# Settling Nature

## *A Case Study of the Lynx in Norwegian Carnivore Management*

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# Abstract

The carnivore issue has been a much debated issue in the Norwegian public for well over a century. After a longer period of trying to eradicate the animals through government issued shooting rewards from the middle of the nineteenth century, the carnivores were reintroduced into society through different political processes in the latter part of the twentieth century, following an increased scientific focus on the value of specie preservation and biodiversity (Richardsen 2014, Stokland 2014). This has been the source of an ongoing conflict surrounding the carnivores' place within Norwegian society. Especially, how to create a viable social structure based on the co-existence of carnivores and grazing industry in the Norwegian outfield has been the center of the conflict in later years.

The thesis treats the active value construction of lynx in Norwegian carnivore management by studying several political processes known as the *carnivore settlements*, through a document analysis of several policy documents documenting these processes. Valuation practices may refer to the active production of values in relation to something, an object or entity, with which it is ascribed. This is a social process, and as such, values must be studied in relation to both the object/entity of study as well as the social reality they create. The thesis looks at the political valuation processes of the lynx and the subsequent effects the enactment of these has on the social and physical reality it inhabits.

Following Asdal's (2015b) argument, "Paperwork does not simply describe an external reality 'out there': Documents also take part in working upon, modifying, and transforming that reality" (p. 74), the thesis follows a practice-oriented approach, looking at how the frames presented by the settlements very concretely transforms a physical reality, and in turn transform the issue itself.

The results of this exploration show that the natural reality of Norwegian outfield is settled in very concrete ways as the result of the values enacted on it in treating the lynx as a member of society. However, this is a continuous process of modification, and although the system on which it is built is settled within the bureaucratic machinery of Norway, the frames for how it is performed continue to shift. In large part due to the lynx itself.

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-Magnus Jacobsen

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# Content

# 1 Introduction

This thesis treats the development of modern lynx management in Norwegian carnivore management, between the 1980s and 2010s. Until the 1980s, the lynx was a hunted species within Norwegian nature management, and the policy stance on the large carnivore in general was based on an eradication strategy to remove them from society. Then, through an increased focus on specie preservation and the value of biodiversity for a sustainable environment in the latter half of the twentieth century, the carnivores were brought back into society. However, this was the source of conflict with other interests in the Norwegian outfield (utmark), especially the grazing industry, who had – in the absence of large carnivores following the eradication policy's effects – based its production on letting its animals graze freely and without significant attention. By scientific and political definitions on what to consider the term *viability* to mean/include, the carnivores were allowed to establish at certain levels and in specific areas in order limit the interaction, and thus decrease the conflict, between the carnivores and grazing production interests. This is the point of departure for this thesis.

The thesis treats the so-called *carnivore settlements* in Norwegian carnivore policy, and looks at how these processes of valuation, in defining a desired natural situation, and the means for how to create it, indeed settles nature in very concrete ways. The settlements are Parliament treatments of the issue of carnivore conflict, and involves propositions, debates and passing decisions on concrete strategies for creating premises for co-existence between carnivores and other actors within society. Through these active valuation processes, based on political discussions of scientific evaluations, the issue is framed in a specific way, and within a specific system. The thesis looks at the 2004 settlement primarily in following the creation of the current system of Norwegian lynx management, and how, in framing it in this way it came to alter the reality of Norwegian outfield.

In doing this, I have based my empirical evidence on a number of bureaucratic documents, including the documents treated in the resulting settlements, legal decisions related to the management of lynx, and on the compensation of losses of livestock to lynx. Using Asdal's (2015b) argument, "Paperwork does not simply describe an external reality 'out there': Documents also take part in working upon, modifying, and transforming that reality." (p. 74) the thesis follows a practice-oriented approach, looking at how the frames presented by the settlements very concretely transforms a physical reality, and in turn transform the issue itself.

As such, the bureaucratic documents represents a way of writing the lynx and its natural surroundings into society, or a sociopolitical existence, that have very clear physical manifestations. In doing this, I have primarily focused on the processes that the documents are a part of, as presenting the active valuation of both lynx and Norwegian nature, and the way in which the documents take part in shaping a physical reality through the enactments of these values, using concrete means. The documents themselves maps out these processes, and gives us insight into the creation of modern lynx management, and why it is performed the way it is and not differently. In presenting desired targets and the strategies for reaching them, the active valuation of the lynx is mapped out in these processes.

"(…) valuing or valuation is something that is actively done while values are something actively constructed" (Asdal 2015a: p. 170). Valuation practices may refer to the active production of values in relation to something, an object or entity, with which it is ascribed. This is a social process, and as such, values must be studied in relation to both the object/entity of study as well as the social reality they create. Valuation practices are enacted by certain means, or tools, and takes place in particular situations, linked to concrete settings (Ibid). In studying the political settlements of the management of carnivores as central valuation practices in the construction of the lynx in Norwegian society, the thesis follows just such an approach.

Subsequently, a main area of research will be to explore how this is done in practice, i.e. how and through what means is the value of lynx created in a modern management system? Setting aside, for the most part, how the lynx came to be protected in the first place, and as such, valued as a member of society, the thesis will primarily explore how this value is framed within specific conditions, and how these are enacted on the animal in practice.

However, a further and related question is needed. Namely, what kind of reality does the enactment of these values create? As mentioned, the enactments of the values constructed in the settlements have concrete physical and social manifestations. The strategies presented have a specific target, namely to create the premise for co-existence. However, in applying these to the management of lynx, what are the societal effects, i.e. what kind of society does this create?

# 2 Defining the Issue

## 2.1 Defining the issue politically: on controversy and the twofold target

The status of the lynx, as well as the other large carnivores in Norway, has a long and turbulent history. From the middle of the nineteenth century, the Norwegian government issued an eradication campaign based on rewards for killed carnivores to rid themselves of the troublesome species (Biørnstad 2015, Richardsen 2014). The resulting effects of this policy is clearly visible in the current carnivore conflict. As the number of carnivores declined, reaching near extinction from within Norwegian borders in many cases, the grazing production started letting their animals graze freely in the previously carnivore inhabited outfield, without significant attention (Ibid). This has been the basis of the Norwegian method for grazing production in grazing season from around the turn of the 20th century. Following a period of ecological and conservational focus in the natural sciences in the latter part of the 20th century (Stokland 2014), the carnivores were reintroduced into society, and the eradication strategy erased. For the lynx, the so-called shooting rewards were abandoned in 1980, and protection for breeding of cubs were legally mandated in the Wild Act (Viltloven) in 1981 (Odden et al. 2014). This marked a shift in governmental stance on the preservation of nature, as the young focus on biodiversity grew into several new treaties and legal decisions, both nationally and internationally. As is stated in treating the 2004 carnivore settlement, there has been a shift in focus over the last 30 years, both nationally and internationally, from the eradication to the conservation of the large carnivores (Innst. S. nr. 174 (2003-2004)). Among other decisions, the Norwegian ratification of the Bern Convention in 1986, on protecting species and their natural habitats within national borders, marks a significant change in policy on carnivores. The convention, along with the later Biodiversity Act (Naturmangfoldloven 2009) are central parts of the framework which carnivores are governed by today. With the reintroduction of the carnivores to society by means of several conventions and legal decisions, conflict levels rose as the effects of the previous eradication tactic proved difficult to reverse. Now the grazing production had to share the outfield with carnivores once again, and the effective measures against conflict between grazing interests and carnivores was undeveloped due to lack of knowledge, means and incentives.

This shared priority of carnivores and grazing animals is termed in the treatment of the 2004 settlement as the *twofold target* of outfield government. This term signifies the frames of the issue, as defined by the political treatment. In short, it refers to the challenge of how to create a viable social structure based on the co-existence between carnivores and grazing production in Norwegian outfield. In this lies the central challenge of carnivore management in Norway, namely how to decrease the level of conflict between the two opposing interests as much as possible. Defining the issue in this way has, as will be treated throughout this thesis, significant implications for how the reality of the lynx and the other inhabitants of outfield is shaped. Significantly, the ordering of nature according to the management system, separating the two interests physically, is a central way in which the physical nature of nature came to be modified according to the political valuation processes.

