversity of implications for human-nature relations, which are in turn connected with the research questions raised in this thesis. This is followed by a discussion on the theoretical framework that contextualise this thesis and the methodological approaches used, before summarising the main findings of each independent but interconnected research paper presented in the second section.

The second section includes the four papers listed below with an indication of their publication status. These papers are referred by their roman numerals (I, II, III and IV).

Paper I: Sunetro Ghosal, Vidya Athreya, John D.C. Linnell, Pål Olav Vedeld: *An ontological crisis? A review of large felid conservation in India* (Submitted to a peer reviewed journal)

Paper II: Sunetro Ghosal and Nitin Rai: *Between the social and the natural:* Exploring value paradoxes of the conservation discourse in India. (Submitted to a peer reviewed journal).

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Paper IV: Sunetro Ghosal, Ketil Skogen and Siddhartha Krishnan: *Locating human-wildlife interactions: Landscape constructions and responses to large carnivore conservation in India and Norway* (Submitted to a peer reviewed journal)

2. HUMAN-ANIMAL RELATIONS: THE PLURALITY OF FRAMEWORKS

The question of human-animal relations is one about creating conceptual boundaries and classification schemes on what defines 'human' in relation to other known life forms (Haraway 1989; Ingold 1988; Mullin 1999). These schemata have very political, moral and social implications on the actions of its adherents. As the discussions in Ingold (1988) highlight, these discourses of boundary creation are fraught with difficulties and challenges, stemming from the very real dangers of ethnocentricism and anthropocentricism. In this section, I will summarise and critique these discourses with their implications on the diversity of relationships between humans as well as non-humans. I argue that these relations are co-constituted by humans and non-human, which has implications for the conceptualisation of 'nature' and 'society' and 'actors'.

My use of 'political' and 'politics' is derived from the work French philosopher Michel Foucault and articulated by Paulson et al. (2003) as'...the practices and processes through which power, in its multiple forms, is wielded and negotiated' (p. 209). Also, my use of the term 'power' is in a relational sense and not one where power is held by a certain group or individual. Castree and MacMillan (2001) argue that a relational notion of power is where an actor is able to 'enrol, convince and enlist others on terms which allow the initial actors to 'represent' the others' (p. 214). Power thus emerges from relations between actors rather than something that can be 'held' or radiated from a central location in social systems.

There are different theoretical frameworks on human-animal relations, built on a specific set of ontological and epistemological assumptions. These assumptions define the boundaries and characteristics of different categories, with implication on the political dynamics of how these categories relate to each other. These categories and relations are legitimised into truths through different narratives and discourses, which guide practices like livestock protection or exclusion of humans etc. In this section, I will explore the ontological framework of two prominent discourses of human-animal relations, especially with regard to their implications for policy, practices and politics.

2.1 The legacy of Descartes

The use of dichotomies—especially the one between nature and society—to construct ontological and epistemological frameworks is prominent in modern scientific discourse, political dialogues and policy formation. Its origins are rooted in specific metaphysical traditions, which are largely European and date back to Greek philosophers like Plato and more recently French philosopher and mathematician René Descartes (Descola & Palsson 1996; Ingold 2000; Latour 2004). These dualisms, especially the one that organises society and nature in opposition is deep rooted in current scientific discourses of knowledge production: relativism/realism, natural sciences/social sciences (Castree & Braun 2001; Foucault 1980; Latour 2004). Through such dualistic pairings these models create purified concepts of analysis that are arranged in hierarchical relations of dominance: traditional-modern, male-female, relativism-realism and especially the world of humans (society) and the world of things (nature) (Castree & MacMillan 2001; Haraway 1991; Latour 2004). In this framework of modernity, the world of humans is political, inherently subjective, value-oriented, relativistic and populated by different social actors. In contrast, the world of things is objective, apolitical, factual, real and populated by organic objects whose behaviour is determined by instincts and inorganic objects governed by immutable laws (Callon & Law 1995; Descola & Palsson 1996; Haraway 2008; Latour 2004).

'Nature' is thus something 'out there' that lacks speech and depends on the intervention of human actors like scientists to 'translate' and speak for it (Callon 1986; Callon & Law 1995; Latour 2004). By implication, humans are the only meaningful actors, while others are the 'objects' of their action even though 'things' being governed by natural laws are immune and epistemologically superior to the subjectivity of human societies (Latour 2004; Whatmore & Thorne 1998). In this model, humans and animals are constituted as conceptual opposites characterised by dichotomised values like subjective-objective, social-natural and people-things, which are arranged in power relations of dominance (Haraway 1991). This is in turn articulated in policy frameworks that seek to create separate spaces in which human use and preservation of nature are prioritised. It is also articulated in popular notions of 'wilderness' conceptualised as apolitical and pristine nature (Cronon 1995), which hold currency in scientific and policy discourse, commerce, activism and popular culture and so exert a strong influence on human-animal relations (Haraway 2008).

2.2 Hybrid naturecultures

Besides the Cartesian model, alternative theories of human-nature relations are derived mainly from anthropology and human geography texts. These disciplines, though rooted within the dualistic model of science, recognise the nondualistic complexity of these relations. Both these disciplines have come a long way from being deeply intertwined within the power dynamics of colonial enterprise and its discourses of exploitative governance (Mullin 1999; Rangarajan 2012; Taylor 2007) to provide alternative frameworks to conceptualise human-nature relations. For instance, the classic study by Rappaport (1984) blurred the conceptual boundaries of natural and social. Since then several other scholars have explored these relations, evidenced in a growing critical literature on the complexity of these relations including the works of Law (1986), Bird (1987), Haraway (1989) (1991), Latour (1991) Cronon (1995), Descola and Palsson (1996), Whatmore and Thorne (1998), Ingold (2000) and Castree and Braun (2001) to name a few.

This body of literature conceptualises human-animal relations in its complexity, without resorting to a dualistic framework, even as it recognises the social aspect of nature and the natural in the social. More importantly, they provide empirical evidence and analytical tools to argue that 'nature' and 'society' are co-constituted by a located history of shared relations between humans and non-humans (Castree & Braun 2001; Haraway 1991). The idea here is not to reduce the biophysical realities to social constructions or society to its ecological functions, but to recognise that different entities are hybrids of both the social and natural (Haraway 2008; Ingold 2000). Furthermore, actors are not equal in their ability to exercise power over other actors and practices. Thus, these histories of relations are located within discourses of control and negotiations between different actors (Haraway 2008; Ingold 2000; Robbins et al. 2009).

It is within the context of this theoretical framework that I carried out my research and its analysis. As I discuss later, this framework has some significant weaknesses, which I seek to address by a small measure, especially in providing general insights about these relations and also in avoiding the dangers of determinism with an overemphasis on relations (Castree & MacMillan 2001). However, this framework also provides a strong critique of the reductionism of Cartesian dualism, while also providing valuable new insights into these relations and the constitution of 'nature', 'society' and 'actors'.

3. CONSERVATION IN INDIA

India is recognised as one of 17 mega-diverse countries that accounts for 8 percent of the world's known biodiversity in 2.4 percent of its surface area (Mathur & Sinha 2008; McNeely et al. 1990). With 1.2 billion people, India is also home to 20 percent of the world's human population. However, these numbers are not meant to suggest a Malthusian relationship between population and resources. If that were the case, India's biological diversity would have been severely dented but instead continues to coexist amongst human enterprise. The numbers are meant to illustrate the complexity, diversity and intensity of claims and contestations that contextualise discourses of development and conservation within it. Also, India is characterised by a complex diversity of ethnic communities as well as biophysical diversity of species and habitats. These communities and groups are woven together in deeply politicised relations of epistemic differences and unequal influence on decision making at different levels. This plurality of epistemologies is coproduced with the non-human actors with whom humans share a long located history (Rangarajan & Sivaramakrishnan 2012). I argue in this thesis that the formal policy framework and the conservation discourse do not recognise these processes of co-constitution by hybrid actors and instead seek to impose a dualistic ontology of relations.

The policy instruments that articulate this dualistic ontology include the Wildlife (Protection) Act, 1972 (and its subsequent amendments), Indian Forest Act, 1927, the Forest (Conservation) Act, 1980 and the Biodiversity Diversity Act 2002. While each of these instruments addresses a different aspect of conservation, they are framed within a positivistic epistemology in a dualistic ontology that separates nature from society. While, the social and economic injustices inherent in these instruments and the discourses of development, were formally recognised in the preamble of The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act of 2006, which sought to remedy "...historical injustice to the forest dwelling Scheduled Tribes who are integral to the very survival and sustainability of forest ecosystems" p.1, (Government of India 2007), the overall dualistic framework remains intact.

This dualism is expressed in the practice of creating protected areas to achieve conservation of and biodiversity. By means of these instruments, the state assumes ownership of these non-human things: "Every wild animal...shall be the property of the State Government..." p.419, Government of India (1972). A little less than 5 percent of India's landmass has thus been set aside as protected areas by excluding humans and managed for

conservation by the wildlife divisions of the forest department (Mathur & Sinha 2008). A significant number of these protected areas are also used for non-wildlife activities like tourism, mining, infrastructural development etc, which are accepted by the conservation discourse (Kothari et al. 1995; Saberwal & Rangarajan 2003). Different levels of legal protection are also extended at the species level outside the protected area network, through which the dualism is shifted from spatial control to the body of each animal. The production of scientific knowledge is also located within this framework and though there are some critical voices that question the socio-political implications of this discourse like Baviskar (1994), Kothari et al. (1995) and Rangarajan (1996), they have rarely questioned its dualistic ontology. The intense debate over banning tourists from core areas of tiger reserves provides glimpses of the political undercurrents of the conservation discourse and its engagements with the question of human and non-human relations[2].

The outcome produced from the practice of this discourse is a naturalised 'nature' for non-humans and a socialised 'society' for humans and domesticated or socialised non-humans (Haraway 2008). I argue in this thesis that besides the other challenges of this framework, it also leads to a devaluation of social actors in natural spaces and natural actors in social places, which is mediated by the conservation discourse. Furthermore, as argued by Latour (2004) this framework does not recognise agency i.e. the ability to act, in non-humans, which is evident in the wording of the law that constitutes these actors as a 'property'. Scientific research related to conservation too is located within this dualistic model, assuming non-humans as things without the ability to act or influence the actions of other actors.

[2] The exchanges between Karanth and Karanth (2012) and Rai (2012) provide a good summary of the main debates in the wake of the Supreme Court of India's July 2012 interim ban on tourism in core areas of tiger reserves, which was subsequently lifted in October 2012, on the condition that all state governments will draw up tourism guidelines for tiger reserves in strict adherence to India's conservation policy.

4. THE RESEARCH SITES

Though the main fieldwork for this thesis was carried out in western India, data was drawn from two other sites in India and two in southeast Norway.

4.1 Akole:

The central fieldwork for this research was carried out in a section of riparian valley complex of river Pravara in Akole sub district, northwest Maharashtra, India (see Map I). A complex matrix of sugarcane fields covers both banks of the river owing to its fertile soil and relatively easy access to water. The quality of the soil around the river was recognised in the district gazetteer of 1884, but the valley itself presented a very different picture (Anonymous 1884). The hilly parts of the district called the Dangs used to receive heavy rain averaging between 150 to 200 inches every year, while the open Desh areas of the valley around the town received barely 20 inches, which left them bare outside the monsoons (Anonymous 1884). The people in the area exploited the availability of water and fodder in different seasons by relying on agro-pastoral activities. These arid valleys, forested hills and seasonal variations are also present in the oral histories documented in Akole, which are bracketed by descriptions of recent changes. The hill tracts are no longer forested and the fields around Akole town are now used intensively for sugarcane cultivation all year round. While the deforestation of the hills occurred over a long period of time (Anonymous 1884), the agricultural change is more recent. Sugarcane has been present in Akole for several decades but remained rare due to the lack of irrigation water and the unreliability of the sugarcane processing factory located 20km away in Sangamner town. This factory prioritised the sugarcane grown by farmers in the immediate vicinity by extending credit and other facilities. However, in the 1980s, a local cooperative sugarcane processing plant was established in Akole town. Simultaneously, permission was granted to use water from Pravara river for irrigation. The Akole factory provided a reliable outlet for local sugarcane and also extended other benefits to local farmers, while the irrigation facilities provided a critical resource for sugarcane cultivation. These changes resulted in the intensification of agro-pastoral activities, dominated by the cultivation of sugarcane, which led to a discernible transformation of the ecology and economy of Akole.

The Marathas are the most economically and politically powerful group in Akole, and are clustered in the highly productive valley floor along the river and around Akole town. As a group, they are the most prominent beneficiaries of the change in agricultural practice in

Akole. There is a small enclave of Muslim traders who run shops and other businesses in the town. Other communities in Akole include tribal groups like the Thakkers and Mahadeo Kolis and a few families of Malis, Bhils, Wadaris, and Phasepardis, with a seasonal influx of nomadic pastoralists such as Dhangars and Guravs. With the exception of the nomadic pastoralists, the other groups are largely located in less productive areas farther away from the river where only seasonal cultivation is practiced. Amongst the tribal families located in the valley, a few do own large tracts of land with irrigation facilities, while others work as daily wage labourers for most of the year.

The economic benefits are not evenly distributed, with the dominant Maratha community and a few non-Maratha families controlling the most productive land with easy access to water and the sugarcane processing factory. Tribal communities occupy a marginal role in the economic and political processes of Akole, also evidenced in being located on the margins of agricultural productivity up in the hills. While the dominant groups claim to have reduced their livestock holdings to focus on agriculture, the marginalised groups continue to herd livestock and poultry, and seasonal agriculture. Ecologically, the change has resulted in a shifting landscape of swampy grasslands that remain relatively undisturbed for most of the year that sugarcane needs to mature before they are harvested. Furthermore, all sugarcane fields are not harvested simultaneously but staggered to ensure a steady supply to the processing factory and also rotate the pool of labourers who do the actual harvesting. The area thus always has thick impenetrable patches of vegetation available throughout the year.

Besides the material and ecological transformation of Akole, the spread of sugarcane has also resulted in a perceived increase in the density of leopards. Though Akole has never been protected for conservation, leopards (*Panthera pardus fusca*) have historically been present in the area but at relatively low densities. The gazetteers report that in the 8 years between 1874 and 1882, in an area significantly larger than the research site, 14 leopards were killed for preying on livestock, despite a princely reward of Rs 13 for each leopard (Anonymous 1884). Seen in the context of political changes taking place in India in that period and the official antagonism towards large carnivores (Rangarajan 2012), it's safe to assume (in the absence of any population estimates) that leopard densities were fairly low in the area. Local accounts seem to corroborate this assumption, with several people claiming that they rarely saw leopards before the 1980s and when they did, it was up in the (forested) hills. One elderly man even recounted working as a beater in the hills, driving leopards for a British hunter before independence in 1947. This perceived increase in leopard numbers in the valley is supported by biological research, which revealed an estimated minimum of 5

animals in the 100 sq km research area and the presence of cubs suggests that the leopards are part of a stable and resident breeding population (Athreya et al. 2013). The conservation discourse ignores spaces like Akole outside the protected area, but its influence is still present through legal protection of leopards at the species-level in addition to a compensation scheme for depredation losses.

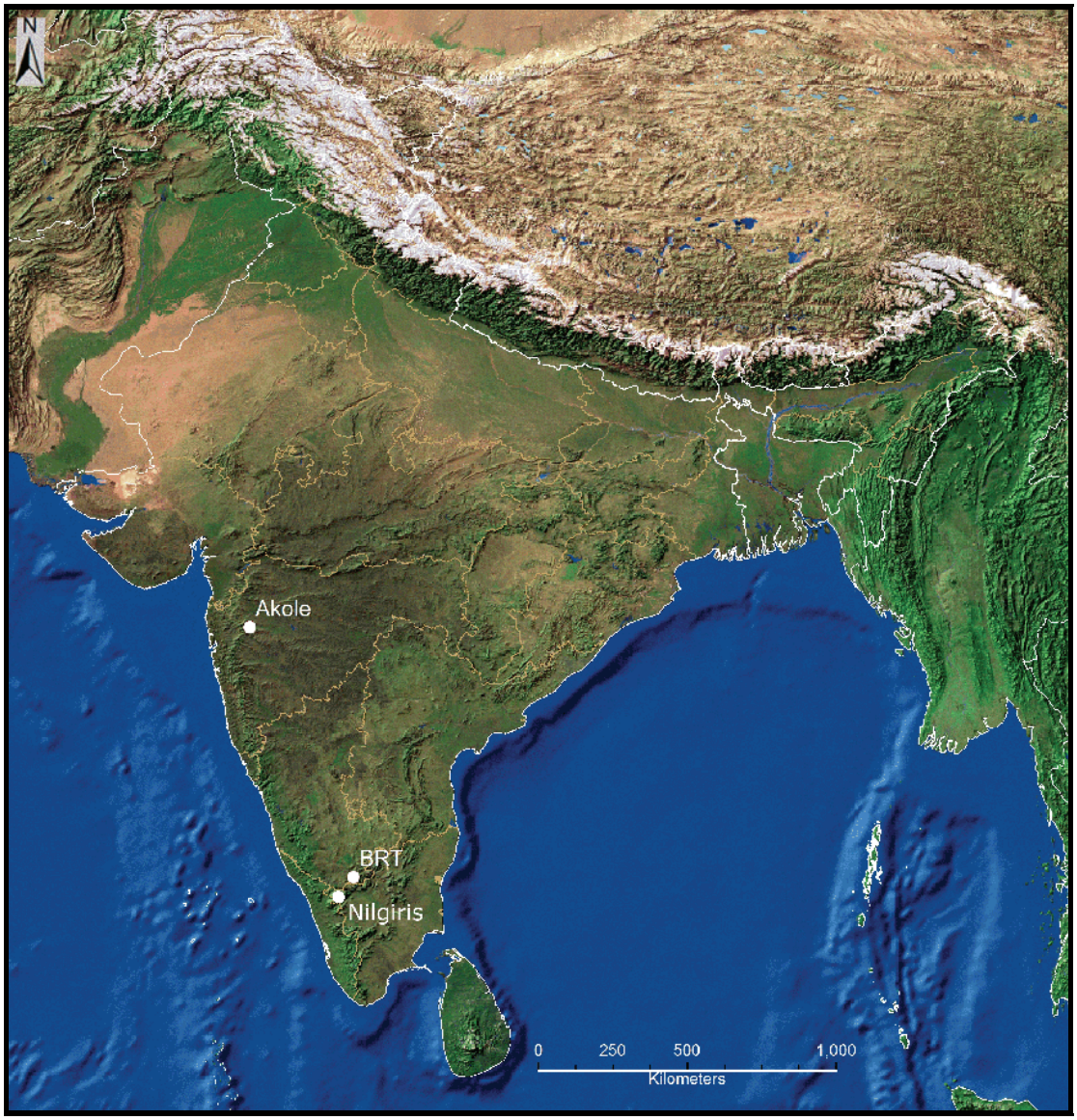
There are material implications of humans and leopards sharing space, especially in the absence of non-domestic herbivores larger than black-naped hare *Lepus nigricollis*. Table 1 provides the official compensation numbers from the local forest department office.

Table 1: Akole compensation figures

Year	**Compensation details**
2006	Not exhaustive: 7 cases filed, for 8 animals killed and INR 15,000 paid
2007	67 cases filed, for 88 animals killed and INR 168,000 paid
2008	125 cases filed, for 142 animals killed and INR 195,000 paid (*45 cases of 53 animals were not valuated*)

These figures (Table 1), however, only indicate cases where compensation claims have been filed for livestock losses. They do not include depredation losses where no claims have been filed, or losses of animals like dogs, pigs and poultry whose losses are not compensated as they are not considered a part of the local production system. Athreya (2012) found that dogs and livestock form a significant portion of the leopard's diet in Akole. This material interaction serves as the central focus of a significant number of studies on the interaction between humans and large felids that are subsequently framed as conflicts (Inskip & Zimmermann 2009; Madhusudan & Mishra 2003; Saberwal et al. 1994; Treves & Karanth 2003). If we were to focus on these numbers alone, Akole presents a paradox, where despite significant material losses, the relationship between humans and leopards presents a low degree of conflict. Though humans, especially some groups, have the means to exert political pressure on the forest department they do not always do so. This is evident in an incident in 2009, when a leopard jumped on a couple travelling on a bike before dawn, which led to a public agitation demanding that the specific leopard be trapped. In the words of the injured man "All leopards are not bad...there are 4 [leopards] in the area, of which only one is mischievous and always creating trouble." Thus, the relationship between humans and leopards is far more complex and dynamic, including biological, social, political, material and historical factors.

One key feature of this research is the comparison it draws between Akole and the other sites in India and Norway. The fieldwork in these areas was carried out by other researchers, with whom I co-authored the relevant papers. My study was part of a larger collaborative Indo-Norwegian research project titled 'Wildlife-Human Interactions: From Conflict to Coexistence in Sustainable Landscapes'.[3] It was also part of the joint Noragric-ATREE project 'Conservation of Biodiversity and Sustainable Use of Natural Resources in India'**.** Here I provide a brief overview of the other sites and the correlating paper, which includes a detailed site description.



Map 1: *Research sites in India: Akole, BRT and the Nilgiris*

[3] For more details on the project, see Thomassen et al. (2011).

4.2 Biligiri Rangaswamy Temple (BRT) tiger reserve [paper II]

Biligiri Rangaswamy Temple (BRT) tiger reserve was first declared a wildlife sanctuary in 1974 and notified as a tiger reserve in 2011. This biodiversity rich area is also home to the Soligas, a tribal community who practiced shifting cultivation prior to the declaration of the sanctuary, used fire to manage the forest vegetation and collected a wide range of forest produce (Rai et al. 2008). The establishment of the wildlife sanctuary ended their agricultural practice and forest management through controlled fires, which have probably been a part of the land management system for many centuries and a part of its ecological dynamics. This led to the sedenterisation of the Soligas with about half of the households being allocated small pieces of land to cultivate but without legal rights over it. This resulted in a heavy dependence on income generated through the sale of non-timber forest produce (NTFP) such as honey and amla (*Phyllantus* spp) collected from BRT. In 2006, following an amendment in the Wildlife Protection Act (WLPA), the harvest of NTFP for sale was banned causing socio-economic distress to the Soligas, which they contested for several years. They finally won the rights to cultivable land, NTFP harvest and other community forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act of 2006, commonly called the Forest Rights Act (FRA).

In 2011, the notification of BRT as a tiger reserve required the creation of a core area free of human settlement and use. Thus, all human settlements, of which the core area contains ten Soliga settlements with about 300 households, are required to be removed after settling their rights. After this no further use of the forest is allowed except for controlled tourism. However, the core area also contains 1,300 ha of coffee plantations established by the British more than a century ago. The estates are now owned by large corporate houses and employ hundreds of people, including the Soligas. While the forest administration is actively attempting to relocate the Soligas, it remains silent on the status and future of the coffee estates. Tourism is another commercial activity that has been increasing substantially after the turn of the century and received a further boost with declaration as a tiger reserve.

A recent study suggests that that the ecology of BRT is threatened by the spread of invasive species and hemi-parasites (Ticktin et al. 2012). Sundaram et al. (2012) compared traditional ecological knowledge of the Soligas and scientific discourses to suggest that suppression of customary management practices in 1974 may be an important factor in the ecological transformation from a diverse forest to one dominated by invasive species. In the context of this changed ecology, even elderly Soligas agree that the use of fire would now be

destructive to the ecology of BRT. This suggests that biological diversity of BRT emerged from the located history of relations and co-habitation by human communities like the Soligas and non-humans. The nuanced use of fire to manage the forest in the past and the adverse impact of current fire suppression policy is illustrative of this situated practice (Rai et al. 2008). This is not acknowledged by the conservation discourse as it seeks to naturalise BRT by excluding claims by marginal communities, but not challenging the commercial discourses of the coffee estates and tourism.

These changes have also impacted the relationship the Soligas have shared with the non-humans in BRT, including tigers (*Panthera tigris tigris*) and wild boar (*Sus scrofa*). While the Soligas shared a close relationship with these species earlier, youth in the community claim they are a threat to their agricultural practices. This suggests that a different relationship is emerging, which is reconfiguring the identities of different actors in BRT.

4.3 The Nilgiri [paper IV]

The Todas are a pastoral community of 1,500 people who live in 56 'munds' (hamlets) on the upper plateau of the Nilgiris, Tamil Nadu. In 1893, 2,948 acres of land were reserved as 'Toda patta land'—a form of common-hold tenure—by the colonial government (Fort St George Gazette 1893), and managed under the Madras Forest Act, 1882. Todas traditionally herded buffalos on the undulating plateau, which was historically dominated by grassland and shola (stunted rainforest thickets). This landscape was subject to intensive monoculture plantations and agriculture since colonial periods (Prabhakar & Gadgil 1998). Eucalyptus, wattle and pine plantations were forestry projects. Encouraged by colonial and post-independence administrations, vegetable and tea cultivation also expanded. As a result, tree cover increased dramatically, with wattle turning invasive. Toda lands and reserve forests adjoining them have not attracted as much conservation attention as adjoining protected areas of Mukurthi and Mudumalai. Conservation managers confirm the presence of 50-56 tigers in Mudumalai, 10 in Mukurthi and 14 in the reserve forests of the district (Ravichandran 2011). While there are intermittent reports of tigers and leopards preying on Toda buffalos, there are no official records as Todas rarely report them , or claim compensation, due to time constrains and bureaucratic hurdles.