Håkon Stokland (2014) described how the issue of re-introducing carnivores into society developed from being a biological to a political issue, due to the degree of conflict the animals were involved in. It became clear that the carnivore populations effected the viability of other interests in such a degree that a political treatment of the issue became necessary. As such, the term *viability*, in speaking of the carnivore populations, came to include a relativity to the other interests they effected. This meant that creating viable carnivore populations was relative to their adaption to the existing societal interests, and the other way around. In constructing the accepted definition of the term viability, several political processes treating the issue has been initiated that have had significant implications for how the lynx and the other carnivores are valued and managed today. Specifically, the *carnivore settlements* must be seen as central valuation processes in the construction of the Norwegian lynx, as well as of nature/outfield generally. In these processes, the accepted population targets, i.e. defined viable populations, being the lowest accepted number in terms of securing conservation of the species, while not higher than the management could handler in terms of conflict, as well as the system and measures by which it is to be managed, was constructed. However, this construction was not a straightforward and linear process, as framing it a political issue would indicate. There were several disagreements between government, committee, and the members of the committee in reaching the 2004 settlement. As the process will show, viability, zones, and measures are relative sizes.

## 2.2 Settling nature politically: Introducing the carnivore settlements (1997, 2004, 2011)

The carnivore settlements include political discussions and definitions on how to create a viable social structure based on co-existence, as defined by the twofold target. This includes different strategies for how to obtain it by limiting the conflict involving the animals after gaining legal protection. These contours of the current management system is framed through Parliament's (Stortinget) treatment of different issues, presented in several documents between 1996 and 2011. The 1997 settlement, presented in the so-called carnivore declaration (Rovviltmeldingen 1997), refers to the treatment of the document *Innst. S. nr. 301 (1996-1997)*. The document includes the beginning of the current approach to carnivore management, with the introduction of the system of geographical differentiation/regional zone management. Following, the 2004 settlement refers to the Parliament's treatment of documents *St.meld. nr. 15 (2003-2004)* and *Innst. S. nr. 174 (2003-2004)*. The 2004 settlement further developed the system of geographical separation into the current system of eight zones, governed locally by individual tribunals, defined national and local population targets for the different carnivore species, as well as termed the *twofold target* for Norwegian policy on carnivore management. The 2011 settlement is in many ways a continuing support for the 2004 settlement, with small alterations to some of the strategies. This is presented in the document *Dokument 8:163 S (2010-2011).*

Throughout the 1990s, different legal modifications for the animal was passed. It gained total protection in southern Norway in 1992, followed by quota-regulated hunting in the whole country except in Finnmark and part of the south and western part of Norway, which had open hunting within the hunting season of February and March (Odden et al. 2014). As a result, the population increased rapidly until the middle of the decade, probably because of low quotas and a large venison population (Ibid). From 1996 to 2003, the population number dropped a dramatic 35% across the country due to large hunting activity because of the lack of specified population targets (Ibid). This was a central reason why there was a need to define clear population target. As such, this was the base for the political discussion of how to define a viable population, both in relation to the biological conservation of the animals, and the maintenance of a viable grazing industry, in the 2004 settlement. The accepted viable number for the lynx population was set at 65 family groups each year (Innst. S. nr. 174 (2003-2004)).

The individual tribunals were constructed to consist of five representatives, elected from the different affected county municipals (fylkeskommune) in a region (Ibid: p. 9). The Ministry of the Environment (now the Ministry of Climate- and Environment), as the head wildlife organ, conducts the final appointment of the tribunal (Ibid). In regions 6, 7, and 8, one member of the tribunal is appointed in consultation with the Sami Parliament (Ibid). The tribunals elects their own leader and deputy leader (Ibid). Furthermore, the tribunals themselves set the quotas for lynx hunting each year, provided that the population target for the region is met (Ibid).

In the 2004 settlement, several tactics for limiting conflict between the carnivores and grazing industry animals, and between affected local opposition toward carnivore conservation and centrally governed carnivore policy. It is stated in Innst. S. nr. 174 (2003-2004) that the majority of the committee members sees strengthening the trust between the central carnivore management, production interests and other users of Norwegian outfield as a central issue (Ibid: p. 9). Reasoning that the support for the conservation of carnivores in Norwegian nature could be undermined if the conflict surrounding population targets and management of the carnivore populations become too great (Ibid). Several measures was proposed.

These measures are, as will be shown, taken against primarily two interrelated sides of the carnivore conflict, both of which are central to the model on which the management system is shaped. The first relates to the actual conflict between carnivores and the grazing industry. Primarily, the measures promoted in the policy documents against this side of the conflict is the physical modifications of the movement and densities of carnivores and grazing animals in certain areas, i.e. geographical differentiation. The second relates to the social conflict between different actors affected by carnivores in their surrounding areas and the state, which legally protects carnivores centrally. Measures taken against this side of the conflict involves primarily three aspects: economic (monetary) compensation, involvement in the management (either local politics or hunting), and spreading information/knowledge about carnivores. A third and related to the second, issue is the conflict between affected local actors and scientific estimates of the situation centrally. Acknowledged as a cause of conflict that could undermine the national conservation of carnivores by the committee on energy and environment in the 2004 settlement, altering social conceptions in general, or adjusting social conceptions to include carnivores in the reality of social life, is a large part of the modification strategies presented in the settlements.

## 2.3 Constructing the twofold target and viability

As described by Asdal (2015b), framing the issue in a specific way can come to alter the issue entirely. As previously shown, the frames for the carnivore issue was constructed through the carnivore settlements, specifically as the twofold target and the strategies for how to reach it. However, how was this done, and what were the effects of framing it in this way?

Significantly, the term *twofold target*, which was coined in the 2004 settlement, creates the frames for the current issue of lynx management in Norway. The term, as mentioned, simply refers to the shared priority of carnivores and other interests in outfield. However, defining it this way creates very specific terms for how the lynx is valued. It indicates very clearly the broad nature of the term *viability* (levedyktighet) when placed in a political context. As presented by Stokland (2014), biological viability, as conservation of the carnivores, is just one side of the issue. Biological viability is narrower than political viability. As defined by the twofold target, the viability of both carnivores and other interests, with grazing production being the example put forward, is valued equally. This indicates very clearly that a viable lynx population is not equal to its conservation or survival. Viability, in this way, consists of a broader, societal focus. One where society and its elements share viability, and this is a political concern, as well as a scientific one. The components of the system has to fit together. Co-existence might be an equally precise term. Framing the issue in this way, as a twofold target of viability, thus have obvious implications for what governmental strategies are enacted on the lynx and other inhabitants of outfield.

How then to define a viable population target? The number of 65 family groups, or yearly litters of cubs, may be viewed as a symbol representing the lowest figure for securing a biologically sustainable population, while at the same time being the highest figure considered viable in relation to conflict. The rigid enactment of this figure on the animal, not allowing the population to decrease below this figure, and not exceeding above it (more on this later), suggest the relative definition of viability as discussed above, where biological viability is a part of it, but only as long as the societal viability allows it. Its relativity is also apparent in the committee treatment of the issue, with two of the parties represented stating that the figure is too high, suggesting that the population target for lynx should be at 40 yearly litters of cubs, i.e. 25 less than the figured passed by parliament (Innst. S. nr. 174 (2003-2004)). These parties, one of them (Senterpartiet) with a strong foothold in the agricultural sector, suggests that considerations to the local affected communities should be prioritized. Not only is there a large

deficit between the passed population target and the opposition's suggested target, opposing interests are presented as more important than the size of the lynx population. This indicate clearly the relativity of a politically defined limit of viability. It also suggests that there is an interest in keeping at least a minimum population of carnivores, even among the opposition. However, there are large differences in the way the population target is interpreted, and indeed valued. With the opposition to the passed target, when discussing the value of biological diversity, claiming it is a "paradox" that the government in several areas of the country are more inclined to prioritize large carnivores that grazing animals (Ibid: p. 8).

Much of the relative interpretations of viability can be explained in relation to the international commitments Norway has to maintaining the large carnivores, specifically through the Bern Convention. After ratifying the Convention in 1986, Norway agreed to maintain a viable population of its large carnivores (Ibid). There is a continued emphasis on the interpretation the Bern Convention gives room for in the committee treatment of the 2004 settlement. For instance, there is an emphasis on the cooperation between countries sharing populations and habitats of carnivores – which is the case between the Norwegian/Swedish lynx population – that viability is relative to the cross-border population, and that this must be taken into account when deciding on population targets. In contrast to the Norwegian lynx target of 65, for instance, the Swedish target is set at 300, making the Norwegian population 18% of the Scandinavian population (Ibid: p. 5). This biological argument, based on a legal interpretation of Norway's interest in maintaining international agreements, and its ability to conserve biological diversity, underlines the relativity of other interests in framing the issue politically. It is clear that interest, which is a significant factor in democracy, is a large part of Norwegian viability, and thus, its natural reality. Furthermore, as defined by the twofold target, these interests are relative to the level of conflict. Sweden, by comparison, has a significantly lower conflict level relative to its much larger carnivore population (Odden et al. 2014). A significant reason for this, it is suggested, is that much of the Swedish grazing industry takes place behind fences (Ibid). More on this later.

The term viability in Norwegian (levedyktighet) directly translates to something like "living skills", but refers to something close to the term sustainability. Nevertheless, the word implies something that is adapted to its environment. When written into a society as a social actor, included in the political frame, this is a relatively new role for the lynx, and, as such, it demands substantial modifications to adapt it to society. Both of the animal itself, and of society. The

conflict level is a clear indicator of this. As such, the term viability also includes an element of control.

When defining an issue as a political issue, one also asks how to govern or control this issue. However, controlling it may also be relative to other things. As in the case of the lynx, framing the issue within the twofold target, trying to control the conflict level between the animal and the grazing industry, indicate that gaining control over the situation involves controlling several actors at once. Creating the strategies for dealing with the issue, simultaneously frame the issue within another set of frames, namely the system that they are to be handled within. Using a term from Foucault, one could say that both defined values and the strategies created in the political settlements on carnivore management function as *technologies of government* (Foucault 1978) in enacting governmental values on its governed subjects. However, how are these constructed, and what do they enact?

Settling nature within a concretely bureaucratic system must be viewed as a way of trying to establish control over something that is perceived as the opposite. As such, an important aspect of the Norwegian handling of the carnivore conflict is not just simply the way the management system is performed, but how this represents a specific way of valuing nature in the first place. One that quite clearly includes control over biological entities. However, politically defining the issue also indicate the shifting nature of these valuation processes. As does the relative frequent interval of Parliament treatments of the issue (there has been three in the last eighteen years, with another planned for next year). As such, it is important to keep in mind the relativity of the settlements to conflicting interests, as well as to the successes and failures of previous strategies. Borrowing a concept from Asdal (2015a), the biological entities that the documents work upon may resist the modification efforts enacted on them. The lynx may follow its own values (Ibid). Settling nature politically is thus always a relative activity, even though it has very concrete physical manifestations. To use an often-used sentence in science and technology studies (STS): It could have been different. Furthermore, it could still be different in the future.

Defining the issue in this way has a long-standing history in Norway. However, in contrast to the eradication strategy, which was the Norwegian policy stance on carnivores up until the latter part of the twentieth century, the current system is built on the premise of socialization and inclusion in society, at least within the population target. Defining the carnivore conflict as a political issue is a way of including the carnivores into society. It ascribes the animals social rights, in a way, by legally protecting a viable population. However, these rights come with

certain conditions, which will be elaborated on shortly, as the terms viability may be considered a relative term in relation to other societal interests. Again, as the 2004 settlement states, continued conflict may undermine the national protection of large carnivores (Innst. S. nr. 174 (2003-2004)). This highlights the facts that the carnivore conflict and the political nature of nature is very much framed as a social issue. Decreasing the conflict level, as such, necessarily involves the simultaneous modification of society and carnivores. The strategies for the management system, presented by the settlements, subsequently follow this twofold approach to reaching the twofold target.

The lynx, and the other large carnivores may have been introduced and legally protected within the bureaucratic machinery in Norway, but the manner and by the means which they are treated may alter in the future. Evaluations of the system of geographical differentiation is set to take place within five years of the 2011 settlement, i.e. in 2016 at the latest. Furthermore, the settlements presented here does in very concrete ways shape the issue of the carnivore conflict to be treated within the system of geographical differentiation. The development of the different settlements, legal decisions and declarations, does in a dynamic way shape and reshape the issue within the increasingly detailed management system, according to the successes and failures of the modification efforts enacted on nature and its inhabiting actors.

# 3 Performing the System

## 3.1 Developing the management system: geographical differentiation

When speaking of the carnivore settlements, one primarily speaks of a political compromise on the issue of creating a management system that takes into consideration the interrelated societal interests that the carnivore conflict touch upon. As mentioned, the thesis has as its empirical evidence, several bureaucratic documents documenting political settlements on carnivores, and indeed of nature. However, treating these documents as more than documentation of a process, adding a perspective that allow us to see what the processes actually creates, in framing and modifying an issue in a certain way, and how this may translate the issue entirely in very concrete and physical ways, may emphasize the extra-textual reality of the settlements. In this section, the thesis treats the settlements in just this way. Looking at the documents as relevant actors in settling nature according to the process of framing and treatment of the issue in the documents. Asdal (2015b) uses the term *modification work* in order to describe processes of transforming an issue according to its documental treatments. As such, the proposed and passed system of geographical differentiation, presented in Parliament's treatment of the 2004 carnivore settlement (St.meld. nr. 15 (2003-2004), Innst. S. nr. 174 (2003-2004)), define the issue in very concrete terms, as an issue that were to be treated within the frames of a geographical division of the country into specific regions, or zones, to decrease the conflict. In this way, outfield is divided into a physical reality that affects several other actors.

The carnivore settlements represents passed governmental proposition on the government of carnivores through Parliament. As mentioned, Stokland (2014) describes how this grew into a political issue during the early years of the conservation of carnivores in Norway, as the conflicts surrounding the animals were too great to simply consider it a biological issue of viability. As previously mentioned, there have been several political settlements over strategies for carnivore management. However, the 2004 settlement stands out as a cornerstone in the modern management of carnivores in Norway, as it is here the system of geographical differentiation, based on regional zone management, as well as the *twofold target* and the population targets for each of the carnivore species, is presented. Settlements reflect first and foremost that something has been proposed, debated, and that the compromise based on

democratic principles has been passed through Parliament. Nothing different here. When speaking of the 2004 settlement in documents, the two documents in question are a white paper (St.meld. nr. 15 (2003-2004)) and a proposal from the Parliament energy and environment committee (Innst. S nr. 174 2003-2004)). The white paper presents the Ministry of Climate- and the Environment's suggestion to the new system of carnivore government, based on the government's initiative to reevaluate the then current system. The white paper also refers to a committee proposal from 2001 (Innst. S nr. 110 (2000-2001) and states the when treating the document, Parliament asked the government to present a new white paper by the end of 2003 at the latest. The white paper was passed through Parliament the very same day it was presented, and the propositions it contains make up the ground for the committee's proposal. It is based on a multitude of scientific reports on the development of a new system.

Innst. S. nr. 174 (2003-2004) is the Parliament energy and environmental committee's treatment of the issue of carnivores in Norwegian nature (Innstilling fra energy- og miljøkomiteen om rovvilt i norsk natur). It contains a summary of the government's suggestions to, and the committee's treatment of, strategies for carnivore management. Apart from the passed propositions, most notably the establishment of the system of geographical differentiation and the population targets for the different carnivore species, the document contains the protocol of the committee's treatment, including the different political arguments on the matter. This is interesting, as it in detailed form describes the argumentation which make up the end result, relative to specific interests, i.e. the valuation process.

In Innst. S. nr. 174 (2003-2004) the government proposition acknowledges the changes in carnivore management, both nationally and internationally, from carnivore eradication to carnivore conservation, and states that in light of the carnivores' extensive area use, conservation will have to happen in the multi-use landscapes that covers most of Norway (p. 2). The term *multi-use landscape* (flerbrukslandskap) refers among other things to outfield, defined as shared priority for carnivores and other interests, including grazing animals in the 2004 and 2011 settlements, i.e. the twofold target. Defining it in this way immediately imprints a set of values upon Norwegian natural landscapes. Primarily, it suggests what is a central part of the carnivore conflict, namely that much of Norwegian nature functions as a production site of some sort. Introducing the lynx, and other large carnivores, to these multi-use areas, means dividing the same space on an increased number of actors. In this way, it emphasizes both the challenging situation that has to be dealt with, as well as justifies that the division of this

landscape into zones cannot avoid causing, at least some, conflict. Furthermore, it defines a natural reality.