4.4 South-eastern Norway Trysil and Halden [paper IV]:

Map 2: *Research sites in Norway: Trysil and Halden*

The study area is within the present distribution range for wolves, in south-eastern Norway. Conflicts over wolf presence in Norway are intense, engaging many rural people and reaching into national politics. The present analysis focuses on two municipalities, Trysil and Halden. Trysil is spread across 3,014 sq km along the Swedish border in the northern part of the wolf range. It includes vast tracts of forests, marshes and mountains, and is Norway's largest timber-producing community in terms of logged volume (Statistics Norway 2011). But mechanisation has diminished the logging work force, and the wood-processing industry is shrinking. Agriculture is limited and farm abandonment is increasing despite government subsidies. Trysil has seen massive tourism development in the form of a large ski resort but it generates few year-round jobs, and the population continues to drop: 6,700 in 2011 from 8,400 in 1951 (Statistics Norway 2011). Recreational activities based on harvesting natural resources, particularly hunting and angling, engage a substantial part of the population. Trysil

has long held the Norwegian record for the number of moose killed each year (Statistics Norway 2011).

Halden, at the southern tip of the wolf range and also bordering Sweden, is smaller (642 sq km), but with a larger population of 28,000 (Statistics Norway 2011). It has a long industrial history and around 85 percent of the population lives in urban or semi-urban districts. It nevertheless has sizeable forest areas, with several smaller communities retaining close ties to traditional land use; where hunting and leisure pursuits with a harvesting ethos are culturally significant. Importantly, there has been substantial in-migration in some rural communities from urban areas. This has created enclaves quite different from the traditional resource-dependent communities, with a different social basis and different relations to the land. The same phenomenon is observed in Trysil on a smaller scale.

Large carnivores are present in both municipalities; bears, lynx, wolverines and wolves in Trysil, and wolves and lynx in Halden. Sheep farming plays a limited role in Trysil and is practically absent in Halden, so livestock loss has been minimal. Still, wolves feature prominently in local debates (Figari & Skogen 2011).

5. THE QUESTION OF ACTORS

This thesis focuses on the relationship between different actors but defines them very differently from dualistic frameworks. I recognise that an actor is co-constituted by social and natural processes and so can be human and non-human. Also, actors emerge through a history of relations i.e. the meanings and identities of different actors are not pre-formed or imposed but are generated through the process of relating (Haraway 2008; Ingold 2000). The question of history is important especially since in cases like Akole, the process of change has been one of continuity and intensification, while in the other cases it is marked by discontinuities.

In the conceptual framework I used for this research, agency—the ability to act—is extended to humans and non-human actors based on their ability to influence the actions of other actors (Latour 2004; Nustad 2011). This is in contrast with the dualistic model that preserved agency for humans by equating it with language and intentionality, which were denied to non-humans. Callon and Law (1995) and (Whatmore 1999) argue that these notions were based on making a distinction between language and the world, in which the latter is the external reference and the former a transparent representation of it. Whatmore (1999) argues that recognising this relationship as being more 'opaque' does not equate to social determinism but a rejection of Cartesian 'nature' and its denial of agency on these grounds. It also opens up the possibility of a relational notion of agency as defined earlier, where chains of translation—processes through which actors are recruited and influenced—include a diversity of communication forms, mediums and channels (Callon 1986; Callon & Law 1995; Whatmore 1999). In this context, I will briefly discuss some important actors relevant to this research.

5.1 Humans

Humans are an important category of actors in this research. However, they are not a homogenous group and are differentiated by ethnicity, located history, livelihood and political economy. These differences are often a source of conflict and contestation over inequity in access to resources and exposure to risks and hazards and participation in discourses of 'truth' (Braun & Wainwright 2001; Foucault 1980; Haraway 1991; Robbins 2004). Thus, each research area has multiple configurations of human groups specific to the area, with their specific engagements with the biophysical environment and political dynamics with other actors.

The socially heterogeneous is further divided across different strata including class, ethnicity, power, gender etc in each of the sites. These factors (with several overlaps) influence the construction of place and the non-human actors that share it. Ingold (2000) argues that this diversity of meanings is not due to cultural lenses but are inherent in the external space, which are gathered through tasks performed in it. Haraway (1991) takes this a step further by theorising that meanings are co produced and co constituted by different actors through their located history of relations. Humans also perform multiple roles including that of conservation managers, activists and scientists who speak on behalf of non-humans to intervene and mediate formal frameworks of management. These actors exert greater influence on the actions of other actors, human and non-human. Thus, humans are also differentiated by their power to influence the actions of other actors depending on their location in the intricate web of relations that bind them together. These differences in access to power, resources and meaning systems exert an important influence on the relations that emerge from these histories (Jalais 2005; Skogen & Krange 2003; Skogen et al. 2008). For instance, Skogen et al. (2008) illustrate these power relations of adversarial groups in the wolf debate in France and Norway using the divergent narratives these groups use to explain the 'problem'.

5.2 Large carnivores

Large carnivores are another critical community of actors in this research. Several large carnivores formed part of this research including leopards (*Panthera pardus fusca*) and tigers (*Panthera tigris tigris*) in India, and wolves (*Canis lupus*) in Norway. In Akole, leopards are a resident population. The choice of leopards is significant here, especially since striped hyena (*Hyaena hyaena*) are also present in Akole (Athreya et al. 2013). The latter shares a very different relationship with humans, which is not discussed in this research. Though hyenas are relatively more visible than leopards, they are regarded as scavengers rather than potential hunters. Though several individuals did mention instances of them preying on their pets, especially house cats, most described how they follow leopards to scavenge from their kills or their odd gait or their appearance. This species specific relations has been observed by Lescureux and Linnell (2010) who found that hunters and herders in Macedonia had contrasting relations with the large carnivore species present in the area, namely wolves, bears and lynx. Thus, these relations are species specific rather than towards objectified large carnivores.

The leopards in Akole do take a toll on human economic interest through depredation of livestock, which is a major area of conflict between humans and large carnivores around the world (Inskip & Zimmermann 2009; Linnell et al. 2000; Treves & Karanth 2003). The leopard is also classified as 'Near Threatened' by the World Conservation Union (IUCN 2011) and the target for conservation action, though it lacks the buzz that characterises tiger conservation. The leopard also enjoys a lower profile than the tiger and lion in mythologies. While, the leopard is accorded the highest legal protection possible under conservation laws in India, it has in the past been branded a vermin along with tigers and subject to the colonial state's extermination programme (Rangarajan 2012).

The literature on leopards describes them as being very adaptable and being able to live in different habitat types ranging from deserts and mountains to forests and human habitation (Athreya et al. 2010; Bailey 1993; Bhattacharjee & Parthasarathy 2012; Daniel 1996; Menon 2009; Prater 1971). Also, weighing over 40kg and measuring close to 6 feet in length, an adult leopard is too large for a single unarmed human to control alone (Bailey 1993; Daniel 1996). While leopards generally avoid humans, they possess the strength and tools to easily kill an adult human and are known to do so in different circumstances (Bailey 1993; Goyal 2001; Löe & Röskaft 2004).

The leopards in Akole display this adaptability, by living off livestock and small prey (Athreya et al. 2013) and also avoiding confrontations with people. This is evident in the low incidences of leopard attacks on humans, documented depredation losses, visible signs of their proximity to humans through pugmarks near houses and oral accounts of peaceful encounters. The analysis of these accounts suggests that the relationship between leopards and humans is reflexive, where they have co-evolved strategies for coexistence-by-avoidance. In this regard, local conservation managers' reluctance to trap and relocate leopards has been important in ensuring leopards maintain their social stability. Cavallo (1990) correlated empirical evidence of leopard behaviour in Africa with archaeological findings to theorise that the relationship between humans and leopards dates back to the Plio-Pleistocene (Cavallo & Blumenschine 1989). Oral histories in Akole suggest that shrines to the large felid deity (Waghoba) are at least several hundred years old.[4] The continuity in these histories of relations in Akole represented through institutions like Waghoba, justifies the initial assumption that identities are co-constituted by different actors through a history of relations.

[4] Though I found no records with specific dates, oral accounts of a shrine in Mumbai dedicated to Waghoba is said to have been constructed in the mid 19th century (Ghosal 2012).

The tiger is currently the largest cat species and shares many habits with the leopards, especially as ambush hunters (Karanth & Sunquist 2000; Schaller 1967). Though the literature on tigers suggests that they cannot coexist with humans and need inviolate spaces, this is based on evidence of research carried out in protected areas only (paper 1). The literature also mentions that tigers do feed on livestock (Karanth 2003; Schaller 1967; Seidensticker et al. 1999), suggesting at least some sharing of space by humans and tigers. The hype around tigers in the media, in the conservation discourse and policy frameworks is possibly unmatched by any other non-human species (paper I). In this research, the tigers appear as prominent actors in BRT and the Nilgiris.

In BRT, the Soligas and the tigers shared a reflexive relationship, which is very similar to the one shared by leopards and humans in Akole (paper II). The relationship of the Soligas and tigers emerged from a long history of cohabitation, which allowed for sharing of space and resources with minimal conflict. However, the conservation discourse has changed the relationship between the Soligas and tigers as well as other actors. Already, the relationship they shared with wild boars is strained over crop losses.

In the Nilgiris, tigers and Todas share a strained relationship. While the Todas too shared a long history of relations with these large felids, these have been disrupted by a long history of changes in this area. In this changed relationship, the tiger and leopards are agents of the state, which transformed open pasturelands into dense forests. The Todas claim that the present tigers are different from the ones that shared a close relationship with them and are no longer responsive actors they were in the past. This changed relationship between the Todas and the large felids emerges from a history of contestation, discontinuity and conflict over land use.

Wolves are the most controversial large carnivores in Scandinavia and northern Europe (paper IV). The native population of wolves in Norway and Sweden are believed to have been exterminated by the 1970s in the wake of state sponsored bounty hunting since the early 19th century (Boitani 2003). A new and significant chapter in the long history of shared relations between humans and wolves commenced when wolves received legal protection in the late 1960s (Sweden) and early 1970s (Norway). The current population of wolves is along the border between Norway and Sweden and is believed to be the result of range extension by the eastern population of wolves from Russia and Finland (Vila et al. 2003). Though there are other large carnivores in the area too, the relationship between humans and wolves is currently the most controversial (Skogen & Krange 2003; Skogen et al. 2008).

5.3 Other significant actors

All the research areas have witnessed changes. However, actors have related differently to these changes and their perceived driving factors. In this section, I shall discuss some of these other actors that are both the cause and effect of these changes.

5.3.1 Sugarcane:

Though not discussed in great detail in the rest of the thesis, sugarcane is an important actor. The political economy of irrigation and sugar processing are important factors for the large scale introduction of this important cash crop in Akole. Sugarcane is the only commercial agricultural product whose cultivation is regarded as an industry and requires close integration with processing facilities (Smith 1975). Also, Smith (1975) highlights sugarcane cultivation requires deep political, economic and ecological changes at different levels and is borne out by the manner of its introduction in Akole.

Though cultivation of sugarcane in Akole is mentioned by the British Gazetteers (Anonymous 1884), it remained low profile till the 1970s, when a sugar processing plant was established in Sangamner, 20 odd kms away. The support and demand from the mill in Sangamner was inconsistent as they prioritised sugarcane grown in the immediate vicinity of the plant. At the same time, farmers in Akole were prevented from using river water for agriculture. This changed in the 1980s with the establishment of a sugar processing plant in Akole and granting of permission to build irrigation channels from the river. While, these changes are driven by the political economy of sugar cane in Maharashtra (Sukhtankar 2013), it had a significant impact on the ecology, economy and politics in Akole.

Ecologically, sugarcane grows in a wide variety of soils and requires an estimated 88 to 118 litres of water per kilo of sugarcane (Shrivastava et al. 2011) reaching maturity in about 12 months. It thus provides a thick impenetrable stand of vegetation, to which humans provide a consistent supply of fertiliser throughout the year. These conditions, emerging out of the relationship between humans and sugarcane, are well suited for leopards, with livestock, dogs and pigs providing a steady supply of prey. There are reports that tigers too have used sugarcane areas in the Malay (Boomgard 2001). Being a cash crop, sugarcane is at once a biological, economic and political hybrid. Its cultivation entailed ecological, economic, political and biophysical reconfiguration in Akole, which have both humans and leopards.

5.3.2 Invasive species in BRT and Nilgiris

BRT is valued for its biological diversity (Aravind et al. 2001; Kamathy et al. 1967), but is currently threatened by invasive species and hemi-parasites which have affected its floral diversity (Ticktin et al. 2012). This is in contrast with earlier studies that incriminated the impact the Soligas' had on diversity of the ecology of BRT (Murali et al. 1996). It is possible that the Soligas' use of fire was far more nuanced than previously recognised and was an integral part of the BRT ecosystem. The removal of fire may have contributed to the spread of invasive species.

A similar process has been underway in the upper Niligiris too, where different state actors actively introduced exotics like eucalyptus and wattle, to 'forest' the endemic shola and grassland ecosystems. These species have now turned invasive and have spread beyond the plantations to the remaining pastures too. These invasive ecologies and their political drivers have transformed the histories on the plateau and contributed to the general decline of the Toda's pastoral systems.

5.3.3 Reforestation of rural areas in Norway

In Norway, farm abandonment driven by changing technology, production systems and resulting demographic shifts have led to spontaneous reforestation of fields that were highly valued because they opened up the landscape. These changes have coincided with the hegemonic rise of the conservation discourse in land management, which have placed restrictions on land use, established new protected areas, and extended protection to species that were previously persecuted. The relations between different actors emerge from these historical, ecological, political and economic changes underway.

5.4 Conservation discourse in India

The conservation discourse in India is primarily facilitated by The Wildlife (Protection) Act, 1972, including its amendments especially the Wildlife (Protection) Amendment Act, 2006. This policy instrument seeks to protect wildlife by creating protected areas while also protecting wildlife at the species level. The former strategy of creating protected areas is strengthened by other policy instruments such as the Indian Forest Act, 1927 and the Forest (Conservation) Act, 1980. Each of these seeks to conserve non-human species by either

keeping them separate or by protecting them from human actions. This discourse is thus a practice of boundary making where nature is 'naturalised' as state property within a defined space or in the body of protected species. This representation of nature and non-humans as objects allows resources outside these designated zones to be exploited for human use. The FRA tends to blur these boundaries a little, as it continues to maintain the dualistic framework, while allowing some limited user rights to forest dwellers in certain specific spaces and under specific conditions.

Besides governance, knowledge creation is an important feature of the conservation discourse, which generates scientific insights to improve monitoring and protection mechanisms. The scientific discourse of knowledge creation is also rooted within a dualistic ontology and provides very little insights on the complexity of relations between humans and non-humans. Instead they conceptualise this relation largely in terms of anthropogenic disturbance or the negative impact of conservation practice on human communities. The discourse is thus very clear on where nature is located (in protected areas) and how it must be protected (by removing human influence and allowing nature to take its course).

As a result, the conservation discourse has very little to say about a space like Akole where a protected species seems to live with humans with very little conflict (paper II and III). Furthermore, given its lack of acknowledgment, the discourse has very little to offer in terms of explaining such an aberration of its dichotomy of nature and society. Thus, there are little or no strategies available to manage such populations of leopards and their relationship with humans beyond extending species level protection (to the leopards) and compensation for losses (to the humans). At the same time, the conservation discourse has been unable to integrate the relationships and practices of the Soligas, who are instead marginalised, while the commercial practices of tourism and coffee production continue unchallenged in the same space (paper II).

6. THE MADNESS OF A 'NON-MODERN' FRAMEWORK

A significant part of this thesis critically evaluates different ontological and epistemological frameworks, especially of the conservation discourse. As Braun and Wainwright (2001) argue, everyone has an epistemology and ontology and this research project is no different. I started this research as an anthropologist with a dualistic ontology, hoping to find a social explanation for the presence of large carnivores amongst humans to simultaneously 'fit' and 'challenge' the biological narratives of large carnivores. As the research progressed, this dualistic framework started to develop large cracks as I struggled to reconcile the complexity of different narratives emerging through the data and comparisons. Having drifted away from these narratives of modernity, I explored other frameworks, especially science and technology studies (STS) and the work of Tim Ingold. Though I recognise their theoretical potential and the upheaval they entail in our current constitution of knowledge and relationships, my grasp over their complexity and seeming insularity remains rather basic. For instance, this framework critiqued and abandoned analytical tools like social construction with other ideas of modernity (Latour 2004). Though their critique is robust, I am convinced that it is possible to reconcile social construction with STS, without reverting to dualisms. Though this theoretical tension will not be resolved in this thesis, I do propose a possible synthesis. While the individual papers do include some discussions regarding these frameworks and assumptions, none of them provide an explicit discussion on these aspects of the research. In this section, I provide a more in-depth discussion on the ontological and epistemological assumptions implicit in my approach. I assume an emergent ontology and a situated epistemology, which are both consistent with each other (Haraway 2008; Verran 2001).

An emergent ontology does not create Cartesian dualisms of purity between nature-society, mind-body, human-animal etc that dominate current models of scientific practice (Braun & Wainwright 2001; Haraway 2008; Nustad 2011). Instead, as Haraway (2003) suggests, such an ontology treats reality as an "active verb" (p.6) that is constantly emerging through negotiations between different communities of actors. Actors are recognised as hybrids of social, biological, political, economic historic and several other factors. This has echoes of Roy Bhaskar's stratified ontology, in which he argues against reductionism by outlining a theory of stratification, with hidden mechanisms and power (Collier 1994). While Bhaskar also focuses on relationships and mechanisms, he makes a distinction between the

material as real and the social. I argue that this distinction is problematic as entities emerge as material and social simultaneously, instead of the neat categories differentiated by Bhaskar.

This ontology draws from science and technology studies, especially the Actor Network Theory (ANT) as well as the perspectives put forth by Tim Ingold, which recognises the possibility of multiple configurations of reality that emerge from a history of relational negotiations. One of its most significant contributions of these perspectives is its critique of reductionist Cartesian models, by providing viable non-dualistic models. One way it does this is by redefining the notion of an actor. In the dualistic models, the notion of agency and actor is related to internal qualities of intentionality and linguistic skills, which implies that humans are the only significant actors (Castree & MacMillan 2001). Haraway (2008) refers to this tendency as 'the fantasy of human exceptionalism', placing 'humans' in a special category by themselves, dominant over other potential actors. However, if we are to define an actor as one who influences the actions of other actors through a series of trials, which includes different mediums of communication, then it opens up new possibilities for recognising agency, as the ability to act, in a host of potential actors, human and non-human (Latour 2004; Whatmore 1999). Furthermore, several scholars have argued that agency does not necessarily require will, intentionality and linguistic abilities in order to act (Callon 1986; Castree & MacMillan 2001; Latour 2004; Whatmore & Thorne 1998; Whatmore 1999).

These perspectives argue that every actor is also located in a network of relations and that each actor is a hybrid of the social and the natural. The question of agency is thus a 'relational effect generated by...interacting components whose activity is constituted in the networks of which they form a part' p. 28, Whatmore (1999). Ingold (2000) too argues for a relational model where reality is continuously generated or emergent from being immersed in the environment and a continued interaction with the land and the organisms, human and non-human, which constitute it. These relational variations, I argue, also provides theoretical space to explore how power and resource sharing are negotiated between different actors and opens new possibilities to explore human-nature relations, which encompass material, moral, socio-economic and political dynamics (Callon 1986; Castree & MacMillan 2001; Castree 2002; Ingold 2000; Latour 2004). In this ontological framework, nature and society are recognised as conceptual categories but not in the exclusive and oppositional sense as they have been used in dualistic models. Thus, different realities are co-constituted by hybrid actors in a shared history of relations (Haraway 2008). The focus here is on the relations between different actors and how these relations emerge in time and space. This concept is at

the core of this thesis as it explores the complex relations between humans, large carnivores and other actors.

In assuming a situated epistemology, I draw on two perspectives. One is the organism-in-the-environment perspective, where meanings are located in the biophysical environment and are collected through active engagement with it and other actors who share the space (Ingold 2000). The other perspective is feminist standpoint theory that rejects the notion of fixed positions and identities in favour of a relational work and a 'play of intersectional worlding' p.389, Haraway (2008). Thus, identities and knowledge are generated through relationships between different actors who live and perform specific tasks in the space. This challenges the dualistic assumptions inherent in the constructivist arguments that differences in meaning lay in the cultural lenses that colour people's interaction with the biophysical environment (Ingold 2000; Nustad 2011). The organism-in-the-environment locates the mechanism for diversity of meanings and knowledge systems in the actions that are performed in a space and relational position of the actors. Here the concept of 'intersectionality' is important, as it locates actors within the intersections of different hierarchical relations of power, which Kjosavik (2005) argues situates their experiences.

This situated-ness is based on an assumption that inequalities and hierarchies relations of power focus the attention of actors on specific experiences and the realities that emerge from it. This perspective also correlates with the theoretical claim, by Foucault (1980), that truth is a function of power, with every society having its 'regimes of truth' made true by discourses of power and social processes has an important role to play. Thus, knowledge emerges from the discourses and located practices of a history of relations. Thus, I do not try to understand or uncover 'truths' of representation and interactions between humans and large carnivores in different contexts, but rather understand the relational processes of located history that enable actors to co-constitute their shared reality. In assuming a situated epistemology, where knowledge is an effect of relational power, located history and active engagement between different actors, I seek to provide an explanation through a description of how this complexity is constituted (Ingold 2000; Latour 2004).

So far, I have highlighted the strengths of this framework, not the least its ability to expose the reductionism of dualism and providing space to recognise non-humans as agents. However, Castree and MacMillan (2001) highlight some important weaknesses in these perspectives, especially ANT. For instance, despite avoiding the determinism of dualism, this framework runs a serious risk of being deterministic. For instance, though the emphasis on

relations is theoretically productive, a singular focus on relations can overshadow the importance of other processes. These perspectives also tend to obscure differences rather than provide analytical explanations for them and so provide few insights on how to differentiate between networks of actors if they have been constituted by similar processes. Lastly, if each network of actors is assumed to be unique, there are few general insights that can be drawn from focussing on such networks. To this I would add, the ambivalence of these perspectives to social construction as an analytical tool, which they critique for the dichotomies it evokes.

Despite these weaknesses, the STS framework need not be discarded as it offers valuable insights and analytical tools. I propose a possible synthesis to address some of these theoretical weaknesses. In their critique, Castree and MacMillan (2001) propose a weaker form of ANT, that retains its critiques of dualism, its recognition of agency of non-human actors and its emphasis on power being relational. To this, I would argue for retaining the analytical concepts of nature and social but not locating them in a relationship of dichotomy. It would then be possible to recognise variations in the social, natural, political, historical constitution of different processes and actors i.e. these processes are not always equally social and natural, but dynamic hybrids of both. Thus, to return to the synthesis outlined by Castree and MacMillan (2001), if some processes are more social than natural, a weak version of social construction can possibly be accommodated. In recognising the pluralistic hybrid constitution of actors and processes, one can avoid creating dichotomies. Instead, it enables this pluralism from which relations emerge through historical processes of negotiation that organise different realities. I attempt such an accommodation (see paper IV) to explore how social constructions impact the relations between humans and large carnivores through recognition of pluralities of the social and the natural.

I would thus argue that using a situated epistemology opens the possibility of drawing on the insights of social constructions without necessarily invoking the dualisms that such a position entailed under the binary model (Castree & MacMillan 2001; Nustad 2011). This still leaves open the question of social construction by non-human actors. In this regard, Ingold (1988) edited a thought provoking volume titled ‘What is an animal?’ which provides different perspectives and arguments that articulate the complexity of the question, and our inability to escape the twin dangers of anthropocentricism and ethnocentrism. It is impossible to conclusively resolve these issues within the confines of this research. For the purpose of this research, I shall interpret the actions of non-humans in the context of the relationship they share with humans.

6.1 Methodology and methods

Methodology and methods are often used confusingly and interchangeably. I use the term methodology in the classic sense as outlined by Kaplan (1964) as the '...the description, the explanation and the justification – of methods and not the methods themselves.' (p. 18). Nilsen (2008) adds that methodology functions as a theory of methods, which draws on the theoretical framework and its epistemological and ontological assumptions. In this context, this research requires data on meaning and knowledge production, which I assume are located in a history of relations. To respond to this, I use a methodological framework from comparative anthropology as outlined by Ingold (2008) as a 'practice of observation grounded in participatory dialogue' (p. 87). This provided more specific methods to generate data to inquire into the interactions and relations between humans and large carnivores. As outlined earlier, this research assumes an emergent ontology where different actors interact with each other to constitute reality, it also recognises the potential impact of processes of social constructions in influencing 'meaning', as a result of active engagement with other actors (Castree & MacMillan 2001). This study uses 4 kinds of data: 1) qualitative interviews and group discussions, 2) observations, 3) historical records and 4) published and unpublished literature. Besides the literature on large carnivores in general, more specific inputs on leopard in Akole are largely derived from biological and telemetry research carried out in the area by Athreya (2012), from discussions with different local actors and my own observations. Since I carried out fieldwork primarily in Akole, I limit myself to discussing the methods used for this component. The methods used for data collection in the other field sites – BRT, Nilgiris and Norway, are outlined in the relevant papers (see paper II and IV).