This reality is of central importance to the carnivore conflict. As mentioned initially in this section, the documents are central actors in settling nature in very concrete ways. By defining much of nature as a multi-use landscape, Parliament creates a sociopolitical reality which the inhabitant of these areas have to relate to, when passing the propositions of a system of geographical differentiation. Using such open phrases, as multi-use landscapes, or outfield for that matter, there is no ownership implied, i.e. no one party is prioritized. In much the same way, the wording used in this thesis – i.e. outfield – attributes to this definition. The Norwegian word "utmark" could be translated in several ways to English. For instance, both "uncultivated land" or "pasture" could be used. However, these terms may be said to indicate a form of separation or ownership over nature, which is not fruitful for treating this issue. A farmer may for instance be more inclined toward using the term *pasture*, as it literary means an area for grazing. A social anthropologist may be content with using the term *uncultivated land*. This is not entirely incorrect either. However, creating a division between what is cultivated and what is not is not precise enough to describe how the strategies presented shape, and in many ways cultivate these areas. Furthermore, using one of these terms would be to go against the argument of this thesis, namely that in passing the proposed definition of outfield, as an area of shared priority, this becomes the physical reality of nature when imposed. In this way, the connection between the material and the semiotic, as described by Asdal (2015b) is clear.

Furthermore, the open semiotic definitions of the areas which are to be constructed, i.e. the zones or regions, include several other actors. The zones that are to be constructed are shared, although conflicting interest are to be kept apart as much as possible, the system of zone division include both carnivores and other actors. In this way, the shared reality of the political valuation process become the shared reality of the physical. As such, society is settled in concrete ways.

In presenting the propositions for the system of geographical differentiation, the government presents the conflict, and its subsequent recommended measures for treating it, in a historical light. The Ministry (now the Ministry of Climate and Environment), it is stated, refers to the fact that since the early 1980s, it has been widely recognized that it is necessary with a certain prioritization of the use of area for carnivores and other interests respectively, outfield grazing production especially, if the conflict level is to be reduced (Innst. S. nr. 174 (2003-2004)).

Referring to the development of geographically differentiated management, this featured in draft to national plan (utkast til landsplan) in 1987 under suggestion of "security areas" for large carnivores, and in white paper number 27 (1991-1992) on the management of bear, wolverine, wolf and lynx as "core areas" for large carnivores (Ibid). Further, the idea of a geographically differentiated management was developed through the 1997 carnivore declaration (rovviltmeldingen), referring to Parliament's treatment of Innst. S. nr. 301 (1996-1997) (Ibid). In the 1997 treatment, the contours of the current system is visible, as both shared priority in outfield (twofold target) and the differentiated management system is presented.

It is stated that the establishment of the lynx is deemed undesirable in areas where it is not established already, and in areas with high densities of grazing livestock and reindeers (Innst. S. nr. 301 (1996-1997)). Therefore, permission was given to hunt openly without quota restrictions in these areas (Ibid). According to Odden et al. (2014), given lack of clear population targets and high taxation in the form of hunting, the 1997 approach to geographical differentiation led to a drastic decrease in lynx population from 1997-2003 of 35 percent across the country. The Ministry, it is stated in the 1997 carnivore declaration, wished to develop a closer cooperation over determining the quotas across county lines (Innst. S. 301 (1996-1997)). The development of the eight tribunals (rovviltnemdene) was decided in the Parliament's treatment of white paper number 15 (2003-2004) and Innst. S. nr. 174 (2003-2004), as was the number of family groups which would be the accepted number of lynx in Norwegian nature, 65 (Odden et al. 2014). Furthermore, each tribunal gained responsibility for maintaining the accepted viable number of carnivores within their zone and manage funds for conflict decreasing measures (Innst. S. nr. 174 (2003-2004)).

Presenting the issue, and the proposed measure – i.e. the system – in a historical context, is in this way to create a sense of control and familiarity with the situation, as well as to promote the obvious solution with historic hindsight. It has been clear for a long time, it is stated, that a system of the type now being introduced has been a necessity. In this way, the carnivore issue is not just a current issue, it is a past issue we have experience from, and the future of the issue is within our control because of the lessons learnt from the past. From this very short introduction of the governmental proposition, the issue is both defined as an issue that has to be treated within very concrete frames, as well as being defined as an issue that is not out of control. On the contrary, it may seem that it is only a matter of time before the conflict will decrease. In this way, the issue of the carnivore conflict gained specific frames, or conditions,

for where and how it was to be treated. The grounds from which to establish a societal collective, of co-existence between carnivores and other actors are mapped out in the settlements. Defining the twofold target for carnivore management, for instance, resulted in a transformation of the government of nature in Norway, and as such, the physical reality of outfield for both carnivores, grazing production and other societal interests.

In this way, the active part of the value construction process becomes clear: maintaining a viable population of carnivores is perceived as a societal interest, due to several factors. However, in reducing conflict with other societal interests, the populations are not to exceed or decrease below the target. Furthermore, if the conflict is to be reduced to a minimum the population has to be kept away from potential conflicting actors. The development of the number 65, as the accepted viable population target, is thus valued as the lowest number for securing survival relative to the highest level accepted in terms of preventing conflict. During the relative short history of carnivore conservation in Norway, the issue has been transformed many times, from a very broad question of conservation, to increasingly concrete frames of "to what degree" and "by what means". For each carnivore settlement, white paper or declaration, the issue has become more specific.

The current division of the country into eight regions highlights the very concrete way in which nature is made up by the settlements. Each tribunal has to create a local plan for how to maintain the lynx population within the centrally decided population target within the region, as well as issue measures for decreasing conflict with grazing industry. This includes dividing the region into zones prioritized for either carnivore or grazing industry, and issuing measures for upholding the zone division. As decided in the 2004 settlement, each tribunal is yearly issued a sum of money for taking precautionary- and conflict reducing measures, which they have to prioritize themselves (Innst. S. nr. 174 (2003-2004): resolution number 338). This local government of funds and measures are also a way of locating the issue. As acknowledged in the settlement, there are conflicting conceptions between affected actors locally and scientific estimates of the situation centrally (Ibid). In drawing up the lines for zone management on a local level, the settlements translates the national issue into a local one. As previously mentioned, there remains a difference in conception concerning the view of carnivores in Norwegian outfield, an issue the strategies presented are trying to address. In placing the issue locally, leaving the government of the regions up to the tribunals within the frames of the national targets, the settlements settles a natural reality that the local tribunals have to handle.

In this way, the system presented in the settlements become realty for local actors, human and non-human. This may in itself function conflict reducing, in creating incentives for taking measures locally, as well as somewhat forcing through a common conception of the situation. However, primarily it creates frames, or conditions, for which the carnivore conflict can be handled within. How this is done in practice, i.e. how nature is constructed according to the settlements remains to be explored.

During the development of the system of regional zone management, the frames of the issue has, as mentioned, become increasingly detailed. As stated in the 2004 settlement, it has during the relative short period of carnivore conservation in Norway, been recognized that separating carnivores from livestock is a necessary precondition for co-existence. How and in what way to develop the system has however taken some time. Noticeably, during this period of political co-existence (1981-2015), there has been a number of developments within environmental studies that has resulted in alterations to both the understanding and the government of nature. As mentioned, the Bern Convention, which Norway ratified in 1986, is substantial for the national commitment for the preservation of large carnivores. More recently, the previously mentioned Biodiversity Act of 2009 has become a central pillar in the legal framework of nature. Furthermore, the ecosystem services approach to environmental government is both largely imprinted in the existing management system and the subject of pending investigations (see NOU 2013: 10 Naturens goder – om verdier av økosystemtjenester/The goods of nature – about the values of ecosystem services). Substantially, they all have to do with understanding the value of specie conservation. The latter approaches, the ecosystem services approach and the Biodiversity Act, focus on the value of the species for ecosystems, and the ecosystem services for the maintenance of environmental functions. Perhaps as a result of the bottleneck in environmental research from the latter part of the twentieth century, conservation of the lynx, as well as the other large carnivores is taken out of its isolated context and placed within the larger context of environmental protection. This is important in two respects: Firstly, this is important for understanding the value creation of the lynx as a societal interest, i.e. from eradication to conservation. Secondly, it has concrete effects on how the lynx is managed within the zone system.

As stated in the introduction to the 2011 settlement, Norwegian carnivore management is to happen within the frame of the decisions made in the Biodiversity Act, and Parliaments treatment of this, the Bern Convention and the twofold target of the carnivore settlement of

2004, and the continued treatment of this (Dokument 8:163 S (2010-2011)). The Biodiversity Act functions as a legal framework for the management of Norwegian natural resources, and thus the individual zones in the system. In treating the construction of zone management, this framework has to be acknowledged. In relation to carnivore management, the act treats subjects such as protection, hunting measures, compensation and production methods, as well as highlighting that biodiversity is to be managed as to not create too much strain on the ecosystems. Interestingly, the 2011 settlement – which refers to the Parliaments treatment of the carnivore conflict – refers to the Parliaments treatment of the decisions made in the Biodiversity Act, i.e. to its own treatment. This not only highlights the relativity of interpretations in the settlements and the active nature of value creation, it suggests that the issue is never really settled, but open to future modifications. Furthermore, in constructing the management system, it is relevant to include the relevant element that help make it up. This may shed additional light on the value creation of lynx in Norwegian nature.

## 3.2 Performing zones: modifying the movement of lynx

In trying to enact the values constructed by the settlements, the zones have to be performed in a way, to function as separating the geographical areas they treat. Asdal (2015a) writes about how timing the growth of cod is a central part in how values are enacted on it in fish farming. In the same way, timing, or controlling the movement of lynx, is a vital way for uphold the system of geographical differentiation, and as such, enact the values presented in the settlements. This is enacted primarily through hunting measures, in not allowing populations to settle in areas where it is deemed undesirable. Quota hunting is the primary measure for controlling the movement of lynx on a large scale. However, as highlighted by Asdal (2015a), there is no guarantee for their success. The lynx may resist the modification efforts enacted on it. It may follow its own values (Ibid).

The timing of movement and of population growth is perceived as a central issue in limiting the carnivore conflict. Odden et al. (2014) (and Innst. S. nr. 174 (2003-2004)) presents data from the national surveillance program on large carnivores in suggesting that the occurrence of meetings between lynx and livestock happens randomly, given grazing season and the presence of carnivores in the area. Limiting these random occurrences is perceived as the most effective measure.

The settlements, by their very term, indicate a shaping of the issue that could have taken many forms. In particular, the political nature of the "settling" of "the issue", as an indication of a compromise between different interested parties indicate this fact. As mentioned previously, this highlights the broad nature of the term viability. Viability may refer to something that is sustainable, which persists because of its own connection/adaption to its environment. In this way, creating a viable lynx population must include an adaption or modification of the animal to society, as well as the other way around. This highlights the collective modification process initiated by the settlements. However, the settlements may be viewed as settling the way nature functions in certain areas, which turns our attention to the shared reality between the documents and the objects they document (Asdal 2015b).

Creating the conditions for co-existence for lynx and other societal interests is defined as based on the dividing outfield into a number of zones, where different areas are prioritized for lynx and livestock. This remain the baseline for the strategies presented in the settlements. Significantly, this highlight the active part of the valuation process of both lynx, livestock, and most noticeably, outfield: as the viability of both interests are dependent on conflict reduction, nature is divided into zones for separation. Separation becomes a value enacted upon nature through the introduction of zones. However, how is this done in practice? Furthermore, what kind of natural reality does this create?

The 2004 settlement divided the country into eight regions. In most cases, with the exception of the counties Oppland (Region 3), Hedmark (Region 5) and Nordland (Region 7), the different regions include several counties, and representatives from the affected counties share representation in the government of the individual tribunals (Inns. S. nr. 174 (203-2004)). Drawing up the lines for each region enacts in very distinct ways values upon outfield. The same does marking different territories within each region as either prioritized for carnivores or grazing production. It modifies the accepted movement of several species. However, in order to create an accepted system of separation, several means have to be applied. Otherwise, there is nothing to make the borders function.

The maps over zones and prioritized areas may be seen as central means for limiting lynx/livestock interaction. They enact values that modify the conditions for both lynx and grazing production. However, both the lynx and the grazing industry have to some degree resisted these modification efforts. Asdal (2015a) says that this is a common challenge in trying

to enacting values upon biological entities; there is no guarantee that the modification effort will succeed.

Hunting has been a primary measure for enforcing the system of geographical differentiation. In the settlements, quota hunting is presented as the primary measure for limiting the spread of lynx. The main function of this measure is to thin out the population in areas where the densities of lynx is too high, as well as to disallow the establishment of populations in areas where the lynx is deemed undesirable. Section 17 of the Biodiversity Act states: If the population number of wolverine, lynx and bear over time has been clearly above the population target, the King (i.e. the government) is to give access to the owner, or one acting on the behalf of the owner, to eliminate (avlive) wolverine, lynx and bear when this must be considered required in order to remove an immediate and significant threat for damage on livestock, farmed reindeer and pigs (Naturmangfoldloven 2009). If the population of wolverine, lynx and bear over time has been clearly below the population target, or extraordinary population related conditions dictates it, the King (i.e. the government) is to repeal the access to eliminate (Ibid). In practice, issuing these measures are treated by the individual tribunals when the population number is above the population target for that region, in accordance with the management system decided in the settlements. The section may be viewed as the principle law for carnivore management.

However, the section also opens for interpretation. When using the phrase "immediate and significant threat for damage", this is a relative description. A significant point that appears in the committee's treatment of the population targets, which highlights the relativity of the politically decided viability limit for the carnivore populations, is the term threat. This concerns the concern of too high pressures of carnivores, a point emphasized by representatives of two of the parties in the committee, according to Innst. S. nr. 174 (2003-2004). A point that is the cause for disagreement over the population targets, as the two party's committee representatives consider the numbers too high, and that a lower number would be sufficient for maintaining viable populations, as well as improve conflict reduction. Furthermore, the settlement states that it is the individual tribunal's responsibility to initiate conflict reducing measures, hereunder hunting, as well as establish quotas for hunting when the population is above the target (Ibid). It also states that in cases where the quota is not taken out, this should be added on to next year's quota, or in cases of license hunting, SNO (the state's nature supervision) should assist in taking out remaining quota (Ibid). This creates, in many ways, the threat of carnivores within the regions where populations are above the population target. Threat, in this way, is immediate

and significant if the population is above target. As such, in limiting the extent to which the lynx is allowed to spread, i.e. to control or settle its movements within the zone management system, is relative to controlling the population number. In addition to establishing the threat of carnivores as relative to the density of the population, using hunting as the primary measure against conflict, this indicates a lack of clear alternative measures. A point that will be treated later.

The 2011 settlement states in relation to lynx, that an effective measure for regulating the population is through quota hunting, and that this also should remain the main measure in the future (Dokument 8:163 S (2010-2011): point 2.2.9). The lynx is the only large carnivore in Norway that is regulated through quota hunting, which refers to ordinary hunting on a certain number of individuals within a wild species, and with pursuant to the Biodiversity Act (Rovviltportalen 2015a). Each region that has reached its population target of lynx, may open for quota hunting in hunting season (between 1st of February and the 31st of March). In addition, certain areas (Carnivore Region 1/parts of western-Norway) where it is deemed undesirable for lynx to establish are open for quota-free hunting. The number of individuals within the quota is based on the average population number within a region over the last three years, and calculations are made in relation to how many female lynx can be taken out, considering the plausibility of reaching the population target the following year. Furthermore, quota-hunting focuses on areas not prioritized for lynx breeding.

In this way, the movement of the lynx is managed on a large scale in relation to the borders of the system. However, as mentioned, in many cases the lynx has resisted these attempts to control its movement.

## 3.3 Modifying work: creating individuals

Emile Durkheim suggested that crime was a phenomenon that would always persist, as society would always depend on setting norms that some of its inhabitant would fall outside, in order to reassure social norms among the remaining inhabitants. In much the same way, it may be said, the settlements creates individual troublemakers within the lynx population. In the 2011 settlement it is stated under point 2.2.6, that measures are to be issued, including hunting, against individuals with abnormal/socialized behavior, to prevent damages or to ensure health- and safety considerations (Dokument 8:163 S (2010-2011)). Though this is presented as a

measure for limiting the conflict, it in many ways create the individual in question. For what does the title abnormal/socialized indicate? This is not defined in the settlement. However, presented in its vague wordiness, the title indicate an individual that is a threat to health and safety. The health and safety of who? Grazing animals is protected against attacks by the Wild Act (Viltloven 1981), stating that damaging individuals can be taken out as a result of direct attacks upon livestock and farmed reindeer. Furthermore, the following point – point 2.2.7 – states that the management of carnivores should be performed in such a way as to not deny outfield grazing, siting the Animal Welfare Act (Dyrevelferdsloven), in grazing prioritized areas (Dokument 8:163 S (2010-2011)). It may not be put in such direct wording, but the abnormal/socialized individuals of the lynx population may be considered an individual who do not follow the boundaries presented by the system of geographical differentiation. This is backed up by Odden et al. (2014), stating that a troublesome individual could simply mean an individual outside of its lynx zone. This indicates a substantial modification by the settlements on the objects they treat.