6.1.1 Literature review

The review process included literature from different parts of world, with a special focus on India, related to human-animal relations, leopard ecology and different theoretical frameworks. Though this review focused on research papers, it also included popular articles, books, e-group discussions and reports. The inputs from this method helped locate this research within formal theoretical frameworks, while also providing access to different debates, critiques and arguments on human-animal relations. The literature review was an ongoing part of the research process, feeding into other methods and in turn being informed by them. It was carried out systematically through database search engines like ISI

Knowledge and Google Scholar using different search protocols to identify peer reviewed papers. The review was also done opportunistically, by cross-referencing bibliographies of scientific papers and also a manual review of the issues of the *Journal of Bombay Natural History Society* from 1947 to 2011. The review consisted of reading through abstracts to identify relevant papers for further reading. Once identified, these papers were read and a short summary of their findings were noted in a computer document. These summaries were revisited during the analysis and drafting of the papers, which constitute the results of this research process. Paper I contains a critical analysis of the scientific knowledge of large felids in India located in research papers, especially their ontological assumptions, focus, influences and implications.

I have been a member of different online discussion groups for several years, especially popular ones like Natural History of South Asia (this was earlier located on a listserv at Princeton University, USA but more recently has moved to a yahoo server: http://tech.groups.yahoo.com/group/nathistory-india/). These discussion groups provide access to ongoing discussions, popular articles, campaigns and debates on topics related to conservation in India, between different members of the conservation community that includes activists, scientists, journalists and amateur naturalists. These discussion groups provide access to different viewpoints. While these groups do not equate the conservation discourse, its members are a cross section of different interest groups and these discussions and debates provide insights into competing narratives.

6.1.2 Archival research

Archival records were searched to piece together relevant historical patterns and shifts. This included piecing together the history of the conservation discourse in India, past records of interactions between humans and leopards, sociopolitical and economic changes in India generally but in the research area more specifically. Like the literature review, the archival research was an ongoing part of the research, helping refine the questions, but analysis and discussions also led to new questions that guided the archival search. The archival research focused on historical records available online from the gazetteers department websites (http://cultural.maharashtra.gov.in/english/gazetteer/index.php) as well as online historical records from the Digital South Asia Library at the University of Chicago (http://dsal.uchicago.edu/reference/gazetteer/). These records were searched for reports of leopards and other large felids in the area as well as their relationship with humans,

management strategies, political economic changes, relevant social institutions, especially in Maharashtra and Bombay Presidency and other relevant developmental changes that may have impacted human-nature relations. This research included several books on the environment history of India, the miscellaneous sections of *Journal of the Bombay Natural History Society*, which recorded observations of hunters and naturalists since the end of the 19th century. I made summary notes of relevant reports. While there are very few reports from the specific area where this research was carried out, observations from other areas, their general tone and conclusions provided insights into the relationship between humans and large felids in India over time.

6.1.3 Participant observation

I spent time in Akole between May 2008 and December 2008 developing relationships, interacting with people from different communities, observing different livelihood tasks, holding informal discussions, attending different social events and meetings (not all of which were related to leopards). While I continued to do this throughout till the end of fieldwork in 2011, it was later done in conjunction with other methods. I have grown up in the metropolis of Mumbai, which is around 300 kilometers from Akole and speak the local language (Marathi). However, the time spent in Akole helped improve my communication skills in the local dialect—which while serving as a source of great entertainment for most people helped me be accepted as a familiar outsider. These interactions would often be about my research and sometimes random events would lead to interesting discussions, say during journeys in public transport between Akole and the railhead for suburban trains to Mumbai.

All these interactions, discussions and experiences were crucial in shaping my understanding of Akole but also in changing my own ideas of conservation, leopards and agriculture while also developing a taste for the local cuisine. These discussions, observations and thoughts were written down in the form of field notes that served as a rich source of data, ideas and explanations that add texture and coherence to data generated through other methods. This aspect also sensitised me to the subtleties and nuances of different practices and negotiations. Furthermore, it also helped identify individuals for interviews and additional informal discussions on different aspects about living in Akole, leopards, local and state level party politics, development and change etc. These interactions were also used to document different signs of leopard presence in the area as well as sightings, incidents and depredation in the immediate localities, peppered with their own views on them.

6.1.4 Semi-structured interviews and focus group discussions

Qualitative interviews are an important method employed by this research to access different meaning and meaning production mechanism. Topic-guided or semi-structured interviews were used to understand how meanings are produced on several topics including leopards, development, politics, livestock, feral dogs, rabies etc. I used an interview guide to ensure relevant topics were discussed but never decided on specific questions before interviews. This interview guide was developed to generate data in response to the objectives of the research. The interviews did not have a fixed format or time frame, which proved valuable, as they were usually lively, free flowing and personal. Often they would throw up unanticipated insights, which were included in subsequent interviews. The purpose was not to replicate interviews but to build on them cumulatively, which meant that each interview was unique in flow and content. In general, the focus of these interviews was on content rather than form. This allowed for expression of ideas while also reflecting on it through the interview process. We returned to different areas periodically to interview members of different groups and sub groups across caste, ethnicity, gender, class and livelihood categories.

The interviews were carried out in two phases in 2008-2009 and 2010-2011. All the interviews were done by me but I did use a field assistant who participated in the discussions and helped clarify ideas and meanings of unfamiliar words. Though he lives 20 kms away, he has worked in Akole for 24 years. His familiarity with the area and practices were a valuable bridge of trust that ensured the interviews were never awkward. Potential informants were identified through participant observation, informal chats, local references and government records of individuals who have been compensated for livestock depredation by carnivores. They were then approached for interviews. They were given a brief outline of the research with assurances of anonymity, before obtaining an oral informed consent to proceed with the interview.

Several of these interviews spontaneously turned into focus group discussions as others would join. These would usually mean other members of the family, neighbours and friends who would give their opinions on the issues being discussed. These focus groups can be regarded as natural groups rather than formal groups, which are specifically arranged or formed in accordance to a predefined social category (Frey & Fontana 1993; Morgan 1997). Though these groups were mostly homogenous, they would often include people from different social groups, especially class, livelihood and gender. Some discussions included forest department officials and local villagers across different social groups. These

discussions provide a rich source of insights to multiple configurations of meaning production and the political dynamics between different groups. Though the interview guide was used in such discussions, more often it would develop a life of its own.

6.2 Analysis and interpretation

The subjective richness of qualitative data means it requires rigorous analysis and interpretation to provide theoretical insights. In the context of this research, the meanings and meaning production systems were often explicitly discussed during some interviews, while in others they were more implicit. Furthermore, these needed to be correlated with observations and data before drawing relevant conclusion and integrated into the different papers. The biggest challenge was to preserve the richness of the data while maintaining analytical rigour in the given theoretical framework. The processes of data collection, stages of analysis and interpretation overlapped and did not follow a linear pattern as is common with such methodological approaches (Bryman 2001; Kvale & Brinkmann 2009).

Besides the actual interview, I made notes of background information that were not covered in the actual interactions. These notes include how the person was approached, why their viewpoints are interesting and possibly any relevant incidents related to the actual interview. The interviews were conducted in the local language (a rural dialect of Marathi) using a voice recorder with the interviewees' consent. In some cases, when the interviewee declined the use of a voice recorder, I took notes during the interview. I listened to the interviews and re-read the notes, to write up summaries of the interviews, focusing on meanings attached and the history of different relations. Through this process, I translated the recorded interviews to English and transcribed with diligence to capture the subtleties of the language and culture, besides accuracy of translations. Native Marathi speakers were asked for specific help to translate difficult concepts, and also to cross check the quality of the translation. The summary notes for each interview are categorised to highlight the relevance of discussions to the questions being asked by the research. These meanings were located within the relational position of the interviewee (while not collecting personal information) to gain insight on different relationships and 'meaning production'. The patterns of relations and meanings were then mapped within the conceptual framework to interpret their relevance to the research question and objectives, which overlapped with the writing process. At times, the writing threw up new questions which led me to trace the data backwards and listen to the interview again for possible new insights.

7. THE COMPLEXITY OF HUMAN-LARGE CARNIVORE RELATIONS: A SYNTHESIS

Large carnivores share a complex and dynamic relationship with humans. Through history, humans have idolised them as symbols of power (Knight 2006; Saunders 1998), branded them as vermin and offered bounties for them (Boitani 2003; Rangarajan 2012), culled them for damaging human interests (Knight 2000) and in the last few decades also made them the focus of conservation efforts to arrest their declining populations (Seidensticker et al. 1999; Seidensticker 2010; Treves & Karanth 2003). Though these conservation efforts have enjoyed a degree of support, they have also faced resistance as large carnivores have started making a comeback in areas from where they had disappeared or had become rare (Saberwal & Rangarajan 2003; Shahabuddin & Rangarajan 2007; Skogen & Krange 2003; Skogen et al. 2008). This is partly because conservation further intensifies unequal economic and power relations, which characterise discourses of development and progress. In addition, large carnivores are also prone to material conflicts with humans through depredation of livestock and the physical harm and death they are known to cause (Goyal 2001; Löe & Röskaft 2004; Madhusudan & Mishra 2003). This research explores some dimensions of this complexity using a non-dualistic theoretical framework that recognises the agency of non-humans to influence the actions of other actors.

In paper I, we review the scientific knowledge that informs conservation practice for large felids (leopard, Asiatic lion, snow leopard and tiger) in India. This body of knowledge is important for the influence it exerts on conservation policy and its practice while also influencing the popular perception of large felids. We focussed on peer-reviewed journals and identified 103 papers since 1947. The review revealed two striking patterns: The biological sciences dominate in the published literature, and nearly all the research has been carried out in protected areas, though a substantial number of large felids also live outside protected areas. In the paper, we argue that these patterns are not incidental but the result of the dualistic ontological framework of science that have developed through the processes of ‘purification’ and ‘translation’ that fit complex realities into disciplinary prerogatives shaped by the nature-culture dichotomy. In addition, since this body of knowledge locates large felids in conceptually 'pure' biological spaces, there is little or no insight from areas outside or their relationship with humans, besides antagonistic ones in and around protected areas. These findings highlight important knowledge gaps in the research-based knowledge of large felids in India.

I would argue that these discourses are practices of creating ontological and physical divisions between humans and large felids. In effect, they recognise specific spaces and actors as natural and social, which they seek to control and protect through the authority of the state. However, this practice of boundary making, is fraught with challenges and paradoxes, which has been documented in the literature (Guha 2003; Jalais 2005; Robbins et al. 2009; Vasan 2005). We explore some of the intricacies of these challenges and paradoxes in paper II, by comparing the relationship between different actors. In Akole, the prominent actors are leopards, local groups and the forest department, while in BRT, the Soligas, tigers and the forest department emerge as the prominent actors. Akole is primarily used for agro-pastoral activities but is also shared by humans, leopards and hyenas. BRT is a protected area, which the conservation discourse and practice seek to naturalise by evicting its indigenous human population, but retaining commercial coffee plantations and tourism. Thus, we find that the conservation discourse values the two areas very differently, which is expressed in the relationships that emerge between humans and large carnivores. In Akole, the lack of control over the physical space has led local managers to enable plurality by recognising the reflexive relationships between humans and leopards. However, physical control over BRT has resulted in effective marginalisation of the Soligas and their relationships. As a result, the reflexive relationship has started to erode and is being replaced with one of antagonism. However, the conservation discourse continues to allow coffee estates and the tourist industry access to the space, as they provide political legitimacy to its narrative of wild nature and state control. In paper II, we argue that both sites are natureculture hybrids but their present valuations are the result of the working of the conservation discourse and its binary vision. These valuations and the selective enforcement of dualism may well be harming the very 'nature' that the conservation discourse seeks to conserve. Akole, on the other hand, has benefitted from being on the margins of the conservation discourse's practice, which has allowed for the persistence of a pluralistic framework.

While paper II highlights the paradoxes of conservation discourse, paper I highlights the need for more research on the relationship between humans and large felids outside protected areas. Paper III addresses this knowledge gap through a critical discussion on the negotiations in Akole of relationships between humans and leopards that have emerged through located history and discourses of modernity, of which conservation is one expression. The emergent relationship between humans and leopards is operationalised through an institution called Waghoba, dedicated to the big felids. Though this institution is common amongst tribal communities, several non-tribal groups also subscribe to it. The rituals related

to this institution reveal the plurality of relations between humans and non-humans ranging from dominance (livestock and crops) and trust (leopards). However, Waghoba also brings to the surface the underlying tensions between different ontological frameworks. When located in discourses of modernity, Waghoba emerges as a non-modern and backward practice, which the community members acknowledge. Despite this ontological tension, local members of the forest department, who are also embedded within local communities, have enabled ontological plurality rather than enforcing the dualism of modernity. As a result, leopards and humans continue to co-constitute this relationship, while co-opting the state's narratives of protection but at the same time rejecting its dualistic ontology.

As argued earlier, actors are co-constituted in varying proportions by social and natural processes. In this context, paper IV explores the possibility of using social constructions without resorting to dualisms. It uses concepts described by Ingold (2000) to explore how meaning is located and its impact on the relationships of humans and large carnivores. Paper IV draws on research conducted in Akole, Nilgiris and two sites in southeastern Norway, which have varying levels of conflict. Each of these sites have changed over time; physically, demographically, biologically, socially and politically. However, the change has meant different things to different actors. There remains a perception of conflict in the Nilgiris and Norway, despite the actual material loss being relatively low. Though the material loss does play a role, the perception of conflict is linked to divergent social constructions of space and its use. In both cases, afforestation and large carnivore conservation have coincided with general economic and social decline. This has led to discontinuities in historical practices of meaning construction for some groups, which are replaced by alternative practices. The conflicts over large carnivores are thus embedded in larger conflicts over management and use of particular spaces with resulting biological, social and political implications. Akole has the lowest level of conflict of the sites discussed in this paper. One possible explanation, which emerged through the comparison, is that continuity in the historical practices of meaning construction in Akole. The processes of change that have benefitted local communities (even if unequally distributed) have also contributed to a perceived increase in large carnivore numbers. This analysis provides insights into the impact that social, political and historical processes between human groups, and the resulting changes in biological processes, can have on the relationship between humans and large carnivores.

8. CONCLUSION

This research focuses on the relations between humans and large carnivores, in the context of different discourses from which they emerge. Such an analysis of relations and conservation must be located within larger discourses of development and modernity, especially in the context of unequal economic and political relations. By recognising non-humans as actors, I show that these discourses of inequity are also extended to them. The reflexive relationships between different actors, human and non-human, are contextualised within these processes of change, which present potential contestations and challenges but also possibilities of synergies and opportunities.

The papers in this thesis provide insights into the complexity of these relations and the influence of different ontological traditions and discourses. For instance, the conservation discourse seeks to create boundaries between society and nature, based on an assumed dichotomy between the two. The relationships imposed by this discourse are one of conflict between an objectified nature and a subjective society. Furthermore, the policy framework for conservation in India and the research knowledge that informs it are also located within this ontology of dualism. As a result, there are no formal strategies or frameworks to understand and enable the kind of ontological pluralism observed in Akole, where conservation of biological diversity is practiced *with* humans *and* non-humans. The framework used by this thesis blurs these boundaries with humans and non-humans co constituting these relationships through a shared history. This provides critical insights into the working of different discourses. It also highlights that these discourses are not insular, but dynamically adapt to political and biological processes with varying outcomes, as seen in the discussions in different papers of this thesis.

These relationships between different actors are dynamic and continue to change in response to a variety of factors and processes. This thesis provides a glimpse into this complexity with a critical commentary on different processes and their underlying patterns. It also leaves several themes unexplored and questions unanswered, while suggesting some directions to investigate them. However, if I return to my assumption of ‘reality’ as an active verb then it follows that this research is at best, a set of unfinished conversations between different actors.

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Paper I

AN ONTOLOGICAL CRISIS?
A REVIEW OF LARGE FELID CONSERVATION IN INDIA[1]

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Abstract

The need for a solid knowledge base for conservation activity is now universally recognised. We critically scrutinised the scientific knowledge of large felids in India through a review of peer reviewed research papers in order to assess the information available to make landscape-level management decisions that aid conservation, which is a stated goal of both the Indian government and the international community. We found two striking patterns: the biological sciences dominate in the published literature, and nearly all the research was carried out in protected areas, though a substantial number of large felids also live outside protected areas. We argue that these patterns are not incidental, but the result of the dualistic ontological framing of science that has developed through the processes of 'purification' and 'translation' that try to fit complex realities into disciplinary prerogatives shaped by the nature-culture dichotomy. In addition, since this body of scientific knowledge locates large felids in 'pure' biological spaces only, there is little or no insight from areas where humans and large felids share space. These findings, we believe, highlight important knowledge gaps in our present research-based knowledge of large felids in India, which urgently need to be addressed if progress is to be made in conservation.

Key words: Large felid research, conservation in India, science and technology studies

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INTRODUCTION

Large felids share a complex relationship with people, marked not only by conflicts and persecution, but also by coexistence and deification (Boomgard 2001; Saberwal & Rangarajan 2003; Saunders 1998; Treves & Karanth 2003). Over the last two centuries, large felids, like other large carnivores, have been facing a conservation crisis marked by a systematic decline of populations and their distribution across much of their historical ranges. Conservation efforts over the last few decades have yielded mixed results, and even when successful have often been associated with a diversity of conflicts (Linnell et al. 2001; Treves & Karanth 2003). As part of these conservation efforts, large amount of resources have been allocated to research, resulting in a growing body of scientific literature on the large felids. In some cases, these efforts have refined our strategies and started to turn the tide of large felid population decline for species like puma (*Puma concolor*) and Eurasian lynx (*Lynx lynx*), which have begun to recover in many parts of north America and Europe respectively (Hornocker & Negri 2010; Linnell et al. 2009). However, for many other species and in other regions, the crises seem to persist (IUCN 2011; Seidensticker 2010). In this paper, we critically analyse this body of scientific literature, which aids the management of large felid populations in different areas, to identify possible patterns and gaps in this body of knowledge.

While it can be argued that scientific knowledge enjoys a greater influence over policy-making and practice than other forms of knowledge, the evidence for this is rather mixed. Some authors have identified obvious disconnects (Velho et al. 2012), others highlight resistance (Karanth et al. 2003), and in some cases policy frameworks also shape research priorities (Huesemann 2002). Some also point to the reciprocity or mutual dependence between science and politics—politicians need science to legitimise decisions, scientists need funding from the public (Vedeld & Krogh 2000). However, there can be little doubt that science as a body of knowledge does provide a critical input to our understanding of different issues and thus exerts an influence, however protracted or indirect, on policy and practice. For instance, biologists (Karanth 1995; Karanth et al. 2003) have been suggesting changes to the Government of India's census methods, several of which were implemented in the 2006 and 2010 tiger censuses (Government of India 2005; Jhala et al. 2011).

While science enjoys a preeminent position in shaping our general understanding of the world and also impacts policies, its epistemological and ontological roots are the subject of intense scrutiny and critical discussions amongst philosophers, theoreticians and

practitioners. Scientific knowledge is currently structured around dichotomies such as positivism-relativism, subjectivity-objectivity, value-fact, nature-politics, natural sciences-social sciences etc. While these debates and arguments continue, there is a growing recognition that science is influenced and shaped by social, economic, political, historical and cultural factors (Bird 1987; Callon 1986; Demeritt 1996; Haraway 1991; Latour 2004).

In this paper, we recognise that science is not value-neutral and, as a body of knowledge, constitutes an interpretation of complex realities. This assumption does not disregard the potency and efficacy of scientific methodology or its far-reaching impact, but recognises that scientific knowledge has inherent value preferences and is embedded within political and societal institutions (Latour 2004; Putnam 1981; Robbins 2012). These influences may not even affect the accuracy of observations but have more subtle influences, for example through the choice of study species, study sites and methodology (Latour 2004; Robbins 2012). Similarly, funding agencies and the state may also influence the location, priority, focus and questions being asked (Bakker et al. 2010; Halpern et al. 2005). While these influences may not bias single results obtained from specific studies, they may combine to introduce a cumulative tilt into the larger body of knowledge. It is these patterns that we hope to uncover in this paper in order to also identify crucial knowledge gaps that need to be addressed for the long term conservation of large felid species in India.

Instead of attempting to cover large felids across the world and the diverse contexts of their conservation, we focus our attention in this paper, on one case study: India and its four large felid species, tigers (*Panthera tigris tigris*), leopards (*Panthera pardus fusca*), snow leopards (*Uncia uncia*) and Asiatic lions (*Panthera leo persica*). All, except the leopard (Near Threatened), are classified as Endangered by the World Conservation Union (IUCN 2011). However, some of the discussions in this paper may have a broader geographical relevance to the conservation of other large felid species too.

There are several reasons for focusing on India. Spread across 2.4% of the world's land area, India accounts for 8% of the world's known biodiversity and is recognized as one of the 17 mega-diverse countries (Mathur & Sinha 2008). Furthermore, India has strong and deep-rooted discourses on conservation in specific and science in general. In addition, it is also home to more than 50% of the global tiger population, the only known population of the Asiatic lion and a significant proportion of the global populations of snow leopards and leopards (IUCN 2011; Saberwal et al. 1994; Seidensticker et al. 1999). Thus, India plays a significant role in generating knowledge and strategies for conservation of large felids, especially these 4 species. Furthermore, they live in a diversity of spaces, including multi-use

ones with human densities exceeding 300 people per sq km, and with the exception of the snow leopard, are known to attack and kill people (Goyal 2001; Löe & Röskaft 2004; Saberwal et al. 1994). Large felid conservation in India faces similar crises as in other parts of the world, including conflicts with people, poaching and ecological change. However, these challenges may well be more intense in India due to its higher human population densities, complex socio-political structures and resource allocation mechanisms.

METHODS

Our data is derived from a review of scientific papers, published in peer reviewed journals between 1947 and 2011, resulting from research conducted on the four large felids in India. Large felid conservation and research took root in India in the 1960s. Prior to this, we found numerous observation notes, expedition reports and hunting accounts but only six research papers in the *Journal of the Bombay Natural History Society* and one in the *Journal of Bengal Natural History*. Since our review is based solely on peer reviewed papers, it excludes the grey literature, popular articles, books, and websites.

Different methods were used to locate papers on the four species of large felids in India. One method was to search online databases like ISI Web of Knowledge (www.isiknowledge.com) and Google Scholar (scholar.google.com). The search was guided by a predefined protocol to identify only peer reviewed papers based on research and conservation of large felids in India (Pullin & Stewart 2006). The search was carried out in English using key words such as 'Asiatic lion', 'leopard', 'snow leopard', 'tiger' as well as their Latin names, with filters such as 'India', 'large felid research' and 'large felid conservation'. We also cross-referenced bibliographies of scientific papers and manually reviewed issues of the *Journal of Bombay Natural History Society* from 1947 to 2011. Through these methods, we located 103 scientific papers that were centred on the research and conservation of the four large felids in India. While this does not constitute an exhaustive inventory of all existing papers, we believe that it provides a wide enough sample to reflect general patterns in the readily accessible scientific knowledge on these species. These papers were analysed to characterise their research focus and study site. We also listed the agencies that funded research on large felids in India, from the acknowledgments in the papers, as the funder's conception of conservation may influence research focus.

RESULTS

While there are many practical and institutional challenges to conducting wildlife research in India (Lewis 2005), our review identified a lot of high quality research and publication on the large felids, especially in recent years (Figure 1)—with 56 % of all publications appearing between 2000 and 2009.

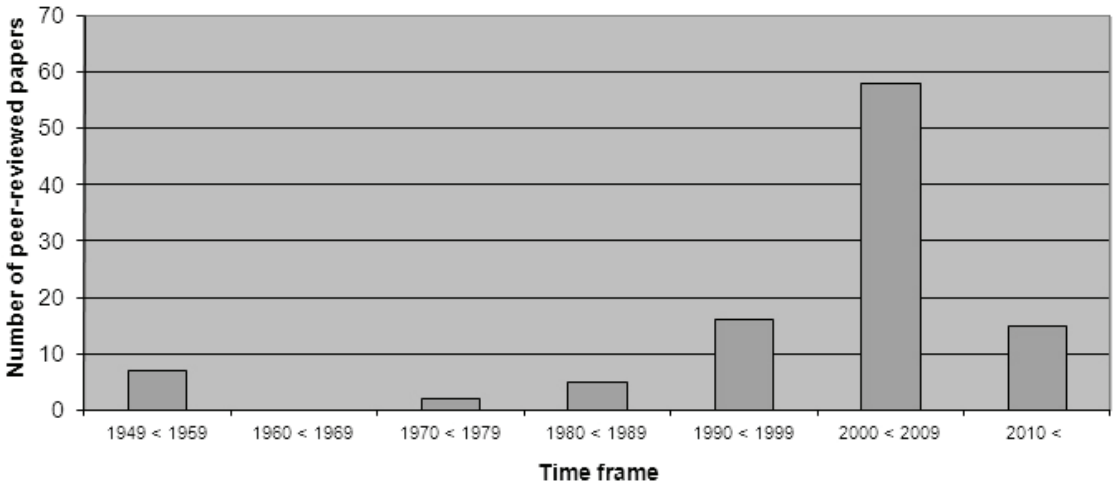

Figure 1: Distribution of reviewed papers from 1949 to 2011

Overall (Figure 2), there is a clear species bias towards tigers (66%), even though the leopard has a much larger range in India (and has far more conflict-oriented interactions with humans), and Asiatic lions number only 1/4th of the tiger population in India and face a far more serious extinction threat.