Defining a carnivore, for example, as abnormal due to aggression or predation on livestock, may be said to create certain limits that the animal previously did not have. Abnormality may as such be considered a modern management phenomenon. Looking back to historical records on governmental stance on the carnivore issue, they were all considered damaging, and thus killable (for a review of the eradication policy, see Richardsen 2014). Richardsen (2014) attributes this to a different view on nature in general, one where humans considered themselves in "lordship" over nature, using it primarily for their own immediate interests. In this respect, each individual may be considered a troublesome individual. This stands in sharp contrast to the values enacted upon the lynx in the settlements, where rather than simply excluding its existence all together, the animal is brought into society by means of socializing - or modifying - it to the societal structure. However, a part of the previous perspective on carnivores still lingers in the term *troublesome individuals*. Only in this context, it means an ungovernable, out of control individual.

Taking out such individuals is a way for the state to regain control over nature. In this context, stating what is normal and what is not, is a way to establish control, to dictate what will be accepted and what will be exterminated. In this way, the policy documents takes the lynx out of its behavioral pattern and places it within a sociopolitical frame. Following Asdal's (2015b) argument, it is obvious that the documents are not separate from its external reality, but modifies

it in very concrete ways. In this case, it not only modifies the reality of the lynx, but also portrays an image of safety and control for the potentially affected parties. In determining what is normal, i.e. what is to be accepted, the documents also imprint a sense of normality upon the local actors, assuring them of the intention of the system.

One might think of the set of rules, presented for each zone, as a way of socializing the lynx, i.e. bringing it into the social sphere, and in many ways, this would be a correct assessment. However, in many ways it is also a modification to the local inhabitants in affected communities, as well as to decision makers both locally and centrally, giving them a set of rules for which to handle their "new" neighbors. It seems inconceivable that a predator such as the lynx would alter its behavior on a specie level due to the taking out of individuals who have eaten an above normal amount of sheep, moved a few kilometers in the wrong direction, or attacked a hunting dog. Yet in reality, this is the rules it lives by in Norway today. As such, the rules may function more as exceptions for its protection, to be upheld by human actors. Significantly, if the system of geographical differentiation is to function as separating, it demands alterations to production means by the grazing industry. In this way, the modifications by the documents may be considered a co-modification process (Asdal 2015a) of both lynx and livestock, a process that is two-sided in its adaption of one to the other.

Efforts to enact values on the biological life of the lynx in Norwegian wildlife is thus largely a socialization effort in two respects. *Firstly*, in making the animal find its place within the politically defined frames, i.e. within the frames of the system of geographical separation. Failing to do so may result in the loss of life for the individual, and may, as the 2004 settlement suggests, result in undermining the political protection on a specie level. The policy documents, as well as the maps over the prioritized zone division, function in this way as what might be called *technologies of government*, to use a term from Foucault (1978), in enacting specific behavioral values upon the lynx; movement and predation. In addition, these are meant to secure the foundations for conserving the species within a viable population. This underlines the political nature of nature preservation, in that the technologies of government tries to adapt biological life to democratic principles; the settlements assumes that opinions may alter in the future if the lynx is not socialized within a certain level, making possible the definition of a viable population to alter as well. In this way, the shared political reality between human and non-human actors, what Latour (2004) calls a *collective*, becomes apparent.

*Secondly*, this is a twofold approach, a co-modification, as the technologies of government also targets alterations to social conceptions of biological value. The values of a viable lynx population is enacted on society through different means, which will be elaborated on shortly. Opposition toward the preservation of lynx and other carnivores has been strong within both the grazing industry and other local actors affected by the carnivore conflict. This may be attributed to several factors; among them, the resistance of the lynx to several modification efforts and the subsequent conflict level between grazing industry and the animal. However, this has also been a factor in the industry's resistance toward modifying production means. The grazing industry tends to view the outfield as a cultural production site, of which carnivores are interfering (Figari and Skogen 2011). Furthermore, the industry tends to view the carnivores as the responsibility of the state, given state protection (Andersen et al. 2003). In this respect, two central perceptions/conceptions have to be altered in order for the state to capitalize on the existence of lynx in Norwegian outfield within the system of geographical differentiation, i.e. to modify production means toward a conflict reduction approach: that of the cultural landscape, and that of the responsibility for conflict reduction. There are many strategies presented in the documents focusing on this modification, of creating a "common conception" as it is termed in the 2004 settlement, between science, politics and local actors. One of the central strategies for reaching this common conception is the development, use, and inclusion of local actors in surveillance technology (Innst. S. nr. 174 (2003-2004)).

# 4 Modifying Society

## 4.1 Modifying social conceptions

Creating a "common conception" of the situation, between scientific evaluations, management and local experiences, is important for decreasing the conflict (Innst. S. nr. 174 (2010-2011)). Disagreement between these parties concerning population estimates, it is recognized, is a source of conflict (Ibid). The level of conflict in relation to management of the species (carnivores) is high, which often makes taxation of the populations necessary (Ibid). However, how to create this common conception? The parliament committee, in treating the 2004 settlement, suggests that high quality surveillance and increased local cooperation is the best way of reducing the conflict level (Ibid).

Theodore Porter (1992) writes on how the use of numbers in accounting practices have been a central part of the objectivity claim of the sciences. Accounting for biological entities and their effects by translating them into numbers is in Porter's (1992) words an effective way of making them conceivable for the public. In the case of the lynx, where viability largely is a political question, this becomes highly important. Numbers are technologies that work at a distance (Ibid). However, in order for the numbers to gain performativity, enacting the values of governmental policy on society, i.e. altering the public conceptions of outfield management in local communities affected by the carnivore conflict, there needs to be a trust in (the objectivity of) these numbers (Porter 1992). This is a central part of the challenge.

There is a continuing conflict over the trust in the population estimates presented by Rovdata (heading the national surveillance program), where local experiences tend to be that the real number of carnivores is much higher than the scientific estimates. Including the public in population surveillance and data collection has been a central part of the strategy in this sense. Surveillance technology, through increasingly based on electronic tracing, includes manual observations, as well as DNA collection, in the analysis of population estimates. The lynx population estimate is based on the observation of tracks during winter, and based on the number of individual tracks and distance criteria's based on average movement of the animals (from data collected by the national surveillance program) the population number is calculated. Including both public actors and organizations in data collection, such as local hunting- and fishing organizations, has been a central part of the surveillance technology.

Surveillance of family groups of lynx is based on local cooperation, largely on reported observations of tracks, picture- and eyewitness observations of several lynx together reported to SNO (the State's Nature Supervision) (Odden et al. 2014). The distance criteria's gives an objective approach to classifying the number of family groups based on average maximal movement distances in radio monitored female lynx in Scandinavia (Ibid).

Previously, local reporting of tracks, and tracks crossing so-called crossing-lines (kryssningslinjer), made up the core of the surveillance program. Tracks were reported in to central authorities and examined by SNO for confirmation on their legitimacy. Stokland (2014) writes how this system developed in wolf management was the start of Norwegian carnivore surveillance. Several factors may be said to have triggered the conflict in numbers between affected communities and scientific estimates. According to Stokland (2014), the biologists in charge of mapping the wolf population were few and depended largely on reported observations, for instance in newspapers, before local contacts in hunting and fishing organizations were employed to monitor local observations. These then had to be investigated to declare their legitimacy. In order to verify observations several criteria were developed, where only the most plausible observations were counted (Ibid). This may be the source of the conflict in numbers, as the methods for counting was both underdeveloped and lacking precision, and that the observations were often rejected as false due to not meeting the strict criteria. The center of the conflict over population estimates is still based on the conception of the population being higher in carnivore-affected communities than in scientific estimates. One reason for this has been reported observations of the same animal, or the tracks of the same animal, several times. This may give the impression that there are more carnivores in an area than it actually is.