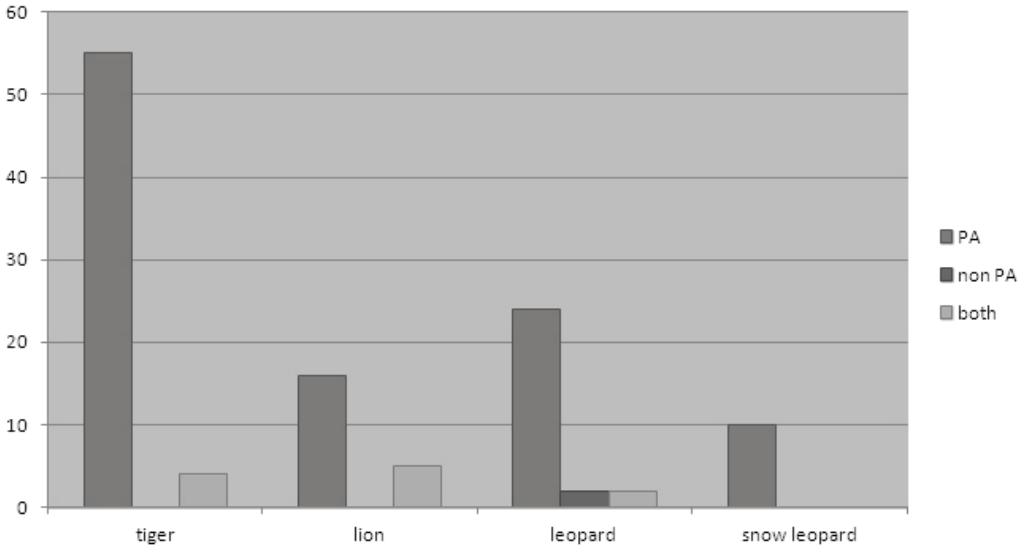

Figure 2: Location of large felid research inside PAs, outside and both.

The review also revealed some general patterns (Table 1). The most telling is the disciplinary bias in favour of the biological and ecological sciences, with only 18% of the papers addressing socio-economic issues, people's attitudes, and community participation in conservation. Most of these appeared after 1997. One notable exception to this pattern is the research on snow leopards in the Trans-Himalayan area of Spiti, which includes a mix of socio-economic and ecological perspectives (Mishra 2000).

Table 1: Species types and thematic focus of the reviewed papers

Theme/focus area	Tiger	Lion	Leopard	Snow leopard
Ecology	68	49	54	23
History	3	6	3	0
Census	9	10	7	0
Material conflicts	6	19	30	46
Socio-economics	6	0	3	8
Attitude of locals towards large felids	9	0	7	8
Philosophical underpinnings of conservation	5	0	3	0
Management of large felid populations	10	10	0	0
Hunting	0	10	0	0
Local participation in conservation	0	0	0	15

Ninety percent of the papers are based on research carried out in or around protected areas (PAs). This pattern is even more striking for tigers, where all the papers located, were based on research in and around PAs. However, since the turn of the century, there is an expanding literature exploring the idea of large felids in conservation areas, centred on PAs but placed in a larger matrix of land use (Mathur & Sinha 2008; Wikramanayake et al. 2004).

In all, we identified funding from 43 agencies (Table 2), and several projects were funded by multiple agencies, however four funding agencies were involved in a total of 55 of the 65 research projects that we could identify, while just 3 institutions seem to dominate large felid research in India (Table 3).

Table 2: Funding agencies for large felid research in India

Funding agency	No. of research projects
Ministry of Environment and Forestry, Government of India	18
Wildlife Conservation Society (USA and India chapters)	15
US Fish and Wildlife Services (USA)	12
National Fish and Wildlife Foundation (USA)	10
Unites States Geological Survey (USA)	5
National Geographic Society (USA)	4
World Wide Fund for Nature (International and India)	4
Tata (IISc, NCBS)	3
International Snow Leopard Trust (USA)	3
Chicago Zoological Society (USA)	3
Centre for Wildlife Studies (Bangalore)	2
Macarthur Foundation (USA)	2
Disney Wildlife Conservation Fund, USA	2
National Wildlife Federeration (USA)	2
Netherlands Organization for Scientific Research	2
Global Tiger Patrol (UK)	2
US-India Fund	2
Rufford foundation (UK)	2
German Academic Exchange Service (DAAD)	2
Wildlife Protection Society of India	2 (PA) +1 (NON-PA)
Council of Industrial and Scientific Research (GOI)	2
Individual Donors	1
US National Science Foundation	1
Tigerwatch, Ranthambore	1
Ford Foundation (USA and India)	1
Kaplan Graduate Award (Panthera USA)	1 (PA) +1 (NON-PA)
Leonard X. Bosack & Bette M. Kruger Charitable Foundation (UK)	1
International Trust for Nature Conservation (UK)	1
The Shared Earth Foundation (USA)	1
The Royal Society (UK)	1
Smithsonian Research Foundation (USA)	1
Bombay Natural History Society (IND)	1
Fauna and Flora International (UK)	1
National Science Foundation	1
Moef (Government of Kenya)	1
The Explorers Fund International	1
UNESCO	1
INLAKS	1
Environmental Systems Research Institute	1
Sea World Busch Gardens Conservation Fund	1
Department of Biotechnology (GOI)	1
Royal Norwegian Embassy, New Delhi	1 (NON-PA)

Table 3: Research agencies that carried out research on large felids in India

Research agency	Number of projects	
	PAs	Non-PAs
Wildlife Institute of India (IND)	20	-
Wildlife Conservation Society (USA)	8	1
Nature Conservation Foundation (IND)	7	-
National Centre for Biological Sciences (IND)	3	-
International Snow Leopard Trust (USA)	3	-
Indian Institute of Science (IND)	2	-
Duke University (USA)	2	-
University of California (USA)	2	-
World Wildlife Fund for Nature (USA)	2	-
Center for Cellular and Molecular Biology (IND)	2	-
Indian Institute of Management (IND)	1	-
Chicago Zoological Society (USA)	1	-
Salim Ali Centre for Ornithology and Natural History (IND)	1	-
US Geological Survey (USA)	1	-
Gujarat Forest Department (IND)	1	-
Kaati Trust (IND)	-	1
Snow Leopard Conservency (USA)	1	-
Rogaland Research (NOR)	1	-
Aaranyak (IND)	1	-
Centre for Wildlife Studies (IND)	1	-
Norwegian University of Life Sciences (NOR)	1	-
University of Adelaide (AUS)	1	-
Harvard Medical School (USA)	1	-
Columbia University (USA)	1	-
Salisbury University (USA)	1	-
Stanford University (USA)	1	-
Sycaruse College (USA)	1	-
Aligarh University (India)	1	-
University of Arizona (USA)	1	-
London School of Economics(UK)	1	-
Gettysburg College (USA)	1	-
GB Pant IHED (India)	1	-

DISCUSSION

Overall, the results support our initial assumption of scientific knowledge being political, with inherent value preferences. For instance, the spurt in the volume of research papers between 2000 and 2009 is not merely a maturing of scientific research on large felids in India or the sudden urge to publish research data. Part of the explanation can be found in the

changes in international environmental politics and dialogues in the preceding two decades, such as the report of the Brundtland commission in 1987 and the resulting Rio Earth Summit in 1992. These changes led to the recognition of biodiversity conservation and sustainable development as important priorities, which in turn helped direct much needed funds for research (Gubbi 2010; Halpern et al. 2005). In addition, organisations like the Wildlife Conservation Society, which our review found to be the second most prolific funder of conservation research in India after the Government of India (see Table 2), established their Indian office in the mid-1980s (see http://wcsindia.org/).

Dominance of tigers

Our review found that tigers dominate the research-based knowledge of the large felids in India. This preference does not reflect conservation priority (Asiatic lions are more critically endangered) or conflicts with people (leopards have a larger range and a closer interaction with people). While the tiger does require urgent conservation action, the preference for it over the other large felids in the literature is less a reflection of its conservation status or need, and more a result of value preferences exercised in Indian society and politics. For instance, the tiger is the national animal for India and also exudes power and strength, associated with a prominent Hindu deity and its claws are said to have magical powers in some communities in India (Jackson 1999; Thapar 1992). These values are also reflected in conservation discourses, including the concept of flagship species both internationally through projects such as the Global Tiger Recovery program (Seidensticker 2010) and in India: "The tiger *Panthera tigris* has been used as a charismatic flagship species in the efforts to protect overall biodiversity in several Asian countries" (P. 333: Karanth 1995). This prominence of tigers in the Indian large felid research and literature is actively supported by the top funding agencies like the Government of India and Wildlife Conservation Society-India. Besides funding, the Government of India also provides the formal policy framework for the conservation of large felids. While its 'Project Tiger' was launched back in 1973, the other large cats lack the political profile and resources devoted to tigers. Similarly, WCS India declares on its website that it "...has played a significant role in tiger recovery efforts in the country since 1988. Through unmatched scientific rigor, we have been in the forefront of understanding tigers" (WCS-INDIA 2013).

Tigers are thus part of the political discourse in India, through formal policy and institutional apparatus in terms of Project Tiger (which includes the creation of tiger

reserves), and the National Tiger Conservation Authority among others. The other three large felids do not enjoy the same presence in the Indian political and institutional framework. By comparison, Project Snow Leopard though formally launched in 2009, continues to remain relatively low key in funding and impact. In addition, tigers also figure prominently amongst international funding agencies supporting research justified on the grounds that India is home to more than 50% of the world's tiger population, while leopard and snow leopard populations are distributed more widely beyond India's borders. Research and conservation of tigers are also inter-linked with discourses of Indian nationalism (Lewis 2005; Sivaramakrishnan 2011) but also reflects choices made by individual researchers who carry out research within these hegemonic discourses and the Indian administration framework, mediated through research permits and research grants. While our discussion here is limited to the large felids in India, Bonnet et al. (2002) and Pawar (2003) provide a discussion on similar trends in conservation research in general. These seem to justify our assumption of scientific knowledge systems being shaped by social and political factors and assumptions.

Discourses of dichotomy

Similarly, the predominance of biology in conservation research is another telling evidence of the different factors that have shaped this knowledge. Historically, scientific knowledge has often been structured around creating dichotomies, placing science in opposition to politics, the objective fact of nature in ontological opposition to a subjective value-based society (Latour 2004). The natural sciences cluster around a positivist ontology and epistemology with a strong tradition of quantification, while constructivist ontology and epistemology dominate the social sciences. This structure results in disciplinary reductionism, which provide simplistic interpretations of complex realities (Callon 1986; Latour 1991). Thus, pure biological research, which ignores the political and social processes into which conservation is integrated, misses this complexity (see for instance, Yackulic et al. (2011)). As a result, conservation strategies based only on biology are bound to face political and socio-economic challenges, which they are not equipped to handle. On the other hand, but similarly, research that reduces conservation only to its social elements without accounting for its biology also misses the complexity of issues. A conservation strategy based on such studies may thus address the social challenges but face biological obstacles imposed by the limits imposed by the inherited life-histories, physiology, ecology and behaviour of the non-human actors (see for instance, Ogra (2009)).

Our review shows that the research-based knowledge of large felids in India does not reflect the complexity of their realities due to its narrow focus on ecological research (see also Singh and Bagchi (2013)). The logical questions to ask are; why are these patterns evident and what factors have shaped the development of this particular body of knowledge?

Science and Technology Studies provide critical conceptual tools to explore the ontological frameworks that root the patterns we found in the review of the literature on large felids. The predominance of biology is not a mere coincidence but a result of a conceptual taxonomy that organises scientific knowledge. As mentioned earlier, scientific knowledge is organised around creating series of dichotomies, the first of which is the work of "purification" that seeks to keep nature and society apart, constructing one as an indisputable fact and the other as being defined by subjective values (Latour 2004).

Thus, the work of purification simplifies phenomena by using cultural constructions to create ontological dichotomies like nature vs culture, human vs non-human, relativism vs positivism, traditional vs modern etc, organised around a grammar of dominance and appropriation between the constituent pairings (Haraway 1991). The division between these dichotomies may even tend to increase with time as their respective proponents debate the relative values of their positions (Brox 2000). However, this process of creating purified and opposed extremes remains coherent as long as it is kept separate from a second set of dichotomies, the hidden work of "translation" through which the agency of different actors is mixed together to create networks of new hybrid beings, and so facilitate the work of purification (Callon 1986; Latour 1991; Latour 2004).

Thus, the literature is deeply influenced by the scientific discourses that sustain the ontological dichotomy between nature and society, which anchor the current model of science. "Nature", constructed as a undeniable fact, is recruited as an ideal to counter a subjective and value-based "society" and its associated politics (Latour 2004). This underlying process is further extended and formally institutionalised through policy instruments like The Wildlife (Protection) Act, 1972, including its amendments especially the Wildlife (Protection) Amendment Act, 2006, where identified spaces are "purified" and "naturalised" (by removing the existence and legitimacy of human agency) as conservation protected area. This 'pure nature' is stripped of agency and silenced, with scientists and managers speaking on behalf of this muted nature. Therefore, the resulting predominance of the natural sciences is not surprising given that the space is constituted as being 'free of humans'. Conservation discourse thus becomes a 'technical' challenge fit for the natural sciences, while the social sciences focus on the impact of this conservation on human

communities. These natural scientists are the privileged few, along with managers, who have the ability to shuttle between these different worlds of nature and society. The agency, or the ability to act and influence outcomes, stripped from nature is then concentrated on a privileged epistemic community, empowering them to speak for nature and counter the potentially damaging politics of society.

The existing dominant conservation discourse seeks to recreate its ontological dichotomy by physically separating people and nature though the creation of 'pure' or inviolate spaces; free of humans and human use, for conservation, where nature can exist in its 'pristine' form. This is very similar to the 'wilderness principle' that has dominated conservation discourses in the US by dichotomising between people and nature. As exposed by numerous critiques, the wilderness idea, which still enjoys widespread hegemony in many conservation discourses worldwide, is a socially constructed narrative rather than an 'axiomatic truth'. It hides the political action used to exorcise history and culture from places like Yellowstone National Park in the US, the Serengeti Ecosystem in Tanzania and most protected areas in India, to bring them in alignment with the ideas of pristine wilderness devoid of people (Cronon 1995; Descola 1996; Robbins 2012; Shahabuddin & Rangarajan 2007).

The process of creating protected areas as inviolate spaces, free from human use is also a political act, with far reaching ecological, economical and socio-political impacts creates new nature-culture hybrids. Similarly, a new set of actors like the tourism industry are recruited to this practice, as they generate money to experience this naturalised space, while competing claims to this space by local communities are politically and ecologically marginalised (Guha 2003; Robbins et al. 2009). The ecological impact of physically removing people from 'nature' has been documented with a few cases that point to "successes" (Harihar 2009), "mixed results" (Karanth 2007) and "antagonism" (Rangarajan & Shahabuddin 2006). However, investigation into the numerous cases where humans and large felids share space and resource even in and around protected areas, remains largely absent in the literature (the Soligas in Biligiri Rangaswamy Temple Tiger Reserve and the Maldharis in Gir are two notable examples that find passing mention in the literature (Divyabhanusinh 2005; Shaanker et al. 2004)). Thus, the conservation discourse is organised around the work of purification or keeping humans and society apart from non-humans and nature. The same discourse translates these different actors by recruiting them into new mixes creating nature-culture hybrids, which remain hidden. Purification processes are clearly evident in the literature, while the hidden process of translation, though unacknowledged in

the literature, remains evident in the persistent recommendation of the need for political will, scientific knowledge, and economic resources for effective conservation (Joslin 1984; Ranganathan et al. 2008; Treves & Karanth 2003). The conservation discourse actively recruits different actors to create new networks of nature-society hybrids that sustain the processes of ontological purification.

While we are not directly advocating either inviolate spaces or the continued presence of people inside PAs, the review highlights the lack of knowledge on the interaction between people and wildlife i.e. between nature and society. Creation of conservation priority areas may well be necessary for certain species and situations but still need to account for the historical practices and their physical and political impacts on the space. In this regard, there is a vast knowledge gap in the large felid literature in India on the complexity of the relationship between people and large cats across disciplines.

The pursuit of purity: Where do large felids belong?

The work of purification and translation extend well beyond disciplinary divisions, to conceptually associate large felids with specific spaces. A large number of the papers (90%) across disciplines are based on research in and around PAs. While our sample is not exhaustive, this number is still very high and also reflected in other reviews like the one carried out by Singh and Bagchi (2013). The close association of felid research with PAs is also an outcome of these purification and translation processes that dichotomise nature and culture, humans and non-humans etc, as discussed in the previous sub-section. The conceptual division is further consolidated by external factors and the choices made by individual scientists and institutions who seek funding, and the funding agencies that provide it. Bakker et al. (2010) provide a discussion on similar processes observed in conservation research in the USA. PAs are more attractive research sites from both practical and aesthetical viewpoints than areas outside and also better suited to address the questions that ecologists are trained to answer. Recent research suggests that these factors influence the designation of specific areas as PAs in the first place (Joppa & Pfaff 2009). Funding agencies are also likely to play a key role in shaping research priorities. In our review, we found 43 acknowledged agencies that have funded large felid research in India (Table 2) but the top funders for large felid research were agencies with an overt interest in supporting PAs for conservation. The Indian Ministry of Environment and Forestry, which manages India's wildlife and PAs, tops the list. The list is otherwise dominated by American institutions, who

widely promote the creation of PAs as a central strategy for wildlife conservation (Neumann 1998). Similarly, all the institutes involved in conservation research (Table 3) are also oriented towards the biological sciences, especially the top three that account for 36 projects between them (of which only one was conducted outside the PA network).

The idea of wilderness is rooted in a dualistic ontology, to preserve supposedly pristine 'nature' untouched by humans through the creation of people-free PAs, emerged in USA (Cronon 1995; Neumann 1998). By contrast, European models allow access to conservation areas and sustainable use to an extent, while placing constraints on certain developmental activities. Clearly, the Indian conservation discourse, even if articulated in nationalistic narratives and inherited as part of its colonial British legacy, is modelled more on the American ideal and supported by the research funding that upholds it (Rangarajan 1999; Rangarajan & Sivaramakrishnan 2012). This is in striking contrast to informal institutions and indigenous management models that do not dichotomise nature and society, which find frequent mention (Karanth et al. 2010; Rangarajan 1999; Rangarajan & Sivaramakrishnan 2012; Sukumar 1994) but little formal attention.

Thus, in addition to the disciplinary bias discussed in the previous sub-section, conservation discourses extend the ontological assumptions to locate large felids in certain conceptual spaces, while excluding their possible presence in areas outside PAs. Some papers justify their choice of research site "…populations of these and other large mammal species in India are mostly distributed across the country's network of 540-plus wildlife reserves" (p. 466: Madhusudan 2003), while others do not qualify their selection. As Karanth et al. (2009) and others highlight, the association of large felid research with PAs is an accepted as part of a 'regime of truth', a phrase coined by Foucault (1980). Our review suggests that this 'truth' is supported by research evidence from PAs alone, with little focus on large felids outside.

As a result, reports of large felids in areas outside are interpreted as the result of degradation of habitat and prey base within PAs (Athreya et al. 2007). Furthermore, large felids outside PAs are also valued differently: as "...breeding 'source' populations for wild tigers are primarily confined to effectively protected reserves that occupy less than 2% of the overall landscape, the rest of which acts as a population 'sink'" (p. 180: Karanth 2003). Thus, large felids outside PAs are devalued, and attributed little or no conservation value. For instance, a paper by Carter et al. (2012) concluded that tigers and people could share space. This paper generated a flurry of responses critiquing its findings (see Goswami et al. (2013), Harihar et al. (2013), Karanth et al. (2013) and Carter et al. (2013)) which illustrate the

different value systems and dichotomies that anchor the current discourses of large felid conservation in India.

The inherent assumption here appears to be that large felids should live only in pure, inviolate spaces, which is supported by research from PAs. This assumption forms an important building block of conservation theory and practice, which excludes the possibility of people and wild animals, especially large felids, coexisting (Woodroffe & Ginsberg 1998). Since this body of knowledge systematically ignores areas outside PAs, the notion that 'people and large felids cannot co-exist' is based not on evidence, but on a self-reinforcing conceptual model with its own assumptions. However, some research has been carried out on leopards and lions outside PAs (Athreya et al. 2011; Saberwal et al. 1994) including some social science research more recently like Bhattacharjee and Parthasarathy (2013) and Jhamvar-Shingote and Schuett (2013), which were published recently and not included in our review. There is also some acknowledgement that tigers share space with humans too (Seidensticker 2010). While this is also acknowledged by the scientist leading India's tiger census in 2011, who roughly estimates that a significant proportion (30%) of India's tigers live outside PAs (YV Jhala, pers. comm.), it finds no mention in the official report he co-authored for the Government of India. An acknowledgement of the existence of nature-society hybrids is also evident in the increasing use of the conservation landscape model, which centres on PAs but locates them in a larger matrix of land use (Kanagaraj et al. 2011; Karanth et al. 2011; Mathur & Sinha 2008; Ranganathan et al. 2008; Wikramanayake et al. 2004).

While our review is not intended to dispute the quality of existing scientific knowledge, it does point to some critical shortcomings. As outlined in our analysis of the results, this body of knowledge is structured within a dualistic framework, with conservation of large felids being conceptualised as a primarily (or purely) biological activity, with the social sciences playing a peripheral role. As a result, little is known about the complex network of factors that shape and influence conservation, including politics, culture, economics and ecological change. There is also a poor understanding of the interactions between people and large felids in India. We also know very little of how large felids share space with humans (see Valeix et al. (2012) for research in Africa on adaptive behaviour amongst lions when they extract resources from villages), how people interact with them (see Lescureux (2006) for a discussion on mutually adaptive behaviour by humans and wolves in Kyrgyzstan), and which conservation tools are required to manage these interactions. The primary management tool in India remains to keep people and wildlife apart and pay

compensation for depredation losses outside PAs. The lack of research and paucity of scientific knowledge has played a role in sustaining harmful practices like translocation of 'problem' animals, which often escalates conservation conflicts with tragic consequences for both people and large felids (Athreya et al. 2011).

CONCLUSION

In our review of a sample of peer reviewed research papers on large felids in India, we found clear patterns and wide gaps in this body of knowledge. We suspect that among other factors, especially the knowledge gaps may have contributed to the intensification of the crisis in large felid conservation in India. Other factors include unplanned developmental changes, poaching, lack of meaningful dialogues between different interest groups in framing (and reorienting) conservation policy and the erosion of socio-cultural tolerance. The important point here is to recognise a collective failure to acknowledge and respond adequately to these challenges, especially the complexity of conservation and a recognition that large felids live in a wide range of socio-ecological spaces, including ones they share with humans. This represents challenges and opportunities for felid conservation as well as scientists who seek to build the knowledge base needed to conserve these species. An interesting point of departure would be to formally examine the role of individual and institutional values and their ideological orientations on the process of large felid research, in much the way that Takacs (1996) has done for the development of the field of conservation biology in general. Our goal with this paper is to review and raise a constructive critique of the state of large felid research in India. The research that has been done till now has been of considerable quality but our point is that this may not be enough. The two big challenges we identified in this paper are to investigate conservation questions through inter-disciplinary (non-dualistic) frameworks and to extend focus beyond PAs.

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Paper II

BETWEEN THE SOCIAL AND THE NATURAL: EXPLORING VALUE PARADOXES OF THE CONSERVATION DISCOURSE IN INDIA[1]

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Abstract

The conservation of biodiversity remains a complex challenge, which we explore through a comparison of two different sites in India. We draw on the insights from science and technology studies to understand the processes of value creation by the conservation discourse and the dualisms that structure its ontology and practice. One site is outside the protected area network, primarily used for agro-pastoral activities and shared by humans and leopards. The other site is a protected area that the conservation discourse seeks to protect by evicting an indigenous community, but retaining commercial coffee plantations and tourism. We argue that both sites are co-constituted by a history of relations between humans and non-humans but their present valuations as being social and natural are the result of dualistic ontology of discourse of modernity, within which conservation is embedded. We further argue that this valuation may be harming the very 'nature' that the conservation discourse claims to be conserving and recommend a critical re-examination of its ontological assumptions.

Keywords: conservation discourse, dualistic ontology, human-nature relations

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Introduction

Environmental conservation has become a highly contentious issue in the last few decades. While contests over resources and rights to resources are being negotiated on the ground, there is also significant research that draws attention to the contestations in the definitions of 'nature', 'the environment' and consequently the 'threats' and the proposed 'solutions' (Castree & Braun 2001; Cronon 1995; Descola & Palsson 1996; Robbins 2012). Policy makers and practitioners have struggled to reconcile the divergent perspectives and interests of conserving nature while also achieving developmental outcomes. In many of these discussions, the meaning of 'nature' is assumed to be a universalised reality that is experienced and understood by everyone identically. This notion of a universalised 'nature' has been challenged to reveal the political, social, ecological and historical processes that shape how it is experienced and interpreted (Bird 1987; Descola & Palsson 1996; Foucault 1980; Ingold 2000; Whatmore 1999).

Understanding these processes is important as it also provides insights into the constitution of 'nature', while also defining the threats from which it needs protection. One of the most popular meanings of nature is to equate it to 'wilderness', which is located outside the social domain of humans. Scholars like Cronon (1995) and Robbins (2012) argue that this idea of 'wilderness' hides the complex histories of political, ecological and social processes through which both society and nature are constituted. This 'nature' hides the long history of human habitation and the political action that has been used to erase these pasts. Other popular meanings of nature have included 'biological diversity', which has gained prominence in the last few decades through the influential discourses within conservation. Takacs (1996) argues that this seemingly simple term includes a diversity of meanings and interpretations amongst its supporters including scientists, activists and policy makers. We could continue exploring different meanings but the important point here is that 'nature' is a contested terrain with different claims, interests and implications (Bird 1987; Haraway 2008; Whatmore 1999). These contestations are not one limited to semantic disagreements but have implications for social, economic, political and biological outcomes (Rangarajan & Sivaramakrishnan 2012; Robbins 2001; Robbins et al. 2009; Saberwal & Rangarajan 2003).

The recognising of 'nature' as a social construction is not new in disciplines such as human geography and anthropology (Bird 1987; Castree & Braun 2001; Ingold 2000; Whatmore 1999). This recognition has resulted in a growing scholarship on the political dimension of nature conservation and its impact on human and non-human communities.

More recently scholars like Ingold (2000) Latour (2004) and Haraway (2008) have critiqued the idea of nature being a social construction. They argue that treating nature as a social construction assumes a dualism where pluralism in society is contrasted with a universalised nature. They critique this dualism and argue that nature is co-constituted by a history of relations between different actors, human and non-human (Haraway 2008; Latour 2004). This implies that meaning, value and identities are constantly emerging from these complex relations. In this paper, we explore the intricacies of these themes by comparing how meaning and relations are constituted by the conservation discourse in two sites in India.

While India has a long history of formal and informal institutional mechanisms to effect conservation, we focus our attention on the current conservation discourse. This is significant as India is recognised as one of 17 mega-diverse countries with 8 percent of the world's known biodiversity (Mathur & Sinha 2008; McNeely et al. 1990). In this paper, we explore the ontological roots of the conservation discourse by comparing the relations that emerge from its practice in different contexts. One is a site outside the protected area framework, primarily used for agro-pastoral activities, and shared by humans and leopards (*Panthera pardus*). The other context is a protected area, which an indigenous community shared with tigers (*Panthera tigris*) and other species and now face eviction, even as commercial activities are allows use of the same space.

The common denominator: Conservation discourse in India

Nature conservation in India is achieved through a state-led discourse of species and habitat level protection. The main traction for this discourse is generated through policy instruments like the Indian Wildlife (Protection) Act, 1972 and the Biological Diversity Act, 2002, which are enforced by the forest department. These governance practice have their historic origins in resource exploitation, especially commercially valuable timber, to fuel the imperial state's ambition of capital accumulation (Rangarajan 1999; Rangarajan & Sivaramakrishnan 2012; Robbins et al. 2009; Shresth 2009).

The colonial state legitimised its control over forests and its resource through instruments such as the Indian Forest Act of 1927. It coercively asserted this control over vast tracts of land and resources across the Indian subcontinent by extinguishing local rights (Rangarajan 2001; Weil 2006). This legacy of control was inherited by Independent India, which faced its first environmental crisis with the Asiatic Cheetah (*Acinonyx jubatus venaticus*) going locally extinct in India and the Asiatic lion (*Panthera leo persica*) being

reduced to a single location in Gir. The pleas of several prominent scientists and activists about imperilled fate awaiting the tiger finally moved the Indian government to extend its control over wildlife and creation of protected areas for conservation through the Indian Wildlife (Protection) Act of 1972. Thus, a practice of state control that started out as a discourse of exploitation was retained and extended to include conservation. In effect, the independent Indian state retained its hegemonic role of mediating the meaning and use of 'nature' between competing claims (Saberwal & Rangarajan 2003).

In assuming this role, the state isn't merely a neutral mediator but one that actively enforces a specific vision of 'nature' through its policy framework and the resulting conservation practices. The 'nature' defined by this discourse is an apolitical entity that is threatened by human actions. It, thus, needs to be protected by setting aside natural spaces with their pristine and stable ecosystem and viable populations of diverse species (Karanth 2003; Karanth et al. 2011; Wikramanayake et al. 2004). Though humans are defined as the main threat in this definition of nature, this discourse does not recognise that conservation too is a human endeavour. Prominent human actors in this discourse is the state through its practice of authority, and scientists, who produce knowledge to increase the impact—with mixed results—of conservation policy and practice (Huesemann 2002; Karanth et al. 2003; Velho et al. 2012). Other actors include marginalised communities of human and non-human actors, whose relationship the conservation discourse seeks to govern and mediate.

Conservation practice in India has been critiqued for the systematic exclusion of marginalised communities, which favouring more privileged actors (Guha 2003; Jalais 2005; Shahabuddin & Rangarajan 2007). Non-human entities are conceptualised as things or objects that the need protection. The Indian Wildlife (Protection) Act, 1972 declares that "Every wild animal...shall be the property of the State Government..." (p. 419: Government of India 1972). Not only are these things apolitical, but also devoid of any history (besides their genetic material) and with a marked inability to act or speak, which must be mediated and voiced by the conservation discourse.

Actors and agency

We use the term agency to refer to the ability to act (Latour 2004). However, in the dualistic discourses of modernity, in which conservation is embedded, agency is equated with intentionality and will, which it regards as uniquely human traits (Haraway 1989; Whatmore 1999). Thus, by implication, humans are the only possible actors who have agency. This

ontological dichotomy between nature and society is rooted in specific metaphysical traditions, especially in Europe, dating back to the conceptual distinction made by ancient Greek philosophers to the irreconcilable dichotomy of the Cartesian tradition (Latour 2004). This dualism is inherently reductionist and based on an assumption that humans are a special and unique category outside nature, which Haraway (2008) calls the 'fantasy of human exceptionalism'. This ontology of dichotomy gained political currency through the spread of colonialism and remains enshrined in policy frameworks and discourses on science and nature.

This has been challenged by other frameworks where the distinction of nature and society is dissolved to be replaced by a pluralistic ontology, especially in the works of Ingold (2000), Callon and Law (1995), Whatmore (1999), Latour (2004) and Haraway (2008). These frameworks draw their critical conceptual tools from a diversity of disciplines and theories including anthropology, geography, Marxism and feminism. In this paper, we build on these frameworks by recognising humans and non-humans as social actors (Castree & Braun 2001; Haraway 1989; Latour 2004). The first challenge this faces is the issue of intentionality and will. Even if we assume that humans are truly exceptional in this regard, we argue that these qualities are not necessary qualification to recognise agency. We bypass the need for intentionality by adapting the definition outlined by Latour (2004) where actors are recognised by their ability to modify the actions of other actors through different means and media. For instance, Callon (1986) in his classic essay presents a case where the outcomes emerge from the actions of different actors including scientists, managers, fishing communities and scallops. Haraway (2008) argues further that actors are co-constituted by nature and culture to emerge from a located history of relations between different actors.

'Moral' leopards and 'natural' humans

In this context, we introduce two case studies (Akole and Biligiri). Primary data in both the sites were collected through semi-structured interviews of different stake holders, besides participant observation and informal focus group discussions. In addition, part of the biological data especially on leopards in Akole was derived from Athreya (2012), who carried out research in the same site, and also through observations and discussions. In Biligiri, ecological data is derived from discussions and published literature.

Akole is a 100 sq km riparian valley in north-western Maharashtra, India. It is a mosaic of privately owned croplands interspersed with low rugged hills and drained by

Pravara river. With an average of 180 persons per sq km (District Ahmednagar 2001), Akole presents a densely populated landscape, though this number is far lower than the average density for the district (235) and country (325) (Census Commissioner of India 2001). Historically, Akole was a dry landscape that was dramatically transformed in the 1980s by two important changes: permission to use water from the river for irrigation and the physical establishment of a sugar processing plant by a local cooperative. These changes not only reduced seasonal dependence on the monsoons (at least for those who could afford the costs of constructing irrigation channels) but also heralded the widespread adoption of sugarcane cultivation (for those with access to irrigated water). Though these changes resulted in material prosperity, these remain unevenly distributed amongst heterogeneous communities in the valley (see Ghosal and Kjosavik, unpublished paper, for a detailed discussion on the political and social complexity of communities in Akole).

These changes also benefitted leopards in providing them with a thick vegetation cover and a steady supply of water. Leopards were historically present in the area but in relatively low densities as reported by the Gazetteers of Bombay Presidency (1884) and in oral accounts of people from different communities in Akole. With the introduction of sugarcane, their population density has increased to an estimated minimum of 5 in the 100 sq km area as part of a stable breeding population (Athreya 2012; Athreya et al. 2013). The leopards use the sugar cane as cover all year round, as the harvesting is staggered across time and space, and according to Athreya (2012) feed primarily on livestock and dogs.

Though there are no protected areas around the area, the conservation discourse still exerts an impact in Akole, through the legal protection of leopards at the species level even outside conservation areas. Despite this protection, places like Akole are of marginal importance to conservation. Parts of the valley are managed by the territorial wing of the forest department for non-wildlife activities like plantations and social forestry, though Akole is primarily an agro-pastoral area. Since the conservation discourse discounts the possibility of 'nature' surviving in such a place, it provides very little insights or management strategies for places like Akole. Science fares no better in providing little insights as most of its research is carried out in protected areas (Ghosal et al. unpublished paper). For instance, the literature claims that the diet of leopards is primarily chital *Axis axis* and sambar *Cervus unicolor*, black-naped hare *Lepus nigricollis* with livestock bearing a passing mention (Arivazhagan et al. 2007; Johnsingh 1992; Karanth & Sunquist 1995; Ramakrishnan et al. 1999). With the exception of the hare, the other prey species are absent from Akole, where the leopards feed primarily on dogs and livestock (Athreya 2012).

Thus, Akole's location on the margins of the conservation discourse has prevented the imposition of the dualistic scheme of valuation and meaning on the relationship between leopards and humans. Instead, the relationship is co-constituted by humans and leopards within a grammar of morality (Ghosal & Kjosavik unpublished paper) In communities, especially tribal ones, where leopards are recognised as 'reflexive persons', members use precautionary strategies to avoid confrontations. Leopards too seem to avoid direct confrontations with humans, as emphasised by informants during interviews: "Leopards will not harm you if you do not provoke it...you need to take precautions like carrying a torch and moving in groups after dark...then if you encounter a leopard on that path in the night...just stay calm and stand there...it will move away and let you pass...I have experienced this on several occasions..." explained a middle aged farmer.

In these communities, depredation losses are also located within the moral relationship that humans and leopards co-constitute. Forest department officials in Akole, who are also members of local communities, use their authority to compensate depredation losses at a fraction of their market value, while also enabling a plurality of relations between different actors (Ghosal & Kjosavik unpublished paper). They negotiate political pressure to prevent trapping and relocation of leopards, except in the event of an attack on a human, which has allowed leopards to maintain social stability. As a result, Akole has avoided the upheaval observed in neighbouring Junnar sub-district, which witnessed a dramatic spurt of fatal and non-fatal attacks by leopards on people between 2001 and 2003. These attacks are theorised to be the result of the practice of randomly trapping and relocating leopards (Athreya et al. 2010). In Akole, as a result of the dual roles played by managers and community members, many officials do not treat leopards as 'things' that can be picked up from one place and relocated elsewhere without consequences for the leopard and humans. A local forest manager in Akole explained that "...after humans, leopards are the most intelligent creatures..." They thus make strategic use of the compensation schemes to defuse antagonism over livestock depredation, while also engaging with community leaders to pre-empt conflicts rather than put up trap cages. However, the communities that recognise leopards as reflexive persons rarely avail of this compensation. This is partly because of their inability to navigate the bureaucratic system and partly because depredation losses are not blamed on the leopard alone.

This is illustrated by the presence of a village deity called Waghoba in these communities. The name Waghoba is derived from *wagh*, large cat and *-ba*, a common Marathi suffix used as a term of respect for deities and men, possibly derived from familiar

form (*baba*) of the word for father (*bap*) (Ghosal & Kjosavik unpublished paper). This institution has perpetuated a body of knowledge that incorporates leopard ecology within a grammar of morality. One elderly farmer from a non-tribal community explained: "The leopard is a god....the leopard is Waghoba....if you are irresponsible, then Waghoba will punish you by killing one of your animals..." This view echoed in several interviews across different communities in Akole. Even those who do not explicitly believe in Waghoba, still empathise with leopards as long as there are no attacks on humans. A young woman from the dominant Maratha community highlighted this: "Yes, we are scared of them [leopards] and take precautions after dark..." Her husband interviewed on a different day added: "Leopards leave you alone if you do not provoke them and take precautions." This reflexivity emerges from a history of cohabitation by humans and leopards.

However, these relationships are continuously being renegotiated. For instance, there is a small group of powerful elite (tribal and non-tribal), who claim that leopards belong to protected areas and demand their removal, mirroring the narratives of dualisms in conservation discourse. For these actors, leopards are a political challenge to which they respond by exerting pressure on local conservation managers. They admit that leopards need to be protected but contest their presence in a social space. One of them summarised the issue as follows: "Should they be coming to the village and our houses? Let them live in the forest. Why should we live in fear?" Despite being 'local', their dualistic configuration of nature and society possibly stems from their deeper engagement with discourses of modernity and alienation from local relational practices. Thus, we would argue that Akole emerges as a predominantly non-modern society though it continues to engage with discourses of modernity including conservation (Ghosal & Kjosavik unpublished paper).

The second case is the Biligiri Rangaswamy Temple (BRT) tiger reserve located in south-eastern Karnataka, which is a high priority landscape in the conservation discourse, valued for its rich biodiversity (Aravind et al. 2001; Kamathy et al. 1967). The area was first declared a wildlife sanctuary in 1974 and notified as a tiger reserve in 2011. This biodiversity rich area is also home to a tribal community called the Soligas, who practiced shifting cultivation prior to the declaration of the sanctuary, using fire to manage the forest vegetation and collected a wide range of forest produce (Rai et al. 2008). With the establishment of the wildlife sanctuary they were forced to abandon this agricultural practice and the controlled use of fire to manage the forest. These practices were probably a part of the land management system of the area for centuries and integrated within its socio-ecological dynamics. The

declaration of the wildlife sanctuary recruited the space and its biophysical process to the conservation discourse by excluding the Soligas from it.

This resulted in the sedenterisation of the Soligas. About half the households were allocated small pieces of land to cultivate subsistence crops, but without legal rights over the land. There is a heavy dependence on income generated through the sale of non-timber forest produce (NTFP) such as honey and amla (*Phyllantus* spp) collected from BRT. Socio-economic surveys revealed that as much as 60 percent of the cash income of Soliga households comes from NTFP collection (Hegde et al. 1996). In 2006, following an amendment in the Wildlife Protection Act, the harvest of NTFP for sale was banned causing socio-economic distress to the Soligas, which they contested for several years. They finally won the rights to cultivable land, NTFP harvest and other community forest rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act of 2006, commonly called the Forest Rights Act.

In 2011, the wildlife sanctuary was legally notified as a tiger reserve. The policy dictates that tiger reserves have a core area free of human settlement and use (Government of India 2006). This meant that all human activities must be curbed after settling necessary rights and claims, after which no further use of the forest is to be allowed. In BRT, the core area contains ten Soliga settlements with about 300 households. However, the core area also includes 1,300 ha of coffee plantations established by the British more than a century ago. The estates are currently owned by large corporate houses and employ hundreds of people, including the Soligas. While the forest administration is actively attempting to relocate the Soligas, it remains silent on the status and future of the coffee estates, which possibly have a greater impact on biodiversity than the Soligas. Yet, these centres of capital formation persist unchallenged. Moreover, tourism, another commercial activity, has been increasing substantially over the years and received a further boost with declaration as a tiger reserve.

The Soligas' residence and customary practice in the BRT has a long history. In a recent mapping exercise, they located 489 cultural sites and 46 clan areas in the BRT landscape. Through such exercises the six Soliga clans seek to demonstrate that the entire area is part of their cultural heritage and counter the physical exclusion effected by the conservation discourse. However, there is little political space for such claims and narratives in the conservation discourse. Earlier studies in BRT concluded that Soligas and their use of the forest are ecologically detrimental (Murali et al. 1996). Recent studies, however, suggest that invasive species and hemi-parasites have had a far greater negative impact on the ecological integrity of the landscape than the Soligas (Ticktin et al. 2012). Sundaram et al.

(2012) carried out a nuanced analysis of traditional ecological knowledge of the Soligas and scientific discourses to suggest that the suppression of customary management practices in 1974 may have contributed to the changed ecology of BRT from a diverse forest to one dominated by invasive species, especially lantana (*Lantana camara*). Interestingly, in the context of this changed ecology, even the Soligas agree that the use of fire would now be destructive to the ecology of BRT. This suggests that biological diversity of BRT emerged from the located history of relations and co-habitation by human communities like the Soligas and non-humans actors. The nuanced use of fire to manage the forest in the past and the adverse impact of current fire suppression policy is illustrative of this situated practice (Rai et al. 2008). This is not acknowledged by the conservation discourse as it seeks to naturalise BRT by excluding claims by marginal communities, but not challenging the commercial activities of the coffee estates and tourism. We would argue that the biodiversity of BRT is co-constituted by the history of relations between the different actors, which include the Soligas. In contrast, the conservation discourse ignores the complexity of the processes that constitute BRT and focus instead on its 'natural' and 'pristine' qualities, which we argue emerge from its own political practice.

The implementation of the Forest Rights Act has provided some benefits to the Soliga. So far, individual rights have been granted to 1,516 households and community forest rights have been granted to 35 out of 62 podus (hamlets). This, however, has not removed the threat of eviction for some podus as the forest department governs a protected area according to provisions of the WLPA, while rights have been granted under the Forest Rights Act. We would argue that the systematic recruitment of BRT to the conservation discourse is an attempt to modernise it by imposing a nature-society dichotomy. This process of naturalisation of the landscape can only be achieved by the exclusion of non-modern actors like the Soligas, 'purifying' non-human actors of any social meaning, while simultaneously recruiting modern actors in the form of coffee estates and tourism. The seeming paradox of recruiting tourism and coffee estates is explained by their shared ontology that dichotomises between a natural 'nature' and a social 'society', where the former can be commoditised for consumption through the market, conceptually (tourism) and materially (coffee).

Ontologies of power

The two cases bring to surface the process of value creation by the conservation discourse. The leopards of Akole are devalued for being in the 'wrong' nature, even if they have co-

produced that nature through a history of relations. Similarly, the Soligas are devalued as well, for being in the 'wrong' nature, even if they have co produced it through their history of relations with non-humans. The valuations of different communities of actors and spaces emerge as the effect of the power wielded by different actors (Foucault 1980). Following Latour (2004), we argue that these values of nature and actors are located in the ontological dichotomy of the conservation discourse and the relationships it seeks to forge to physically recreate this dualism through spatial control legitimised with the support of other powerful actors. Though the same policy framework governs both Akole and BRT, very different practices emerge in them, especially in the context of spatial control. The 2006 amendment of the WLPA prescribes a clear separation of the world of things from the world of humans:

> ... National Parks and sanctuaries, where it has been established, on the basis of scientific and objective criteria that such areas are required to be kept as ***inviolate*** for the purposes of tiger conservation...
>
> p.500: Government of India (2006), emphasis added

It assumes that if nature is left to itself, by removing all human influences, it will revert back to its original pristine state in due course. This static view of 'nature' echoes the idea of the 'invisible hand of the market' in the neo-liberal model, where the market should be left alone by removing all human influence to allocate resources efficiently. These ideas have been critiqued heavily for ignoring the political economic context within which markets operate (Foucault 2008). Given that both these models are dealing with resource use, it's not surprising that parallels run even deeper. Both assume faith in apolitical, non-social and non-historical processes, from which human society is dichotomised. In the case of conservation, it assumes that an equilibrium-driven biology will drive it back to a pristine state, as long as humans do not interfere (Berkes et al. 2003). It is hardly surprising that like the neo-liberal model of resource management, this dualistic discourse of conservation has been critiqued for ignoring the social processes and the political economy of environmental management (Berkes et al. 2003; Brockington et al. 2008; Shahabuddin & Rangarajan 2007).

This political economy is evident in the selective exclusion of human actors from BRT, where the Soligas are 'othered' (Ingold 2000), as non-modern humans who in their 'primitiveness' lack the knowledge to value and manage BRT. Thus, the coerced removal of the Soligas begins a reconfiguration of their relationship with non-humans, as the conservation discourse seeks to modernise BRT as natural space. These changes are evident within the Soliga community too, where Sundaram et al. (2012) found that the younger

generation subscribed to the conservation discourse in regarding fires as destructive, whereas the older generation contextualised the use of fire within specific ecological systems. Similarly, there is an emerging relation of conflict between the Soligas and non-human actors like wild boar (*Sus scrofa*). The boars, who raid Soliga fields, are now being branded an 'imposition of the state'. Thus, new relationships and practices, characterised by competition and conflict over resource use, are emerging from the coerced removal of the Soligas from their located history in BRT. The stability of this re-configuration requires the active intervention of the conservation discourse and its control over the 'naturalness' of BRT.

Latour (2004) terms this process of creating dichotomies as the work of purification, where nature and society are purified of each other. The selective application of this process is deliberate to the extent that Soligas were already a politically marginalised community when BRT was included into the conservation discourse. Since they lack the means to challenge the authority of the state, they were forcibly recruited to the conservation discourse by sedenterising them, to initiate a process of reconfiguring their relations with non-human actors in BRT. On the other hand, coffee plantations persist in the same space from where the Soligas were removed. Given their greater political and economic clout, their removal is far more problematic. Instead, there is a conspiracy of silence, which enables them to continue with their commercial operations. It not only helps avoid confrontations with powerful actors but also provides political legitimacy to the state's control of BRT. Latour (2004) terms this process the work of translation, where purified categories (a naturalised nature in this case) are mixed up in new ways to create a new hybrid of the social and natural that were not possible without the work of purification (of separating the natural from the social). This is further illustrated in the process of integrating the tourism industry, evidenced in the physical mushrooming of state-owned and private tourism enterprises.

These new relationships emerging in BRT are also dependent on the conservation discourse for stability in the form of censoring and policing. Soligas from Kanneri colony, a settlement close to the road used by tourists report that the forest department ordered them not to be seen on roads where tourists were taking safari rides as "tourists often complain about the lack of wildlife sightings due to the presence of the Soligas". Tourists have invested in the vision of a wild and pristine forest without people, which is disturbed by the presence of a Soliga rather than the tiger for which they paid money. Neither tourism, nor coffee estates provide 'inviolateness' prescribed by the law, but their participation in this discourse is necessitated by the legitimacy they provide to the dualistic ontology of the conservation discourse.

Thus, the recruitment of these actors facilitates the devaluation and eventual removal of competing claims embodied by the Soligas. In removing the Soligas, the place they co-constituted, co-managed and co-habited with non-human actors is also effectively marginalised to an erased past. This allows actors privileged by the conservation discourse, especially state managers and scientists, to assume the role of 'legitimately' speaking for this naturalised 'nature' (Callon 1986; Castree & Braun 2001; Latour 2004).

This discourse functions very differently in Akole. Since it is recognised as 'social', Akole is of marginal interest to the conservation discourse even if it hosts uncommon and protected species such as leopard, rusty-spotted cat (*Prionailurus rubiginosus*), and stripped hyaena (*Hyaena hyaena*) (Athreya et al. 2013). Despite their conservation value, these actors are devalued for being located in a socialised space rather than a naturalised wilderness. The absence of the hegemonic spatial dualism imposed by the conservation discourse has allowed for the continued existence of a more pluralistic ontology in Akole. This is not to suggest that Akole is an ideal model for conservation or an echo from the past. There are inherent tensions, given the unequal distribution of the benefits from agricultural change as well as murmurs of discontent and protest over control of resources. There are also the elite minority who seek to modernise the area through the removal of leopards. Rather than an ideal model, Akole serves as sobering critique by highlighting the limitations of the current conservation discourse in managing relations between different actors.

We argue that the boundaries between nature and society are neither as clearly defined nor as exclusive as conceptualised by the conservation discourse. If the ontological dichotomy did actually exist, nature and society would cancel each other out and not allow coexistence. It would mean that even if some leopards 'were to stray' into a space like Akole, they would not be able to survive. However, the leopards of Akole have not merely survived but are a stable breeding population (Athreya et al. 2013). Humans and leopards emerge from a located history of relations that allow them to share space and resource.

The Soligas shared a similar relationship with tigers in BRT. A Soliga elder explained: "We know the smell of the tiger and the tiger knows the smell of the Soliga". This intimacy of tigers and the Soligas is further highlighted by another Soliga: "When we see a tiger, we loudly call it a 'dog'...this humbles the tiger and it moves away rather than sit there preening if we call it a 'tiger'." This echoes the reflexive relationships observed in Akole. The Soligas could have been co-opted by the conservation discourse, to facilitate plurality like it does in Akole (Ghosal & Kjosavik unpublished paper). However, in the context of spatial control it enjoys in BRT, such a plurality threatens the ontological foundation on

which the discourse is based. Whereas the leopards in Akole have gained from being 'unwanted' by this dualistic framework, the Soligas have suffered for being 'unwanted' for their located history in BRT.