The political strategy for this has been to invest increased funds into surveillance technology, in order to attain the most precise numbers, as is highlighted in the settlements. Subsequently, investments in management technologies for surveillance of carnivores have increased significantly over the last few years, with a reported increase of 17 million kroner from 2005 to 2011 (Miljøverndepartementet 2012: p. 11). An increase in budget of 6.9 million in 2011, totaling 23.1 million kroner, awarded to Rovdata, heading the national surveillance program (Ibid). As presented by Odden et al. (2014), the Scandlynx program, studying the Scandinavian lynx population, has gained significant data on the movement and predation of Norwegian lynx. Reports, stretching from 1996 to 2013, indicate a use of area that surpasses the understanding

of the animal at the time of the introduction of the system of geographical differentiation. Talking to John Odden at NINA, he explains that on several occasions, the reported track observations from experienced local observers have suggested that as much as several family groups would inhabit an area, while electronic GPS surveillance equipment has shown that it has only been one individual moving over a large area. Therefore, decreasing the conflict in numbers may be viewed as a twofold issue: firstly, the methods and technologies for gathering data on the numbers and behavior of the lynx must be developed to a satisfactory level. Secondly, the results must be accepted by the affected parties in order for them to gain objectivity, i.e. function as the accepted reality.

## 4.2 Modification work: applying technology; means for valuation

In creating the premise for co-existence, no measure has become so significant for the strategies than the development and application of surveillance technology. In fact, it is stated in treating the 2004 settlement, that developing technology is seen as a principle measure against conflict, both against the social conflict in perception and in creating a common conception of the situation, and in creating measures against inter-animal conflict, i.e. enforcing the system of geographical differentiation (Innst. S. nr. 174 (2003-2004)). Furthermore, there is an acknowledged lack of knowledge about effective ways to prevent carnivore attacks, which is a main reason for the unaltered demands for receiving monetary compensation. More on this later.

In this way, technology plays a significant role, both in taking the lynx into account, evaluating its expansion, predation and subsequent effects, and in strengthening the borders of the system of separation. This is why it must be considered a primary mean for valuating the lynx, as well as a mean for settling nature according to the settlements.

Asdal (2015b) writes about how an issue can be transformed through its framing and the modification that goes into creating bureaucratic documents. In many ways, the focus on technology that has gone in to the settled strategies has indeed transformed the carnivore issue in Norway. Though Norway has been at the forefront in the use of surveillance technology for some time, and there is hardly and country in the world that relatively uses more resources than Norway in the surveillance of carnivores, according to Odden et al. (2014), electronic tracing

of lynx is only some twenty years old, and the current national surveillance program was just established in year 2000. In such a perspective, the development of scientific data and subsequent evaluations based on this electronic research was needed in order to produce specific alterations to the current system of geographical differentiation. This is visible in the continued focus on increased research and investments in surveillance technology in conflict reduction, as well as on pending investigations (Ibid). However, science and technology applied on carnivores have historically had a prominent position in the management of carnivores, as biologists were the first to develop both the surveillance program and initial evaluation of viable populations (Stokland 2014). More currently, in the introduction to the 2011 settlement it is stated that all management of carnivores are to be based on scientific and experience based knowledge (Dokument 8:163 S (2010-2011)).

Considering the system of geographical differentiation, the size of the zones are essentially based on knowledge of the movement of carnivores. In order for it to function as separating, the zones have to be big enough to contain the animals during a year. This means that the system has to be adapted to the knowledge created about the movement of the carnivores they are to contain, as well as to not let the populations develop in areas they are not already developed. In such a way, the lynx becomes a central actor in creating the conditions for the political settlement of nature based on scientific evaluations of its movement.

In the beginning this knowledge was based on manual surveillance of tracks crossing so-called crossing lines (kryssningslinjer), where local observations made by local hunting and fishing organizations, as well as other local actors, was the cornerstone of the surveillance technology (Odden et al. 2014). Still, a large part of the surveillance technology is made up of local observations reported in to central authorities (SNO). However, the development in the distance criteria that is used to calculate the area use of individual lynx and family groups have since 1996 been based on electronic tracing (Ibid). Odden et al. (2014) states that the only available method for tracking the movement and eating habits of lynx is by using different types of radio- or GPS necklaces. Subsequently, this has in later years resulted in the re-evaluation of several of the elements of the management system, including the strategies for decreasing conflict. As will be discussed in the next section, criteria for compensation, which has been a central part of the strategy for both decreasing social conflict among affected actors, as well as for creating incentives for altering production methods and initiating conflict reducing measures, has been a central area of research for the Scandinavian lynx research program Scandlynx (Ibid). Pending

the results of this research, emphasized in both of the two latest settlement, the effect of measures taken based on the study of lynx movement and predation is to be evaluated as potential new criteria for compensation, using surveillance technology. Furthermore, the application of more than 200 cameras, surveilling areas commonly inhabited by lynx has been a later development, which in addition to study the lynx' behavior functions as valid observations in the estimate of population numbers. Moreover, results of the GPS surveillance of lynx in certain areas have shown previously unknown results about the area use of the animal, with movement patterns being specific to the geography of the terrain they inhabit (Ibid). Some of these, according to Odden et al. (2014), challenge the system of geographical differentiation in functioning damage reducing. A point that can prove significant in the evaluation of the system set to take place next year.

Significantly, the application of technology, emphasized in the settlements as central damage reducing means, has transformed the issue in several ways. Due to both increased investments and increased knowledge based on electronic surveillance, the role of surveillance technology has increased in significance. This seems to have been the intention all along, looking at the previous three settlements, as mentioned all siting pending scientific investigations and further technological developments as preconditions for alterations of the system.

Interestingly, this implies an alteration to the framing of the issue, i.e. in where the issue is treated, and who is treating it. Firstly, though the settlements, as discussed, are primarily political treatments of scientific evaluations, due to the large degree of conflict surrounding the carnivores, there is in the settlements themselves a tending development toward framing the issue a scientific issue, pending further investigations. As such, on could say that the political may have only been a benchwarmer for the role of science in settling nature according to a political system. As previously showed, the role of science, in that case biology, was substituted with a political framing due to conflict level. However, in later years, it would seem that this exchange is reversed. This would indicate, in the first place, the necessity of creating a bureaucratic system of management, based on geographical differentiation, and secondly, that this system has come a long way in being settled.

Furthermore, Asdal (2015b) sites Marres (2005) in discussing how an issue, in the STS tradition – a contested and politicized question, "which comes with the capacity to gather a public of interested actors around itself" (Asdal 2015b: p. 75) – may turn into a non-issue in the way of experts asserting ownership of it. In many ways, the strategies presented by the settlements

have been about locating the issue at the affected localities, involving local actors in surveillance work and basing management strategies on local expertise, in addition to establishing local government of zones and measures within the national targets. However, largely, the system builds on scientific evaluations and recommendations. In fact, both the 2004 and 2011 settlements mentioned states that all managements decisions should build on scientific data provided by the national surveillance program (Rovdata). This position, given to science in the settlements, has significant implications for what the common conception, that the 2004 settlement states as of central importance in creating in order to decrease the social part of the conflict, has come to mean, namely the scientific conception. This highlights very clearly that the policy strategies targets out an active alteration of social conceptions among its modification efforts to create premises for co-existence. Stokland (2014) argued in a similar fashion when debating the issue of whether one could justifiably term the current period as the "age of biodiversity". In creating a sustainable system of conservation of carnivores, the conception of the value of biodiversity has to gain foothold outside of academic circles (Ibid). In this way, the valuation of carnivores is closely linked with the concept of biodiversity and its value for environmental issues. However, the vital point here is that these values has to be actively created and presented before the affected public in objective ways, and that strategies for creating both values and objectivity in carnivore management rests largely upon technological artefacts. This is why management technology must be considered a central mean for valuing the lynx.