These histories of relations between humans and non-humans are thus very political, even as they are biological and social. This is illustrated by this quote from a manager in Akole: "...we have had instances where people are so panicked [after an encounter with a leopard] and demand some action by threatening to call the local political leaders at the state and national level...the relationship between local (village) leaders and the forest department is crucial. If this relationship is good, they come forward to help if there is a crisis." These relationships in BRT are similarly political, as illustrated through the discussions on the use of fire and the perception of conflict with wild boar. The conservation discourse actively seeks to depoliticise these relations in BRT, with managers and scientists serving as spokespersons for non-humans. In contrast, the managers in Akole are deeply engaged within these political negotiations between different actors.

Further, the managers and scientists seem to enjoy a rare privilege in being able to move seamlessly across the great divide between the world of things (nature) and people (society) that they uphold (Latour 2004). This 'nature' serves to counter any political challenges to the authority inherent in the conservation discourse. This is evident in the following statement from a local forest official in Akole: "It is the right of every living being on this planet...if there is space, enough food, water and safety, any living being will live here...it is the people who are at fault, they have gone and built concrete houses in the leopard's habitat [in the forest] then where are they to live...so if they are living near a village then what is wrong?...they never trouble anyone and only eat how much they need..."

In Akole, the conservation discourse relocates control and authority from the physical space to the body of individual leopards and imposed through the authority of the forest department. However, these officials lack spatial control and management strategies beyond compensating losses. As a result, they use their relational power to enable plurality of values rather than impose dualisms as outlined by a manager in Akole: "...it's important that we are aware of the politics of each village...and build relationships with the gram panchayat (village parliament) over time...these relationships help us manage potential conflicts between people and leopards."

While compensation for depredation losses is an important management tool, its effectiveness is mixed and often results in a perception that leopards are 'government animals' (Bulte & Rondeau 2005). In addition, the managers employ two crucial strategies,

which bear no mention in the policy framework, by sustaining relations with local leaders and co-opting local institutions. The state does not recognise these institutions but has been unable to counter its moral authority in Akole as it has done in BRT. Asa result, these institutions continue to undermine the conservation discourses narrative of modernity in local 'nature' management.

We argue that the lack of political control over space and resources are important factors that locate places like Akole on the margins of the conservation discourse, despite providing a positive outcome for leopard conservation. This has allowed for the persistence of meanings co constituted through shared histories of relations, possibly similar to the Soligas in BRT prior to 1974. The conservation discourse, on the other hand, seeks to replace conceptual complexity with simplistic dualisms resulting in the birth of unstable hybrids held together only by the state's hegemonic power. The inherent tensions within the conservation discourse and the legacy of control continue to influence the dualistic valuation of actors and spaces that emerge as an effect of its practice.

Leopards and Soligas: aberrations and obstacles to modernity

In the dualistic ontology of conservation in India, the leopards of Akole are an aberration, while the Soligas are an obstacle in the process of modernisation. In light of the arguments put forth by Descola (1996) and Latour (2004), the pluralistic ontology of communities in Akole and the Soligas are non-modern. The modernisation scheme precludes the possibility that natural areas might be 'live-able' or that social spaces might harbour wildlife. The WLPA is particularly silent on the possibility that people can coexist with wildlife in the core areas, though its interpretation is selective when it comes to the more privileged human actors. In the dualistic ontology, the emerging relationship between conservation and local communities in natural spaces and humans and non-human actors in social spaces is one of conflict. Having created these categories, conflict stems from the result of humans and non-humans 'appearing' in places where they are 'unwanted' by the conservation discourse. The logical solution prescribed for such **'**conflicts**'** has been to relocate the 'unwanted' elements mediated by privileged actors, which often lead to an intensification of conflicts (Athreya et al. 2010; Guha 2003; Shahabuddin & Rangarajan 2007).

We argue that the conservation discourse seeks to selectively mediate and distribute power and access to resource amongst actors, human and non-human, through the political hegemony it enjoys through the state's authority. However, the state itself is not a

homogenous entity but one where different interests contest and negotiate control and influence. For instance, there are numerous examples like BRT, where the state has selectively excluded politically marginalised groups as part of its conservation discourse, only to facilitate the inclusion of politically powerful groups like tourism operators and commercial interests (Guha 2003; Shahabuddin & Rangarajan 2007). Also, the purification of natural and social spaces is linked to influence of neo-liberal growth policies in the state. This accounts for the paradox of simultaneously enabling the availability of Soligas as labourers to coffee estates in the core areas of BRT.

We further argue that the conservation discourse seeks to recruit support by attributing greater values to some actors—human and non-human—over others, as illustrated by the two case studies. Consider this text extracted from a paper summarising tiger conservation in India: "...breeding 'source' populations for wild tigers are primarily confined to effectively protected reserves that occupy less than 2 percent of the overall landscape, the rest of which acts as a population 'sink'" (p. 180: Karanth 2003). This implies that animals that leave the protected areas created by the discourse are doomed. Thus, the conservation discourse operates by creating political and moral values and categories of human and non-human actors. Such simplistic valuations are problematic for several reasons. For one, it concentrates hegemonic power in the actors who make these valuations, with few feedback mechanisms to check the impact of their actions. Secondly, these valuations are based on an assumed dichotomy that erodes alternative systems, and made 'true' through the exercise of power (Foucault 1980).

Is reconfiguration possible?

The conservation discourse is thus riddled with inherent assumptions that attach higher value to certain ideas, spaces and species over others. We argue that though it is impossible to create a framework without any ontological and epistemological assumptions, there is a need to engage with the diversity of relations through which these values emerge. As illustrated with the two case studies, this diversity is excluded from the current conservation discourse to create politically, socially and ecologically marginalised actors. Instead, its practice functions to legitimise and consolidate power hierarchies engendered in the structures of the state and processes of knowledge production (Chhatre & Saberwal 2006; Guha 2003; Robbins et al. 2009) rather than the conservation of nature, even by its own dualistic definition.

To return to the Akole example for a moment, it can be argued that it is an exception of human-leopard coexistence, with little value to conservation or management of human-nature relations. This argument holds true in the context of existing knowledge of large felids in India, which has been critiqued for being on research done almost exclusively in protected areas and thus offering little insights on these relations outside (Ghosal et al. unpublished paper). There is increasing evidence that wildlife, including large felids, do live in multi use spaces (Athreya et al. 2010; Saberwal et al. 1994; Seidensticker 2010). This growing acknowledgment suggests that the interaction between human and non-human actors is far more complex than recognised by the conservation discourse. As the discussion of the elite minority in Akole illustrated, managers are often investing efforts to trap the odd leopard based on political calculations rather than need. This provides a disturbing glimpse of the possible outcomes for leopards and humans, if this dualistic ontology were to become more common in places like Akole. This is already evident in BRT, with the changed relations emerging between the sedenterised Soligas and other actors. While we are not arguing against protected areas *per se*, we are arguing against the simplistic conceptualisation of human-nature relations that favour certain actors and exclude others. As these two cases illustrate, if we are to retain the complex network of relations between humans and non-humans, there is an urgent need to address the intellectual paralysis imposed by the hegemony of ontological dualism in the conservation discourse in India.

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Paper III

LIVING WITH LEOPARDS: NEGOTIATING MORALITY AND MODERNITY IN WESTERN INDIA[1]

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Abstract

The interaction between humans and large carnivores is complex and dynamic. In this paper, we explore the emergence of these relations through different discourses. We use a case study from an agro pastoral area in rural India where humans and leopards share space and resources. We argue that their relations are the result of a located history of relations that are ordered through the actions of humans, leopards and other actors. These relationships are also influenced by different ontological discourses, of which we explore two, which are co constituted by humans and leopards. One is the discourse of modernity, in which the relationship between humans and leopards is characterised by dichotomies. The other is a non-modern discourse, where humans and leopards are located in a constellation of moral and social relations. These discourses have very different histories of relations and power dynamics. Their practices operate simultaneously in the area, co opting and accommodating each other.

Keywords: pluralistic ontology, dualistic ontology, human-nature relations, modernity

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Introduction

The interaction between large carnivores and people is complex and dynamic and the subject of intensive scholarship. Most of these investigations constitute this relation in terms of conflicts, be it over biological resources (Treves and Karanth 2003; Mech and Boitani 2003; Madhusudan and Mishra 2003) or socio-political negotiations (Herda-Rapp and Goedeke 2005; Jalais 2008, 2005; Knight 2000; Dahlstom 2003). There are also anthropological accounts like the one provided by Saunders (1998), which dwells on the moral dimensions of these interactions through the historical association of felines and feline iconography with power. Similarly, Knight (2006) explores these relations between humans and the (now extinct) Japanese wolves in the context of other relations, demographic shifts and changing politics of land use .

These studies have yielded rich insights into the relations between humans and large carnivores, but are based on a reductionist dualism between nature and culture, where large carnivores are things being represented by humans (Descola and Palsson 1996; Latour 2004). As a result, they do not adequately capture the complexity and dynamism of these relationships. This is in contrast with studies like the one by Lescureux (2006), who explores the relational reciprocity between stockbreeders and wolves in Kyrgyzstan. In this paper, we explore a similar relationship between agro-pastoral communities and leopards (*Panthera pardus fusca*) in rural India, and compare two ontological frameworks that influence it.

We argue that these specific relations are embedded in a larger web of social relations between different actors—including humans and non-humans—with their inherent power dynamics. For this, we first discuss our theoretical framing of actors, before outlining the two ontological frameworks and their implications for the relations between humans and leopards. We then discuss the power dynamics inherent in each framework, before exploring how they emerge through their interaction with each other. We argue that policy frameworks need to formally engage with the web of relations, within which conservation is embedded.

Actors in a shared space: Humans and leopards in Akole, Maharashtra

An ‘actor’, in binary or dualistic models of nature-society relations, is primarily human, linked with intentionality that anchors her or his ability to act (Castree and MacMillan 2001), which Haraway (2008) calls the ‘fantasy of human exceptionalism’. Instead, we draw on

different frameworks especially science and technology studies (STS) and Tim Ingold's organisms-in-the environment to redefine the concept of 'actors'. Ingold (2000), building on the work of ecologist Gibson (1979) and anthropologist Bateson (1973), argues for an organisms-in-the-environment approach, which is inhabited by humans and non-humans. Actors in these perspectives can be both human and non-human, based on their ability to reflexively influence the behaviour of other actors (Latour 2004; Ingold 2000). These perspectives critique dualistic models for excluding non-humans from having agency or the ability to act. This approach argues that humans and non-humans are hybrids of the natural and social, and co-constitute each other through a located history of relations (Castree and MacMillan 2001; Haraway 2008). The relations that emerge are not chaotic but organised through reflexivity and cohabitation (Ingold 2000; Lescureux 2006; Haraway 2008). In dualistic frameworks, agency has been equated with consciousness, will and intentionality, which non-humans are assumed to lack. Ingold (2000), Latour (2004) and Haraway (1991) argue that even if we were to agree with this assumption, these qualities are not necessary to act and influence the actions of other actors. We use this framework to explore the power dynamics inherent in two discourses that contextualise the relations between humans and leopards, which include material, moral, socio-economic and political practices (Callon 1986; Latour 2004; Castree and MacMillan 2001; Castree 2002; Whatmore 1999; Ingold 2000).

Fieldwork in Akole was carried out between 2008 and 2011, using a variety of methods including semi-structured interviews with the help of a topic guide, participant observation, informal focus group discussions and review of archival records and literature. Human informants included members of different stake holder groups and participants in socio-political negotiations. They were identified through different social networks as well as opportunistic encounters. The inputs on leopard ecology are drawn from Athreya (2012), who carried out fieldwork in the same site as well as relevant literature, personal observations and oral accounts.

This study was carried out in Akole sub-district in western Maharashtra, India, which is a riparian valley, presently dominated by the cultivation of sugarcane on privately-owned farmlands along Pravara river. Before the introduction of large scale cultivation of sugarcane in the 1980s, the area was arid and supported seasonal agro-pastoral activities. It was transformed in the 1980s by two important changes in resource management practices: permission to use water from the river for irrigation and the establishment of a sugarcane processing cooperative factory in Akole town. These changes resulted in the intensification of

agro-pastoral activities, dominated by the cultivation of sugarcane, which led to a discernible transformation of the ecology and economy of Akole, which is acknowledged by all local actors.

The economic benefits resulting from this change are not evenly distributed, with the dominant Maratha community and a few non-Maratha families controlling most of the productive land in the valley with easy access to irrigated water and the sugarcane processing factory. Tribal communities occupy a marginal position in the economic and political processes of Akole. Even when they own land, they are typically located in peripheral areas, especially in the hills where sugarcane cultivation is absent due to lack of water. The politically dominant groups, mentioned earlier, have reduced their livestock holdings to focus their resources on agriculture, while the marginalised groups continue to herd livestock and poultry. The actual composition of tribal and non-tribal groups varies from village to village. However, non-tribal communities, especially Marathas, are concentrated in and around Akole town, while the ratio of tribal communities increases dramatically as one moves farther away,

Ecologically, the changes discussed earlier have created swampy grasslands that remain relatively undisturbed for most of the year till they are harvested. Also, since all sugarcane fields are never harvested at the same time, it ensures the presence of patches of this thick impenetrable vegetation throughout the year. This change has impacted the land use patterns dramatically, along with the new political and economic relations they entail. Though unintended, these changes have also benefited leopards (*Panthera pardus fusca*). They were present in the area earlier but were relatively rare (Anonymous 1884). There has been a perceptible increase in their numbers once sugarcane spread across Akole. This perceived increase is supported by the study conducted by Athreya et al. (2013) who estimate the leopard population density at a minimum of 5 animals in a 100 sq km area. The presence of females with cubs suggests that these leopards are part of stable breeding population resident in Akole (Athreya 2012). The leopards feed primarily on dogs (pets and feral), poultry and livestock of which there are plenty in the area (Athreya 2012). Large felids living in sugarcane plantations is not a new occurrence, with historic records of tigers exploiting a similar niche in the Malay archipelago (Boomgard 2001). The other large carnivore present in the area is the striped hyena (*Hyaena hyaena*), with an estimated density only marginally higher than leopards (Athreya et al. 2013). However, since hyenas and humans have a relatively low profile relationship compared to leopards, we focus on the latter.

There are no conservation protected areas (PA) in or around Akole, besides the reforestation plantations in the hills managed by the forest department. The leopards, however, are legally protected as a species even outside PAs, which is enforced by officials of the forest department. Under this policy framework, livestock depredation by leopards are compensated at a fraction of the market value for animals like domesticated bovines, goats and sheep that are part of production practices, while the loss of dogs and poultry are neither recorded nor compensated.

Leopard attacks on humans are a politically sensitive issue in the area, especially in the context of the upheaval witnessed in Junnar sub-district, south of Akole. An intensive spurt of fatal and non-fatal attacks by leopards on humans was recorded between 2001 and 2003 in Junnar. These attacks are attributed to the management practice of capturing and relocating leopards, with little regard of their social organisation, spatial orientation and homing instincts (Athreya et al. 2010). There have been no fatal leopard attacks on humans in Akole though there have been two non-fatal and possibly accidental incidents between 2007 and 2012, which we discuss later in the paper. There are a few reports of human attacks on leopards in the past even though leopards were rarer, when some animals were killed after they had fallen into groundwater wells. This practice has ceased with widespread awareness of the implications of harming a legally protected species. While most informants agreed that leopards have always been present in the area, the perceived increase in their number is attributed to a mix of land use changes and state-led interventions of trapping and relocating leopards. The latter is substantiated by research on leopard management in adjoining areas (Athreya et al. 2010; Athreya, Bijoor, and Watve 2012) and by conservation managers in different parts of the state. This practice has now been curbed after official guidelines were issued by the Ministry of Environment and Forests in 2011 to manage human leopard conflict (MoEF 2011).

While Akole sub-district is reserved as tribal area, the research site covers only a small segment of it and is socially heterogeneous. Amongst the tribal communities are Thakkers and Mahadeo Kolis and a few families of Bhils, Wadaris, and Phasepardis. In addition, there is a seasonal influx of nomadic pastoralists such as Dhangars and Guravs, who follow an annual migration pattern with their sheep across a larger area in response to climatic and ecological factors, especially rain (Sontheimer 2003). Their herds feed on agricultural waste and provide manure through their excreta. These groups are located within a network of social, political and economic relations that they have developed historically

with the local villagers. An elderly pastoralist explained: “Over the years everyone knows us...once we arrive we meet the villagers and get their permission to stay here [in their fields] and pay whatever is agreed upon...after that other herders will not be allowed to stay here while we are here...”

Of the resident tribal communities, some live on the peripheries of villages in the valley, while a majority live in the ‘tribal belts’ in the hills along the periphery of the valley. These hills were historically forested including teak and other valuable timber and also home to leopards (Anonymous 1884). According to oral histories from different communities, villagers and the forest department harvested these forests till the hills had no natural forests left. The forest department has now taken over the hills for reforestation projects. Pastoral groups, predominantly from tribal communities, use these areas for grazing their livestock for which they are charged an access fee. Though these spaces are not formally protected, the relations between the forest department and agro-pastoralists are dynamic and open to constant renegotiations. These communities depend primarily on their livestock and poultry and practice seasonal agriculture, while working as daily wage labourers for other farmers in the valley and occasionally hunt hares (*Lepus nigricollis*) and monitor lizards (*Varanus bengalensis*) for consumption.

These identities of tribal and non-tribal emerge from their located history of relations and play an important role in local and state politics and also in access to resources. By this, we do not imply that these communities are internally homogenous or that members are deterministically bound by these relations. For instance, members of these communities are differentiated in terms of class, gender, political power etc, just as some individuals have reconfigured their relational identities through different means. However, we use ‘community’ as our unit of analysis to focus on a relational unit of located histories, while recognising individual variations. In this context, we explore how humans and leopards emerge from two ontological discourses, with their distinct practices of power negotiation and resource management.

Waghoba: Divinity as a moral beast

Waghoba is a village deity found in different parts of Maharashtra. The name ‘Waghoba’ is derived from the Marathi word for tiger, ‘*wagh*’, which is derived from Sanskrit ‘*vyaghre*’ also meaning tiger, while -*ba* is a common Marathi suffix used as a term of respect for deities

and men, possibly derived from the familiar form (*baba*) of the word for father (*bap*). This is significant in a largely patriarchal-patrilineal society.

Of the large felids that personify Waghoba in Akole, there have historically been at least two (tigers *Panthera tigris tigris* and leopards *panthera pardus fusca*) and possibly a third (Asiatic lion *Panthera leo persica*) though the Gazetteers make no mention of it. Tiger iconography is used at some Waghoba shrines, while others consist of a rock covered with sacred vermillion paste. While there have been some recent reports of tiger sightings in Akole, no definitive evidence was found in the 4 years of interdisciplinary research carried out in the area between 2007 and 2011. Leopards, on the other hand, are very much present in the area. In Akole, all large felids are Waghoba, while in other communities like the Warlis and Kolis near Mumbai, the tiger is Waghoba, while the 'leopard is just a leopard' (Ghosal 2012). This relationship between humans and large felids emerges from a cosmology of meaning that is co-constituted by human and non-human actors. Waghoba is not an anthropomorphised personification or metaphor. Large felids and humans are recognised for their specific characteristics, traits and dispositions that differentiate them but also bind them together in a reflexive moral framework. The leopard is thus Waghoba, with specific ecological, moral, political and social roles, which cannot be performed by any other actor.

In Akole, Waghoba is most prominent in tribal communities, especially Thakkers and Mahadeo Kolis. For members of these communities, leopards are Waghoba, while the shrines serve as a channel for material (offerings) and ritualised (prayers) dialogues. In the words of an elderly male from the Thakker community:

> "...leopards are our god...it's important that we diligently do the proper rituals for Waghbaras every year… [if not] it will cause us some harm, maybe take an animal or attack a person."

The Waghbaras is an annual ritual devoted to Waghoba, where offerings are made to express gratitude for his benevolence but also propitiate him. Waghoba, thus, articulates a relational practice that situates leopards and people within a moral community of persons. These practices emerge from shared histories and are stabilised through reflexivity of real and imagined encounters (Haraway 2008). As a result, depredation by leopards is a moral act, despite its strong material implications. A middle aged woman from a tribal community had this to say after the leopard killed her chicken: "One day it [leopard] ate a chicken and another day [it] took a dog....we immediately went and broke a coconut there [at a Waghoba shrine]. So the poor thing did not trouble us after that."

These communities recognise that leopards are carnivores and may kill livestock, if given an opportunity. One important practice that emerges from this relationship is diligence in livestock protection for moral, biological and economic reasons. This is evident in the words of an elderly woman from a tribal community: "They [leopard] need fresh meat...we have to respect their habits and protect our livestock...he [Waghoba] will punish us if we become careless or are disrespectful." This has an impact on livestock management practices, which are characterised by active protection strategies that reduce potential risks of depredation. A Mahadeo Koli youth explained: "The leopards do not do anything to you as long as you perform your duties...as long as you are righteous, do not trouble them and carry out all the rituals to Waghoba, [then] leopards will never trouble you."

These relations partly explain the absence of compensation claims from members of these communities for even the relatively rare depredation losses. It is possible that the leopards use the area around the river more intensively, but they are certainly present in both areas as confirmed by visible signs of their presence and sightings by local residents. Another explanation for the absence of claims from these communities is that they lack the resources and political influence to navigate the forest department bureaucracy. What these communities lack in political and material resources in modern discourses, they make up with their non-modern systems to negotiate with leopards directly. Thus, the persistence of Waghoba could be interpreted as a survival strategy in the context of the weaker position occupied by these communities vis-à-vis the state (which also protects the leopards) in obtaining political economy. This interpretation does not suggest that the state's narrative of leopards is superior but highlights the political dynamic between the state and local communities. In addition, Waghoba also influences livestock management practices that reduce vulnerability to depredation by increasing the risks leopards would face in attacking these animals. This makes sense in the context of the findings by Valeix et al. (2012) that lions in Botswana change their behaviour when they hunt livestock in order to avoid humans, while Carter et al. (2012) found a similar relationship for tigers and humans in Nepal. It is plausible that leopards in Akole have learnt to avoid the risk of attacking protected livestock, when easier prey is available in the form of feral dogs and unprotected livestock.

Even in communities where the institution of Waghoba is weak, the moral reflexivity of human-leopard relations were present. For instance, a young woman from a non-tribal community explained, "They [leopards] also need to eat...what else are they going to do? ...[also] they don't take animals from the same house every day, do they?" Underlying these

narratives is the assumption of leopards as a responsible 'person', which is common across most communities in Akole, a form of practiced empathy by two reflexive actors.

Though it is difficult to ascertain if this empathy or morality is indeed reciprocated by leopards but their actions suggest that they are intimately aware of humans and actively avoid confrontations with humans. A common theme in several accounts of face-to-face encounters with leopards, is that if people stand their ground without getting agitated, the cat 'calmly gives way by leaving the path'. In the words of a young woman from the Maratha community, "Leopards will only harm you if you provoke it...it fears for its life too...you need to ensure that you take precautions after dark, like carrying a torch...ensure you have a companion if you are venturing out...besides safety it will also ensure that we and leopard are aware of each other's presence in the area...' This reflexivity emerges from a history of sharing space, with these everyday actions stabilising a mutual accommodation. In addition, the reluctance of managers in Akole to trap and relocate animals has prevented disruption to the leopard's social structure and also causing trauma to individual animals, as warned by Athreya et al. (2010). On their part the leopards too have not killed any humans, though they do pass close to houses as observed from their tracks, camera trap images and oral accounts. There are no reports of them attempting to enter houses, threatening humans or approaching guarded livestock. Most depredation incidents take place outdoors and the only occasions when leopards did enter an enclosed shed was in cases when protection mechanisms were weak or nonexistent.

There have been a few cases of 'aggressive' encounters between leopards and humans. In one case, the leopard pounced on a farmer and his wife as they were riding on a motorbike before dawn, along a path between sugarcane fields. The couple were injured from the fall and the leopard disappeared almost immediately. Various theories were put forth to explain this encounter, ranging from the bike disturbing two courting animals to suggestions that the motorbike may have surprised the leopard. The farmer's own explanation of the event is rooted in the 'leopard as a person' narrative "It [the leopard] must have had a bad encounter with a motorbike in the past and retaliated to the sound of our engine. It could easily have killed us but did not...but we are very scared now and have stopped leaving the house after dark."

There is also a report of a man being chased by a leopard. The victim, in this case a rich and influential farmer from a tribal community, said he was in the tomato field one evening when he spotted the leopard at a distance of 7 to 8 feet. His reaction was to shout and

run: "...I ran for my life...I stumbled and remembered my god [not Waghoba] and shouted his [the god] name...that calmed me but I ran and the leopard chased me...it could not reach me because of the wires used for tomato...I could hear it breathing and then it stopped while I ran back to the house." It is not clear if the leopard actually chased the man, as there were no eye witnesses. While the person attributed his survival to his faith in god, he emphasised that leopards arrived in Akole valley only in the last decade after being introduced by the forest department. Though this individual belongs to a tribal community, he is part of an elite minority in Akole who petition the forest department to remove leopards to forests and regularly apply for compensation. He explained that leopards are beautiful from a distance, but that their life is different and do not belong to human settlements like Akole, where they have become "as common as stray dogs...and you cannot even trust dogs these days." This example further illustrates that communities are not homogenous and static units, but have their own dynamics of change as members engage with modernity.

These different incidents illustrate the reflexive relationships that emerge between humans and leopards, with each responding and influencing the other's actions. This supports our assumption of recognising leopards as social actors, for their ability to influence people's actions, be it livestock protection practices or the precautions people take after dark. If these strategies did not work to prevent conflict or aggressive encounters between humans and leopards, their efficacy would erode quickly. As we have earlier, this ontological discourse of plurality and responsive actions is co-constituted by human and leopards and emerges from a history of relations through negotiations and material exchanges. For instance, the avoidance strategies that both humans and leopards employ could be the result of traumatic encounters in the past (when leopards were killed opportunistically and humans may have lost their lives or livestock) but also from an even older relationship when hominids and leopards interacted closely on the African savannah (Cavallo 1990; Cavallo and Blumenschine 1989). The last encounter illustrates that these relations are not static but constantly emerging from negotiations between actors.

Panthera pardus: the legal-scientific leopard

The influence of conservation discourse is very much present in Akole through the forest department and scientific knowledge that influences management practice. In this discourse, leopards are recognised as 'property' of the state, which is achieved through policy

instruments like the Wildlife (Protection) Act, 1972 (Government of India 1972). The conservation discourse is based on an ontological dichotomy that Latour (2004) describes as a separation of the world of people (society) and the world of things (nature). The main strategy emerging from this dichotomy is the creation of protected areas where wild animals can be conserved as valuable natural resources with the state's authority mediating human activities. Though this ontological framework excludes the possibility of nature and society coexisting, it extends legal protection at the species level even outside protected areas. Thus, conservation discourse functions in Akole through the legal protection of leopards enforced by the forest department, even in the absence of spatial protection.

The local representatives of the forest department exercise this authority by paying compensation for depredation losses caused by leopards, rescuing leopards when required and setting up trap cages to manage 'problem' animals. In this discourse, leopards are located within a taxonomy scheme of species classification that puts them in class Mammalia, order Carnivora and family Felidae. They are recognised as being 'near threatened' by the World Conservation Union (Henschel et al. 2008) and as a Schedule 1 species of the Wildlife (Protection) Act, 1972 (Government of India 1972). The scientific literature describes leopards as the most 'adaptable' member of the large felids, who are able to live in a wide variety of habitats, including areas close to human habitation (Menon 2009; Bailey 1993; Daniel 1996; Prater 1971). In this discourse, leopards emerge as 'wild animals' threatened by humans. They are constituted as amoral and apolitical biological entities, without any social historical, i.e. purely natural biological beasts. This is further strengthened by the scientific literature that rules out the possibility of large felids and humans sharing space, based on research in protected areas (Ghosal et al. unpublished paper). Thus, leopards need state intervention for protection from humans, and mediation of scientists to decipher their behaviour and prescribe conservation action (Latour 2004). A very different relationship emerges between humans and leopards as a result of the ontological separation of society and nature. Forest department personnel embody this discourse in Akole, even though there are variations in their individual subscription to this concept of a legal-scientific leopard.

As discussed in the previous section, a few residents also subscribe to this dualism and use their privileged access to political leaders to pressure for the removal of leopards from Akole. One such member explained the situation: "Leopards are beautiful…but should they be living around people? They are OK as long as they live in the forest but not to the extent that they start coming to our villages...why should we live in fear of stepping out of

our house after dark?" The inherent paradox is the dualism, where leopards are constituted as purely natural and outside human influence even as the state is held responsible for their presence and management. Following Latour (2004), we argue that this paradox is the result of greater relational power assumed by the state and scientists, in the discourses of modernity, as spokespersons for society, nature and leopards. These relations emerge from a history that binds together Descartes, European metaphysics and imperial expansion, Independent India's state discourses of power and other actors that drive the discourses of modernity and its ontology of nature-society dualism.

Thus, there are at least two distinct ontological discourses in Akole, from which very different relations emerge between humans and leopards. However, these discourses unfold in the same biophysical and socio-political space, marked by shifting boundaries, inherent tensions and exchanges. The question boundaries and implications are important as communities in Akole engage with the influences of modernity through communication technologies, education systems and governance practices. We return to this question after we explore the questions of power and control inherent in these discourses.

Waghbaras: negotiating social relations?

The Waghbaras is a ritual performed every year to acknowledge Waghoba for his benevolence in taking care of people's needs and safeguarding their livestock. Different communities follow their own distinct time table and rituals, reflecting their production systems and spatial orientation. For instance, agricultural communities (primarily non-tribal but also include some tribal groups) perform the rituals when they take their livestock grazing after the monsoons. Their ritual consists of prayers and a vegetarian feast performed in the hills. Other communities (predominantly tribal) perform the rituals at a fixed time of the year, where each family sacrifices a rooster at a Waghoba shrine, which is then shared between family members, relatives and neighbours. This has echoes of Rappaport's (1984) classic work on such rituals amongst the Tsembaga in New Guinea, which provide crucial animal proteins to their carbohydrate rich diet. The rituals of Waghbaras possibly have nutritional benefits too, which many community members mentioned during interviews.

The offerings to Waghoba are largely symbolic with only a small portion of the offerings actually being presented to Waghoba (the head and feet in case of a sacrifice). The rest is shared and eaten by the immediate family members and others with close reciprocal

ties. In the case of animal sacrifices, the offering usually consists of a rooster sacrificed by each household, which culminates with the slaughter of a goat bought with money collected from the community. This goat's meat is then shared by those who contributed for it and further shared through reciprocal relations within the community. The actual meaning of the ritual or the importance of different sacred sites is lost in antiquity and many community members said they trusted the wisdom of their ancestors: "No one really knows why it [the shrine] is situated here or how these rituals started...our forefathers who started it must have their reasons but no one really remembers it anymore...but I have myself witnessed the benefits of these rituals..." emphasised a middle-aged member of a tribal community during a Waghbaras.

The actual performance of rituals function as important "tasks" through which meanings is located in the landscape and its community of actors (Ingold 2000). The Waghbaras thus provides a unique opportunity to trace the moral and political constellation of relations that are stabilised by Waghoba. The offerings made in the rituals, for instance, are either agricultural produce or domesticated animals. Ingold (2000) argues that this relation is based on a logic of dominance, where living organisms are integrated into human production systems. The dominance and disciplinary practices are evident in everyday herding practices too. For instance, Thakkers have trained their herds to follow the lead of an individual herder while grazing but never overtake him or her. One elderly herder explained the practice: "They know us and will not follow anyone else...it helps maintain discipline and also prevent them [goats] from getting into trouble... we do not have to keep training them...the older goats teach the younger ones..." Such practices are co-constituted by humans, leopards, livestock and other actors though their shared history of relations.

The ritual offerings are made to Waghoba, with whom humans share a very different relationship. Ingold (2000) terms this as a relationship of trust, which he argues is a combination of 'autonomy' and 'dependency', and a hope of reflexivity and reciprocity. Thus, the offerings serve as an acknowledgment of trust in Waghoba's moral judgment, gratitude for his benevolence and an expression of social affiliation between actors. One member of the tribal community explained, "The rituals are to request Waghoba to take care of our animals...to take only what he needs and ensure we have enough for survival..." Thus, the performance of these rituals knot together the shared symbolic, material, political and social strands of meaning that emerge from the relationship between humans and leopards.

The Waghbaras also serves important functions for the relations between humans, by facilitating cohesion through reciprocal sharing of offerings and practices of shared worldviews. For instance, in one Waghbaras in a tribal community, three youth performed most of the slaughters. When asked about it, one of them explained that they were willingly acquiring bad karma (or immoral deeds) through the taking of a life, for the greater good of the community, "It [the sacrifice] needs to be done... [it] is better if a few of us carry out the actual killing as most others do not want to do it. Also, with our expertise, the animals suffer less and we get the bad karma, for which we have to atone later." As a result of this, these youth temporarily enjoyed a better social status, especially on the day of the ritual. Some community members expressed their gratitude by sharing a portion of the meat with the family of these youth.

In terms of the power relations proposed by Ingold (2000), the Waghbaras is a practice through which the benefits derived from a relationship of domination and control (animal sacrificed or cereals cooked) are shared to sustain and strengthen a relationship of trust and vulnerability (humans and leopards). Waghoba can then be conceptualised as a pluralistic discourse through which a diversity of relations and practices emerge through negotiations of power and resource use.

However, Waghoba is also a contested domain. For instance, Waghoba himself embodies the power equations inherent in gender roles of local communities, which are largely patriarchal-patrilineal. Waghjaimata, the female equivalent of the Waghoba has a limited spatial presence, where she mediates the movement of leopards in and around those villages. This gender distinction is also reflected in the performance of Waghbaras rituals, which are usually done by men. Women only participate if the male members of the family are absent or unable to represent the household, though the actual sacrifice is usually done by male members of the community. The gender dimension is also extended to livestock in the event of a sacrifice. The slaughtered animals are invariably male, be it a rooster or young billy goat, as the hens and nannies are too precious for human livelihoods to be spared for such rituals.

Conservation: Imposing hegemony?

In Akole, the forest department managers are the central actors in this discourse, responding to political pressure from different quarters of society to mediate people's interaction with

state property (leopards). The relationship between these managers and leopards is one of dominance, where the state exerts control over the entire population of the species within its political boundaries. This is evident in the text of the legislation: "Every wild animal...shall be the property of the State Government..." p.419, Government of India (1972). Furthermore, it cultivates this hegemony of control by excluding other human actors from exerting any independent influence, without the mediation of state's instruments of power. Other kinds of relations are denied legitimacy, especially in protected areas. We can also draw parallels of this relationship, with the one that the state cultivates with its human subjects, where the state enjoying a monopoly over use of force and enforcement of its constitution. These ideas are largely drawn from the works of Michel Foucault and his concepts of biopolitics and governmentality (Foucault 2008; Gordon and Miller 1991). Other scholars who have written extensively on these relations include Baviskar (1994), Sainath (1996) and Scott (1998). Drawing on the work of these scholars, the state itself can also be conceptualised as is a contested domain of different interests, vying for power and resources. This multiplicity of interests is also evident in the practice of authority by the forest department.

The local managers of the forest department are also members of local communities in Akole and lack spatial control to keep humans and leopards apart. Thus, on the one hand, they are entrusted with upholding the legal framing of the conservation practice, of shaping a political geography that keeps society and nature in harmonious opposition while also negotiating the political friction generated by their constant intermingling. On the other hand, they are also located within social relations and shared histories that define their identities as community members. One manager explained, "A big challenge is when people start putting political pressure... one big advantage of being a local is that I am aware of local politics and have social relationships with each of them...people also know that I am from here and [that] my roots are here...this helps [us] manage the interaction between people and leopards...so far nobody has tried to take advantage of these relations..." Though the discourses of modernity seek to draw clear boundaries between nature and society, the public and the personal, these boundaries are blurred in spaces like Akole.

This synergistic impact of the twin role of local managers and community members could be understood using the concept of embeddedness as discussed by Evans (1996). This embeddedness used by managers to stabilise a complex network of relations and also the interface between different ontological discourses. One manager explained "We have to manage things within the law...institutions like Waghoba definitely help us manage the

interaction between people and leopards...those who believe in Waghoba have a good understanding of leopards and rarely complain. However, every strategy has its limits....we need to build relationships with people before a crisis and use other systems like paying compensation..."

Thus, in playing dual roles as members of local communities and representatives of the state, the managers enable a plurality of values and build relationships with different communities through dialogues, to manage the interactions between people and leopards. The local managers consolidate the state's authority by serving as a bridge between two seemingly incompatible ontological frameworks, where one dichotomises between nature and society and the other treats them as a unified whole. These boundaries between these discourses are also rather blurry as they constantly co opt practices from each other. Waghoba and the states protection discourse are synergistic to an extent though very different relationships emerge from their practices. It is here, we argue, that the state and its policy must formally recognise and engage with local practices and relations. This will provide a window of opportunity to arrest the paralysis imposed by the current dualistic framework of conservation and also provide new theoretical tools for conservation practice.

Morality in a modern world

As discussed earlier, institutions facilitate social cohesion but also contestations within the community and divisions with other communities (Skogen and Krange 2003). These contests are also present in Akole. For instance, several non-tribal individuals explained that the 'backward' beliefs and 'superstitions' of Waghoba were common amongst tribal communities but not in their own. A farmer from a tribal community close to Akole town said, "They [other tribal communities] are very peculiar...they keep to themselves...but they are getting more civilised now...Waghoba is one of their gods...we also believe in Waghoba but our gods are different like Khandoba, Bhairava [like the non-tribal communities]." He went on to explain that his community believes in Waghoba as it is a part of the general social beliefs in Akole but did not sacrifice animals. "We do the Waghbaras when we take the animals to the hills to graze...it can be anywhere...say near a stream...we make some *khichdi* [mixed preparation of rice and lentils] and *kheer* [a rice-based sweet]...which we offer to Waghoba and also eat ourselves." These rituals were less elaborate and only members of the

immediate family and close associates participate in them as an extension of shared herding responsibilities.

This narrative of modernity and backwardness was encountered repeatedly amongst different communities in Akole. The last quote highlights that it is not merely a contestation of different identities (tribal vs non-tribal), relations or livelihoods and land use (farmer vs pastoralist). The distinction is both ontological and political, i.e. different interpretation of the located histories of animals and humans, with one being modern and the other being backward. Both Waghoba and conservation result in different political geographies of resource use and access, with the technological and economic 'backwardness' of certain communities and the 'modernity' of others marking two extremes of this spectrum. These linkages are politically-charged and marked by suspicion and distrust, as evident in the last quote. The first author of this paper, while doing fieldwork, had an opportunity to observe and document a Waghbaras ritual in a tribal village that involved animal sacrifice. His access was facilitated by an individual known and trusted by the community. Their presence was welcomed and members of the community openly discussed different aspects of the rituals, their beliefs and customs. However, at the end of the day, during dinner with the host's family, they mentioned that community members were unsure about their true motives for being present at the rituals. The neighbours soon joined in and added their bits. Field notes summarise this discussion:

> They [the hosts family and neighbours] mentioned that there are rumours that we are part of the anti-superstition activist groups. Specific rumours suggest that the photos I took today will be used to prevent this community from performing these rituals next year. They mentioned that some community members also joked that some of them may also be in prison for cruelty to animals. After clarifying the purpose of the research, it emerged that the rumours may have originated from community members who were not interviewed for the research.
>
> SG, field notes, 3 December 2010

These underlying forces of tension and cohesion have important influences on the relationships between different actors. For instance, a youth from a tribal community where a Waghbaras was performed, later privately confessed that the rituals sometimes seemed like superstition but that it was also part of their tradition. He jokingly added "Waghoba is our

god and even if the rituals are a superstition, at least we get to eat meat one day of the year." This youth is part of a growing trend where children are being educated in the main towns and cities. His quotation highlights the dynamism of these relations and the shifting boundaries between different ontological discourses.

Members of non-tribal communities too sought to dismiss the idea of 'Waghoba' as superstition but many still participate in its social practices. For instance, a non-tribal farmer said: "Waghoba is all blind superstition that is common in the tribal hamlets. It is [Waghbaras] nothing but a feeling people have...if they [leopards] did not cause any harm or losses...some 10-15 people come together when we take the animals to the hills and perform the Waghbaras to express our gratitude. That's all...nothing more."

However, even though these communities dismissed Waghoba is superstition, they did not hold leopards responsible ("they also need to eat") but blamed the forest department responsible for 'purposely' releasing 'hybrid' leopards ("they are no longer fully natural") to protect their plantations. These narratives acknowledge leopards as persons influenced by the morality of local conservation managers. This provides a glimpse of the complexity of relations, power dynamics and also the diversity of meaning frameworks that coexist in Akole. These pluralities of ontological frameworks and actors—human and non-human—compete and negotiate over resource use in a politically-charged space.

Conclusion

We started out by making two important assumptions: one that acknowledges actors are co-constituted by the social and the natural, and the other that humans and non-humans are both actors. These assumptions opened up a theoretical space to analyse the complexity of relations between humans and non-humans. This framework provided rich insights into the political, moral and biological dimensions of the relations that emerge from the located histories of actors. The practice of Waghoba illustrated the effects of a pluralistic ontology, while also revealing the complexity of relations and the diversity of power relations that it stabilises between different actors. It enables reflexive strategies for humans and leopards to share space and access benefits from different resource bases. For instance, the Waghbaras consolidates the pluralism of relations between actors. However, it also consolidates divisions with other ontological frameworks, including ideas of modernity based on a nature-culture dichotomy (Descola and Palsson 1996; Latour 2004).

The conservation discourse, on the other hand is based on a dualistic framework, which dichotomises nature and society. The relationships that emerge from it are inherently prone to conflicts. The same 'modern' outlook also constructs tribal communities and Waghoba as 'backward' and followers of blind superstition for their inability to draw distinctions between nature and society. Local conservation managers emerge as key players in the intersection of these two discourses, as they are embedded in both. They compensate for the lack of spatial control in Akole by negotiating a plurality of ontological values. These negotiations strengthen the state's hegemony but also provide political legitimacy to Waghoba. These moral constellations of relations provide a theoretical explanation for the complexity of the relationship between different actors.

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Paper IV

LOCATING HUMAN-WILDLIFE INTERACTIONS: LANDSCAPE CONSTRUCTIONS AND RESPONSES TO LARGE CARNIVORE CONSERVATION IN INDIA AND NORWAY[1]

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Abstract:
People's reactions to large carnivores take many forms ranging from support and coexistence to resistance and conflict. In this paper, we explore how social constructions of landscapes influence the response to large carnivore presence and conservation. We compare cases from four landscapes in India and Norway that are shared by people and large carnivores, and conclude that accounting for different social constructions of the landscape can provide greater insights into human-large carnivore conflicts, and take us past an understanding of these conflicts as something that just occur between people and wildlife.

Key words: conservation conflict, landscape interpretations, large carnivores

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Introduction

Humans and large carnivores have historically shared a complex relationship, shaped by a wide range of beliefs and factors (Knight 2000; Madhusudan & Mishra 2003; Saunders 1998). Persecution and habitat loss over 200 years has led to dramatic decline in large carnivore populations. Even as they make a tentative comeback in some areas through conservation efforts and changing land-use patterns (Linnell et al. 2001; Treves & Karanth 2003), their presence has met both resistance and support.

These responses can be understood from biological, economic, political and cultural perspectives. In this paper, we locate people-large carnivore relations in the context of socially constructed landscapes. We build on previous research on the cultural frameworks in which people's interpretations of large carnivores develop, acknowledging that a specific landscape angle has been largely lacking.

Much of the literature on human-wildlife interactions is focused on biology, and the term "conflict" is often used as a synonym for material impact caused by animals, e.g. on agriculture (Inskip & Zimmermann 2009; Treves & Karanth 2003). Many social science studies focus on attitudes towards species (Bruskotter et al. 2007; Ericsson et al. 2008; Gusset et al. 2008), without necessarily accounting for the social and cultural context. People's views are measured as "negative" or "positive", "for" or "against", "believe" or "do not believe", etc. These studies address, for example, negative and positive perceptions of benefits and losses from living around protected areas (Allendorf 2007; Karanth & Nepal 2012), or attitudes towards large carnivores (Bjerke et al. 1998; Ericsson & Heberlein 2003) and the material impact of their presence (Saberwal et al. 1994).

However, people's views on large carnivores—in general or their presence in a particular area—are more likely characterised by ambivalence, internal dilemmas and ambiguity, rather than stable valuations; especially as "societal and policy agendas are often contradictory, paradoxical and highly controversial" regarding environmental issues (p. 136-137: Macnaghten 1995). Another strand of research has taken a different approach, by situating people's opinions of large carnivores, and the conflicts that often surround them, in a wider social and cultural context (e.g. Saberwal et al. 1994; Bagchi and Mishra 2006; Peterson, R. B. et al. 2010). A number of qualitative studies of conflicts over large carnivores have been carried out, particularly in Scandinavia, but also in USA, France and Spain focusing on expanding wolf populations (Figari & Skogen 2011; Sjölander-Lindqvist 2007; Skogen & Krange 2003; Wilson 1997). While the French and Spanish research has rarely

been published in English, see Skogen et al. (2008) for a comparison of France and Norway. These studies conclude that the controversies over wolves are deeply embedded in wider societal conflicts, driven by economic, social and cultural change in rural areas and strongly affected by shifting class and power relations.

It is not possible to recount results from these studies here. However, the Norwegian part of this study draws on data that has been analysed in several publications earlier, and the research question is to an extent derived from these findings. While people's relationship to the land has emerged as significant for interpretation of conflicts over wolves in Norway (Figari & Skogen 2011), this has not been a primary focus of any previous publication. This merits an analysis of this particular aspect. Furthermore, previous research in Norway, and the global North, has focused exclusively on wolves, the most controversial large carnivore in these areas. However, if we are to decipher social mechanisms that influence people's views on large carnivores, we need to look at other species too, for example those in the global South. And finally, the conflicts over wolves in the North are played out in a social context that appears to be different from the ones in which conflicts over tigers or leopards emerge. This also calls for a study with a broader geographical scope.

In this paper, we compare people's views on large carnivore presence in landscapes outside conservation protected areas in India and Norway. We argue that social constructions of landscapes—the meanings people have of the land—strongly influence responses to the presence of large carnivores. We thus look beyond material interactions between people and large carnivores, as this alone does not provide adequate explanation for the diversity of responses to large carnivores in the research sites.

Conceptual framework

To explore the links between interpretations of species and social constructions of landscapes, we lean on a conceptual framework that treats landscape as embodied practice, i.e. landscapes being constructed through tasks and activities people perform on the land (Bender 1993; Ingold 2000; Olwig 1996). This perspective contrasts with conceptualisations of landscapes as mere physical spaces (Karanth et al. 2011) and also ones that regard them as cultural abstractions of individual experiences (Vaccaro & Norman 2008).

Of the scholars who see landscapes as embodied practice, Tim Ingold is perhaps the most evocative. He conceptualises a landscape as a qualitative and complex reality of the lives and work of past generations who have lived in it (Ingold 2000). Thus, the landscape is

constructed through the tasks performed on the land; constituting what Ingold terms a 'taskscape'. Other scholars have used political, historical, social relational and gendered perspectives to explore how physical landscapes are constructed through experiences, engagement and negotiations (Bender 1993; Olwig 1996). Our paper draws on this rich body of work, which sees purposeful or motivated and value-laden interaction with the materiality of the land, in the form of tasks, as a source of meaning. Such motives and values are essential components in the social construction of landscapes.

In this context, we apply what might be termed a "weak constructionist approach": While the physicality of the land and its biology are certainly out there to be interpreted, it is the creation of meaning through this interpretation—within particular cultural frameworks—that produces the *landscape* as a social construction. These constructions then become something different from the land itself.

The main question we ask is: How do local constructions of landscapes influence the responses to the presence—and conservation—of large carnivores? To answer this, we investigate how local landscapes are socially constructed in the study sites, and how these constructions are tied to tasks performed on the land. Against this background, we finally ask how locals interpret large carnivore presence.

Why compare?

A common rationale for comparative research is to identify "social mechanisms" by juxtaposing different social contexts, and look for similar social processes that lead to similar outcomes. A social mechanism in this sense may be described broadly as a constellation of factors organised in a way that regularly—but not necessarily—produce specific outcomes (Hedström 2005). If such events and outcomes are observed under different social conditions, we may assume that factors—economic, institutional, cultural, and even ecological—that *are* similar interact in ways that amount to a "social mechanism". We use the term "mechanism" in a broad sense, without linking it to any specific theoretical perspective. It serves as a rationale for our comparative design, as we compare sites that present a range of contexts for human-large carnivore relations. It also provides a tool to identify factors that tend to lead to certain outcomes across contexts. The outcomes we look to explain are variable interpretations of large carnivore presence.

The four sites; Akole and upper Nilgiris in India and Trysil and Halden in Norway, host large carnivores in multi-use landscapes, with a complex mix of distinct and shared

features. Each suffer relatively limited material damage from large carnivores but have different levels of conflict. There are strong anti-predator sentiments and more or less open conflicts in Trysil and Nilgiris. The other sites present a mixed picture: Akole has the lowest conflict level, whereas strong pro-carnivore sentiments are present in some groups in Halden.

By comparing these sites, we explore the links between local constructions of landscapes and interpretations of large carnivore presence, we also aim to identify processes—social mechanisms—that help explain the diversity of responses to large carnivore presence.

Research methodology

The Norwegian material is derived from 20 focus groups with an average of six participants, representing a cross section of the population in the two sites. Relatively homogeneous groups were recruited for each session to avoid heated and gridlocked discussions: hunters, farmers, conservationists, neighbours, colleagues at randomly selected workplaces, etc. This is akin to what Morgan (1997) terms *segmentation*, though a few groups did comprise a variety of positions on the issue of large carnivores.

The Norwegian research was conducted in 2007-2008, preceding the Indian case studies. Though it was funded and planned separately and builds on research underway since 1999, it was re-analysed from the perspective employed here. The Indian research, designed partly to allow comparison, was part of a larger interdisciplinary project studying human-wildlife interactions (Thomassen et al. 2011).

In the Nilgiris, 35 topic-guided interviews were conducted in fifteen hamlets. In Akole, 55 semi-structured interviews were conducted covering a cross-section of the population, besides participant observation. Like the Norwegian focus groups, interview guides were used as topic checklists to facilitate free-flowing conversations.

Focus groups were used in Norway partly because they yield more data, in relation to time and resources spent, and not only because of their methodological virtues. Similarly, the Indian approach was dictated by the need for collecting data in a cost-effective manner. The goals of the larger interdisciplinary project, and resource allocation within it, made duplicating the Norwegian approach difficult. Though focus groups capture more of the social dynamic in meaning production than do individual interviews (while lacking some of the depth at the individual level), it is the 'meanings' attributed to large carnivores and their habitat that are of interest to this paper. Significant discrepancies between data yielded by

focus groups and individual interviews have been found primarily when the topic is sensitive at a personal level (Hollander 2004), which is not the case here. The interviews and focus groups combined with observations and informal conversations, yield data rich enough to produce fairly "thick descriptions" of all study sites and so rich enough for meaningful comparison.

The research sites:

Akole:

Akole is socially heterogeneous, with several ethnic communities and distinct social stratification. It is spread across a 100 sq km valley in Maharashtra drained by Pravara river, and includes Akole town, which is surrounded by a mosaic of privately-owned croplands interspersed with low hills. Historically, the valley was arid and supported subsistence-level agro-pastoral livelihoods and a low density of leopards. In the 1980s, Akole witnessed major socio-economic and ecological changes: permission to use Pravara river for irrigation and the establishment of a local sugarcane-processing factory. This led to intensification of agro-pastoral activities, dominated by the cultivation of sugarcane. These changes resulted in a dramatic increase in leopard numbers, with livestock and dogs serving as ready prey and sugarcane providing ideal cover. An estimated minimum of 5 leopards are resident in Akole, as part of a stable breeding population (Athreya 2012). There are no protected areas in the vicinity, though parts of the valley are managed for non-wildlife forestry activities.

*The Nilgiris***:**

The Todas are a pastoral community of 1,500 people who live in 56 'munds' (hamlets) on the upper plateau of the Nilgiris, Tamil Nadu. In 1893, 2,948 acres of land were configured as 'Toda patta land'—commmon-hold tenure—by the colonial government (Fort St George Gazette 1893), and managed under the Madras Forest Act, 1882. Todas traditionally herded buffalos on the undulating plateau, which was historically dominated by grassland and shola (stunted rainforest thickets). This landscape was subject to intensive monoculture plantations and agriculture since colonial periods (Prabhakar & Gadgil 1998). Eucalyptus, wattle and pine plantations were forestry projects. Encouraged by colonial and post-independence administrations, vegetable and tea cultivation also expanded. As a result, tree cover increased dramatically, with wattle turning invasive.

Toda lands and reserve forests adjoining them have not attracted as much conservation attention as adjoining protected areas of Mukurthi and Mudumalai.

Conservation managers confirm the presence of 50-56 tigers in Mudumalai, 10 in Mukurthi and 14 in the reserve forests of the district (Ravichandran 2011). While there are intermittent reports of tigers and leopards preying on Toda buffalos, there are no official records as Todas rarely report them , or claim compensation, due to time constrains and bureaucratic hurdles.

South-eastern Norway:

The study area is within the present distribution range for wolves, in south-eastern Norway. Conflicts over wolf presence in Norway are intense, engaging many rural people and reaching into national politics. The present analysis focuses on two municipalities, Trysil and Halden. As we shall see, their social makeup differs in ways that are relevant to our analysis. Trysil is spread across 3,014 sq km along the Swedish border in the northern part of the wolf range. It includes vast tracts of forests, marshes and mountains, and is Norway's largest timber-producing community in terms of logged volume (Statistics Norway 2011). But mechanisation has diminished the logging work force, and the wood-processing industry is shrinking. Agriculture is limited and farm abandonment is increasing despite government subsidies. Trysil has seen massive tourism development in the form of a large ski resort but it generates few year-round jobs, and the population continues to drop: 6,700 in 2011 compared to 8,400 in 1951 (Statistics Norway 2011). Recreational activities based on harvesting natural resources, particularly hunting and angling, engage a substantial part of the population. Trysil has long held the Norwegian record for the number of moose killed each year (Statistics Norway 2011).

Halden, at the southern tip of the wolf range and also bordering Sweden, is smaller (642 sq km), but with a larger population of 28,000 (Statistics Norway 2011). It has a long industrial history and around 85 percent of the population lives in urban or semi-urban districts. It nevertheless has sizeable forest areas, with several smaller communities retaining close ties to traditional land use; where hunting and leisure pursuits with a harvesting ethos are culturally significant. Importantly, there has been substantial in-migration in some rural communities from urban areas. This has created enclaves quite different from the traditional resource-dependent communities, with a different social basis and different relations to the land. The same phenomenon is observed in Trysil on a smaller scale.

Large carnivores are present in both municipalities; bears, lynx, wolverines and wolves in Trysil, and wolves and lynx in Halden. Sheep farming plays a limited role in Trysil and is practically absent in Halden, so livestock loss has been minimal. Still, wolves feature prominently in local debates (Figari & Skogen 2011).

Constructing landscapes

Superficially, the sites seem very different: The socio-economic contrasts between India and Norway are in many ways extreme and cultural diversity, particularly in Akole, is very different from rural Norway. But there are some shared features too, especially in being rural but not disconnected from urban areas. In the Nilgiris, Wenlock Downs—the colonial designation of grasslands that contained most Toda hamlets—is a recreational zone, earlier for game-hunting and now a popular tourist attraction. In the Norwegian sites, urban in-migration and cultural influx, as well as tourism development, may entail different value systems and relations with the land (Kaltenborn & Williams 2002). In Akole, most households have relatives living in Mumbai, Pune and Nashik, which offer better educational and career opportunities. Also, Akole is economically integrated with these urban centres through trade in vegetables and milk. These linkages are important interfaces for knowledge and change (Masuda & Garvin 2008; Tacoli 1998).

Historically, people in Akole were materially impoverished and engaged in subsistence and seasonal agro-pastoral tasks. The socially constructed landscape was framed in moral and religious contexts, which helped negotiate socio-economic and ecological challenges. Leopards featured prominently in this moral landscape. While recent changes improved material conditions, constructions of the land remain largely unchanged. Also, material benefits are not spread evenly, with complex political, socio-economic and historical narratives that divide and bind people, rooting identities to the land and livelihood. Several people—especially along the river with ready access to water—have decreased their pastoral practices to focus on agriculture. Tribal groups, living in peripheral areas with no irrigation and limited agricultural productivity, continue to depend on pastoralism.

There is widespread agreement that Akole is a production landscape (though 'production' itself has variable interpretations), acknowledged even by conservation managers. Physical changes have only reinforced this view. One resident said: "Earlier it was dry...barren...and agriculture was less widespread. Farming has increased now and is everywhere…now there has been a lot of progress [in everything]…education, poverty alleviation, politics…" Leopards continue to feature prominently in this landscape construction. A middle-aged farmer said: "Earlier, we had rain-fed agriculture but now with irrigation, we cultivate round-the-year, including water-intensive crops like sugarcane…sugarcane provides leopards with a hiding place…they [leopards] no longer live

in the forest [in the hills]…there is no drinking water there…yes, they [leopards] do kill our animals but do not harm us, unless provoked."

On the upper Niligiri plateau, the state government repatriated Tamil refugees from Sri Lanka in the 1970s, adding to the older migrant groups and changing its demographic profile. The Tamils, skilled in tea plantation, along with parallel efforts by the local tea board, facilitated a shift from small-scale vegetable cultivation to growing tea. Few Toda munds, however, engage primarily in tea cultivation. While Toda youth are generally reconciled to being farmers and elders nostalgic about their pastoral past; they do not translate to neat 'generational' depositories of tradition and modernity. Some elders are reconciled to an agricultural economy, while numerous youngsters yearn for a pastoral life. The physical alteration of the plateau has fused the lost buffalo-herding landscapes with an idealised past. The Toda *taskscape* emerges not only from agro-pastoral tasks they perform today but also from pastoral tasks they cannot perform in the drastically altered physical landscape.

In Norway, the dominant narrative among people with cultural ties to the resource-based economy is one of economic decline, leading to depopulation and dismantling of private and public services. The forest industry employs only a handful of people, and agriculture is disappearing. Farm abandonment leads to spontaneous reforestation of fields that were highly valued because they opened up the landscape. Importantly, this happens in a time when a conservation ethos has achieved a hegemonic position in public discourse, and increasingly manifests itself in practical land management: restrictions on land use, new protected areas, and protection of species previously persecuted. Some social groups interpret these changes in the cultural valuation of nature (of which wolf protection is one expression) as driving forces behind the decline in resource industries, and as threats to a traditional rural lifestyle that rests on harvesting resources (Krange & Skogen 2011).

But the picture is not clear-cut, as the population is diverse even in Trysil, and pro-wolf attitudes are certainly present. This is more apparent in Halden, where—even in small rural communities—a construction of the landscape that embraces wilderness is strongly present. From such a perspective, resource extraction, as performed today, is seen as harmful. This view prevails among people who are generally not culturally-rooted in traditional land use. To them, the wolf is a strong symbol of an authentic, wild nature that preceded the human-dominated landscape (Figari & Skogen 2011). A rural Halden resident stated: "To experience something so authentic, in this [modern] society of ours—to me, that's incredible…but also a vital necessity! Everything is becoming so artificial. Things keep disappearing and disappearing. So, to be able to…be in touch with something so…it must

have been like that for an eternity!" Their interpretation is informed by a different interaction with the land, valuing it through non-consumptive recreation and symbolic of something unspoiled that should be revered and left in peace. This deviates from a traditional landscape construction, where human appropriation of nature is seen as necessary and benevolent—not only to people, but also to wildlife and the land itself.

Just as the concept of wilderness is tied to the idea of an imagined past, the notion of productive nature is associated with continuity and a heritage from earlier generations. For people rooted in traditional, resource-based land use, the traces of ancestors' hard work and efforts to tame the wilderness express the inherent meaning of the physical environment and must be preserved through continuation of traditional practices. This cultural landscape must be saved from 're-wilding'. Domestic animals as well as hunt-able game must be protected against predators. From such a perspective, humans and nature are not separate: traces of human activities are no more negative than traces of other beings that belong on the land (Figari & Skogen 2011).

Interpreting change

In Akole, change is interpreted as intensification of historic resource use and so represents continuity. Though benefits are not evenly spread, the change is valued as desirable for having lifted people from 'abject poverty' and 'backwardness'. This perception is located within larger narratives of progress. The very landscape changes welcomed by people also improved its ecological potential for leopards.

In contrast, afforestation of grasslands on the upper Nilgiris has been a cause for concern. Toda lands were included in the afforestation efforts, which were not resisted as forest personnel told Todas they could benefit from felling mature trees; a decision many regret given the bureaucratic delays in obtaining felling permits. Todas are nostalgic about the openness and visibility that characterised their landscape. Even as they adapt to the afforested land and its predatory risks, some Toda elders recall the British hunting tigers in Wenlock Downs. They complain that plantations have shrunk grasslands, desiccated swamps and drastically reduced visibility. A Toda farmer said: "More pastures means buffaloes can graze. We can see the buffalos even from a distance and if there are tigers in the area, we can monitor its movements. Now, once the buffalos go beyond the pines, we will be sitting here without knowing what is happening there".

This fear of 'losing the landscape' is observed in Norway too. Farmers and local hunters claim that conservation measures—in concert with a negative economic development—are ruining the beauty of their managed landscape. They fear that if the land is not managed, it will soon be overgrown. While Trysil is a naturally forested area, the open spaces created by agriculture and grazing are all the more cherished. They are seen as aesthetically pleasing, and as strong symbols of the relationship between people and nature and the toil of the ancestors. Like the Nilgiris, many people talk about the possible loss of open landscape, which would be replaced by forest—not a beautiful, mature forest but impenetrable brush. One farmer said: "What scares me about the large carnivores is that the land will not be used. Then it will just become overgrown, and we will have the forest right up to [our doorstep]. That's exactly what we don't want! We want it to be an open landscape, (…) that is used." This is interpreted not as the return of true wilderness, but the onslaught of chaos. But as much as people fear the physical landscape changes, they are even more concerned by—to borrow a phrase from Ingold—'taskscape' change. While the physical changes to the landscape in south-eastern Norway is limited compared to the Nilgiris, many people feel that the land management rationale has shifted dramatically, from production to protection. They see the 'wilderness' paradigm as having achieved hegemony, so that traditional ways to use and manage the land gradually become impossible.

Thus, we have four sites for comparison, which present contestations and continuities in landscape constructions. In the Nilgiris and Norway, we find contested interpretations of changes, and corresponding threats to 'taskscapes', while in Akole changes maintain continuity with earlier interpretations and are widely seen as desirable. Into these emotionally-charged landscapes, enter the large carnivores.

Perception of large carnivores

In the Nilgiris, shrinkage of grasslands and agricultural adaptation has contributed to a decline of Toda herds, while also providing tigers and leopards cover to hunt buffaloes. Open landscapes helped protect buffaloes as carnivores were conspicuous. Forests now serve as habitats for tigers and leopards. A Toda farmer explained: "Earlier you would know what is in an area in a single glance. Now if you go and look for your buffaloes, you know they are there but you have to first find one, get it to one place, then go looking for the others. As a result, you really do not know what's happening in there". An elder said: "everything has

become darkness…[earlier] there was light and openness. Wild animals, if they saw us would move away. Now everything is closed".

While Todas acknowledge historical presence of tigers in the Nilgiris, depredation was occasional. They say the forest department released tigers and leopards in the area during the 1990s and 2000s. Some youngsters are said to have witnessed these clandestine acts. Zoos and Mudumalai Tiger Reserve emerge as source areas. Authorities could no longer feed the zoo animals and so released them in Toda lands. The 'zoo hypothesis' along with the 'closing of pastures help predators hunt' conjecture, could explain why Toda claim more attacks despite fewer tigers. Todas also point to an apparent behavioural difference between old forest tigers and introduced ones. The forest tigers were shy, while the 'new' tigers are extroverted, easily observed and do not fear people. An elderly Toda said: "Today's tiger is not a tiger but a dog. It will suddenly jump on humans. Those days the tiger would go for the neck of the buffalo but nowadays they bite the feet and legs. Since they are habituated to eating limb meat in zoos, they do not go for the neck". A youth recounted: "Those days there was the forest tiger…when it came, it killed a buffalo…" There are references to states of 'naturalness' and 'wildness' in such invocation of tigers.

There are accounts of leopard releases in Akole despite wide acknowledgment of the links between leopards and the intensification of agriculture. Conservation managers admit that leopards have been trapped under political pressure and relocated locally. People, however, cite reasons ranging from leopards protecting forestry plantations to lack of cages. These narratives are employed to explain a perceived increase in leopard numbers and their "tameness". One informant said: "Nowadays leopards are domesticated and used to people. They pose no harm to us". Interestingly, the "tameness" is interpreted very differently in Akole as compared Nilgiris, where lack of fear was deemed as dangerous. Though leopards have historically been present in Akole, their numbers were much lower. Elders recount that earlier they rarely encountered leopards and when they did, it was always in the forested hills. The forests have disappeared and leopards live in the valley. People and leopards are deeply intertwined in the moral landscape with leopards also serving as symbols of the negotiations between people and the state, which protects the animals. On the other hand, tribal groups living in peripheral areas of the valley, with marginal political influence, have institutions that socially integrate leopards as village deities—Waghoba. References to leopards are framed within sacred-moral narratives of Waghoba, the benign deity "who never harms the righteous". However, given their respect for leopards and dependence on livestock, these groups diligently guard their animals. The leopards are thus interpreted as an integral part of

the landscape. The rare depredation losses are interpreted in a moral framework, which provides some perceived control over the situation. One respondent said: “It is only when we are not respectful or have done something wrong that Waghoba will kill our animal…but after we ask for forgiveness and carry out the rituals properly, we experience his blessings.” Others claimed it was an act of benevolence: “It can also be a good sign if Waghoba takes our animal. It means he is happy with us [and our rituals]…our herds will grow in the future. He never takes an animal from those who cannot afford the loss.” Though these beliefs are dominant amongst tribal communities, others also invest time and energy into them. A non-tribal farmer explained: “This is blind superstition…but we do participate in it…for social reasons”.

Leopards, like other animals, are recognized as persons: A young woman said: “They are living beings like us…they need to eat too…are they going to eat vegetables? No! They never take animals from the same house every day, do they?” Most of these people are primarily engaged in agriculture (and work directly with the land) in an area where leopards feed on small livestock and dogs. As long as leopards do not harm humans, people tolerate them as they would other people. One pastoralist explained: “This landscape belongs to leopards as much as it belongs to us.” There is widespread awareness that leopards are legally protected and managers come under intense pressure only after a human attack. While people fear leopards, they recognise that they do not harm humans unless provoked.

However, there are people in Akole town involved in large-scale sugarcane farming who interpret the situation differently. They agree that leopards must be conserved but in protected areas and not in Akole. One individual said: “Leopards are beautiful…but should they be living around people? They are OK as long as they live in the forest but not to the extent that they start coming to our villages...” They regularly petition the department to trap leopards and demand compensation for depredation losses. These individuals no longer work the land themselves and form part of a socio-political elite. They subscribe to certain aspects of local belief systems but acknowledge a ‘disconnect’ from tasks they (and their ancestors) once performed. Leopards, thus, present a socio-political challenge, which they address by exercising their greater access to political influence. While they interpret change in Akole positively, having derived relatively greater benefits from it, and agree that leopards must be protected but away from humans.

In Norway, wolf supporters and sceptics actually speak about the wolf in ways that are similar to each other (Figari & Skogen 2011). Nobody see themselves as wolf haters. Wolves in their natural environment are seen as impressive and fascinating, they are

intelligent, social—and above all—*wild.* So the disagreement boils down to whether wolves belong in Norway today, and whether those present now are real, wild wolves. One farmer said: "They belong in Siberia, where there are no people. People and wolves do not go together. We have a populated countryside in Norway, unlike Sweden. We agree on that, there are generations of agreement about that in Parliament."

Those who adhere to traditional landscape constructions see a symbolic mismatch between (wild) wolves and the (humanised) local landscape. Consequently, the wolves living in the forests of eastern Norway cannot be understood—or treated —as 'natural'. Many informants were even convinced they were hybrids, or 'bastards'. One hunter said: "[A hybrid] will have both the properties of a wild animal, plus it lacks its natural fear of people. That's definitely the most dangerous sort." These wolves, when observed in the neighbourhood and approaching buildings and people, come far too close and are not shy enough to be real wolves. Instead, they are perceived as unnatural animals with unnatural behaviour, showing all the signs of being polluted by humans. Like in the Nilgiris, they are seen as dangerous because of this. There are rumours about how captive-bred wolves have been secretly introduced by the government (Skogen & Krange 2003). These rumours are strikingly similar to the tiger introduction stories in the Nilgiris and serve the same purpose: to underscore that current large carnivore presence is unnatural, and to place the blame firmly on actors of flesh and blood, rather than on diffuse and remote bureaucratic systems (Skogen et al. 2008).

Landscape constructions and large carnivores

While there are diverse interpretations of large carnivores across the sites, the present research suggests that the perception of conflict may not primarily be directed at the carnivores. Instead, as the Nilgiris and Norwegian examples illustrate, the conflicts seem to be rooted in negative interpretations of changes in the physical landscapes, and power structures that are seen as drivers behind that change. We are not denying that predators may cause material damage, or that the physical change (particularly in the Toda case) has a substantial economic impact. Instead, we argue that the responses to these tangible effects may be more fully understood in the context of social constructions of landscapes that define people's relations to the environment.

The large carnivores thus find themselves in an environment fraught with competing interpretations as well as socio-economic and cultural conflicts. Since all four sites have

undergone considerable change, how do we explain the divergent responses to large carnivore conservation? Those dwelling in these places have historically engaged with change and the forces behind it. At a simplistic level, the perception of conflict observed in the Norwegian sites, particularly Trysil, and the Nilgiris can be traced to negative interpretations of change. These are conflicts arising from historical discontinuities in the activities performed in the landscape. Supporters of wolf presence in rural Norway engage with the land in new ways. Their landscape is also connected to tasks, namely their own low-impact, non-commercial practices, supported by narratives of a more sustainable, small-scale resource use in the past. They use the forest for recreational outdoor activities. For them, the landscape is a wilderness in which the wolves belong. Interestingly, people with cultural ties to the resource economy, and who oppose wolf protection, also use outdoor activities as a bridge to the past. The typical case is hunting, which symbolically links contemporary rural culture but to the managed production landscape that formed the basis for settlement. Hunting as a mass leisure activity is only a few decades old (Brottveit & Aagedal 1999) but is socially constructed as an ancient tradition in rural areas. One explanation is that there are few other culturally significant harvesting activities for people to engage in and few people are economically dependent on the forest today. So hunting becomes an "invented tradition" (Hobsbawm & Ranger 1992) of great significance. Wolves also threaten typical Scandinavian hunting with free-ranging dogs and so become an even stronger symbol of threat to traditional rural culture.

For Todas, pastures hold similar recreational value, given their past range-herding strategy. Men still go to look at remaining pastures and even to watch sacred buffaloes, which have now turned feral. Todas value the recreational aspects of annual activities like collecting grass from swamps to thatch their temples. The changed land curbs these activities but facilitates the presence of large carnivores. While this change is desirable and positive for large carnivore conservation, Todas locate it within their lost past. Thus, disagreements are not so much about large carnivores or their conservation, but rather about where they belong.

On the other hand, a positive interpretation of change in Akole encourages a more benign interpretation of large carnivores, especially since leopards were already integrated into social constructions of the landscape. A middle-aged farmer, a week after he and his wife were accidentally attacked by a leopard, said: "There are bad elements in every society, why would leopards be different. Our village has four leopards, three don't cause trouble but one fellow is always doing mischief!" The interpretation of the minority, who claim leopards do not belong to Akole, can be traced to their changed relations with the land and their political

engagements. As they see it, Akole is for humans alone and leopards belong to protected areas.

This may be a rather simplified interpretation of a complex reality, but it provides a useful starting point to understand the differing responses to the presence of large carnivores. Communities and social groups have inherent power dynamics, which favour specific ideas of nature—linked to general worldviews—that shape or even drive conflicts over the specific interpretations and use of the land (Peterson, M. N. et al. 2010). The Nilgiris and Norwegian sites illustrate how unresolved conflicts of interpretation and their physical expressions have deep implications. Akole provides a contrast, where people extract benefits from change—that has also benefited leopards. Changes do affect the social construction of the landscape, but the "new" interpretation is benevolent, accommodating leopards and institutions built around them.

Conclusion

Experience of physical landscape change, as well as perceptions of changing management regimes and a shifting cultural 'power balance', will interact with social constructions of the landscapes in different ways, and determine whether changes are seen as desirable or undesirable. Agrarian change in Akole entailing 'afforestation' with sugarcane is considered beneficial. But afforestation in the Nilgiris and Norway causes economic and cultural concern and portends a sense of loss. These interpretations of change are related to production and recreational tasks performed or hindered, but indeed also to how broader processes of economic and cultural change are experienced by different social groups. Constructions of the landscape at all the sites resemble 'act[s] of remembrance, of engaging perceptually with an environment that is itself pregnant with the past' (p. 189: Ingold 2000). Disconnection from traditional understanding of the past as is most evident in Halden, is tied to the emergence of new, partly in-migrant or socially mobile groups, whose constructions of the landscape have a different basis.

How change relates to landscape constructions influences responses to large carnivore presence. In the Nilgiris and Trysil, notions of belonging, polluted identity and behavioural anomaly in animals also suffuse contestations of carnivore presence. Rumoured relocation of captive carnivores helps explain behavioural anomaly. Negative interpretations of physical—and cultural—change thus bear upon similar interpretations of carnivore presence. Nostalgia prevails for a more aesthetic past that was also a controlled past, where hunting and

monitoring were possible in an open or benevolent landscape. In Akole, positive interpretations of the physical landscape are accompanied by benign responses towards leopard presence. Co-beneficiaries of the productive transformation of barren land, leopards have historically also served as local deity.

While material damage inflicted by carnivores generally has substantial bearing upon conflicts, we argue that responses towards carnivores need not necessarily be reduced to material loss. It has been documented in Norwegian research that strong anti-carnivore sentiments may develop independently of material damage (Figari & Skogen 2011; Skogen & Krange 2003) and this is evident in the Indian cases too—under certain conditions. Such conditions can be discussed in the conceptual context of social mechanisms. Here we may perhaps claim to be on the track of a very simple one, albeit one which needs considerably more comparative research across diverging contexts:

If the changes that brings predators are seen as threatening, and also as imposed by malevolent outside forces, then predators will not be welcome, and easily become symbols of the wider processes of change, *even if* material damage is limited.

If the changes that bring predators are seen as benevolent, regardless of their origin, then predators may be tolerated, *as long as* material damage is limited.

If social constructions of the landscape are already contested, the presence of large carnivores will become embedded into these conflicting ideas.

The opposition to large carnivore conservation in specific areas is rooted in historical, socio-economic and physical engagements with the land, and so cannot be separated from the social constructions of the landscape that emerge. While applying perspectives such as ours is no guarantee of success, we are convinced that treating so-called "human-wildlife conflicts" exclusively as that (i.e. conflicts between people and animals) is a certain road to failure.

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