## 4.3 Compensation: incentives and conceptions

The social conflict in numbers is especially clear in the conflict surrounding compensation for losses of livestock to carnivores. New criteria's for compensation has been brought up as a possibility in all of the three presented settlements. Until last year, the legal guidelines for compensation of losses of livestock to carnivores were based on a discretionary system where losses above normal losses (based on statistics from the 1970s and 1980s, as these times had low populations of carnivores) was compensated, paid out as incentives for taking measures against future losses (Odden et al. 2014, Innst. S. nr. 174 (2010-2011)). However, this has proven ineffective in terms of actually creating incentives. The 2004 settlement mention lack of knowledge about effective measures as a challenge to the incentive based system (Ibid). Furthermore, the difficulty in documenting losses of missing animals in outfield as reasons for

awaiting pending investigations into new legislation (Ibid). Likewise, the 2011 settlement recognizes that a committee is treating the issue, and awaits the result of this investigation (Dokument 8:163 S (2010-2011)). However, it is clear, as both the settlements and the lack of major alterations to production means in grazing production highlights, that there is a need for changes to the compensational model forwarded throughout the history of the modern carnivore management in Norway.

Odden et al. (2014) addresses the issue of overestimation of losses to carnivores. More than 90% of compensations are based on discretionary evaluations made by the county governor (Fylkesmannen), and there are partly large differences when it comes to the different regions in granting applications for compensation (Ibid). The study presented by Odden et al. (2014) evaluates the reported amount of losses in relation to the scientifically calculated maximum losses of sheep to lynx, using "high killing rate" (upper 95% confidence interval of average killing rate) multiplied with number of lynx in a region (p. 52-53). Between 1996 and 2013, the number of losses compensated above calculated maximum losses of sheep to carnivores were: between 1.5 to 5.0 in region 2, between 1.5 to 8.3 in region 3, and between 1.3 and 9.0 in region 8 (Ibid: p. 54). In region 5 however, the average compensated losses in the period where a bit lower than the calculated maximum losses (Ibid). This region has, as previously mentioned, made significant alterations to the grazing production, especially in geographic divisions of sheep grazing (Ibid).

New compensational legislation was passed last year (2014), with significant modifications to the grounds for compensation. The law (Forskrift om rovvilterstatning for rovvilt 2014) is based on a larger degree of risk assessment, and bases the grounds for compensation on the plausibility of carnivore attacks in an area based on data from the national surveillance program, in addition to observed and examined dead production animals. Intending to move away from the previous discretionary system, the new model arguably follows a more forced approach, both in terms of creating incentives for modifications to production means, and for altering public conceptions on the management of outfield. It enacts the values of scientifically constructed numbers upon the grazing production actors. The numbers - 65 family groups of lynx, divided into the individual zones – becomes reality in that the statistical effects of their existence becomes the grounds for compensation. This realty is thus removed from opinion. This marks a shift in the influence over questions concerning carnivore viability, from a political to a scientific definition. Stokland (2014) describes, in writing about the history of wolf

management in Norway, how the question of viability altered from a biological to a political issue, following the high degree of political conflict the carnivores were involved in. Subsequently, the last three decades must be viewed as an assessment period, awaiting investigations into the scientific assessments of the relationship between different societal interests. Management of the large carnivores in the current approach is as mentioned a relatively new field, and the early period in the history of viable lynx management has largely been marked by a trial and error approach until recent years. Subsequently, in lynx management, it is only after a longer period of scientific research in the field that statistical evidence had a long enough time to be tried and tested to a point where it can function as grounds for a legal framework. The settlements have all highlighted the importance of this research and investments in technological innovations in the field.

The new legal grounds for compensation are, in limiting discretionary payouts based on the judgement of local authorities, dividing the responsibility between state and effected parties in the grazing industry. Previous approaches to compensation has been marked by a state centered responsibility for the strains the legally protected carnivores have put on the different actors in the industry. Representatives from the agricultural/grazing industry sector have supported this view, and arguably, the continued division of responsibility in this way has forwarded the conception the new legal grounds are trying to get rid of; namely, that outfield is mainly a production site. The new legislation still pays out risk-determined compensation at the state's responsibility. However, the degree to which the actors in the grazing industry can capitalize on the situation (in monetary terms) is largely up to the individual actor's ability to prevent further damage. In this way, the incentives are forced upon the grazing production, as well as the scientific view of the situation. Stokland (2014) argues that the views presented in much of the post 1960s-1970s conservational literature, concerning the value of biodiversity – which arguably contributed greatly to the policy alterations on carnivores in Norway – has largely been an academic conception. Securing conservation of species in the future thus demands that the public also accepts these conceptions (Ibid). The new compensational legislation may be said to function as a strategy for altering conceptions in just such a way, by enacting the scientific evaluations upon the grazing production through the means of legal alterations.

Point number 4, Conditions for compensation, states under letter a. that livestock owners are demanded to have taken reasonable proactive measures for avoiding damages caused by carnivores, relative to the values at stake and the present risk involved, in order to qualify for

economic compensation (Ibid). Furthermore, the new legislation also stresses increased responsibility of livestock owners in reporting actual findings of dead animals for inspection by the department for Nature Supervision (Statens Naturoppsyn (SNO)) in the Norwegian Environmental Agency (MD), where previous legislation qualified losses above normal losses for compensation by the state (Ibid: point 6.). Where this is impossible to prove, grounds for compensation are based on plausibility of loss above normal in relation to previous statistical records of both loss to carnivores and carnivore density based on statistics of predation (Ibid: point 7.), alternatively plausibility based on other circumstantial factors (Ibid: point 8.). As such, the new legislation involves the responsibility of the owners as a central part of measures for limiting the conflict level between the animals.

One way of looking at this would suggest that the approach toward new grounds for compensation function as a strategy for eliminating the conflict in numbers completely, in that disagreements over the population numbers loses its significance in place of the actual effects of the populations on the grazing industry. However, this would prove ineffective as the population number is directly linked to the plausibility of losses. What it does in practice is try to attack the conflict level by targeting the actual inter-animal conflicts.

Preliminary reactions to the new responsibility on the account of the livestock owners does little to suggest an immediate decrease in social conflict, between the grazing industry and the state. In fact, the conflict seems only to have escalated. Representatives from several agricultural organizations, such as the Norwegian Farmers Association (Norsk Bondelag), Norwegian Sheep and Goat (Norsk Sau og Geit), and Norwegian Farmers- and Smallholdings Association (Norsk Bonde- og Småbrukerlag), united in fighting the alterations to compensational legislation during its treatment period (Thorgrimsen 2014). Senior Advisor of the Norwegian Farmers Association, Finn Erlend Ødegård, said that the new legislation proposed by the Norwegian Environmental Agency (MD) is provocative to the grazing industry, given that the alterations makes it increasingly difficult to achieve compensation for loss of animals (Ibid). In a recently published article in NRK, the leader of the association Lars Petter Bartnes, in agreement with the other two organizations, goes on to call for a re-evaluation of the carnivore settlement of 2011 (Heggdal 2015). Bartnes claims that in large parts of the country maintenance of the grazing industry has proven impossible due to too high pressures of carnivore (Ibid). He argues that the settlement has a negative effect on Norwegian food production, and that a subsequent re-evaluation of the settlement needs a stronger representation

of agricultural competence. In this respect, he suggests that the Norwegian Institute for Nature Research (NINA) be relieved of its responsibility as leading scientific expertise for evaluating policy on carnivores, due to its close ties to environmental government authorities and carnivore management. A role, Bartnes argues, should be shared with an increased presence of agricultural expertise (Ibid).

Separating environmental and agricultural interests, as in Bartnes' rhetoric, says a lot about how this conflict is perceived from the point of view of the grazing production actors. It suggests that the issue is divided into two mutually excluding directions, each with its own agenda. For the grazing industry, the prioritization of the environmental protection of carnivores is a challenge to the industry, Norwegian cultural landscapes and food production, as well as the individual producers. It is obvious here, that the values enacted by the policy documents on outfield management, that of the twofold target and shared prioritization, is meeting resistance in the grazing industry. The stated view of the majority of the committee in the settlement, that outfield grazing has many positive qualities and, likewise, that carnivores in Norwegian nature also will have positive qualities (Innst. S. nr. 174 (2003-2004)), is not shared by the representatives for the grazing industry. In fact, in treating the issues of the 2004 settlement, the representatives from Senterpartiet (with majority of its support in agricultural sectors) were one of the two parties not in favor of the twofold priority of outfield (Ibid). Stating, in agreement with Fremskrittspartiet that this solution would only lead to increased conflict (Ibid: p. 7). In stating that the 2011 settlement should be reevaluated, and relieving NINA of its responsibilities of evaluating carnivore policy in place of more agricultural competence, Bartnes is expressing one of the challenges to overcome in order for the twofold approach to be obtained. Namely that the conception of the conflict of interests, which is perceived as mutually excluding by the agricultural sector, must be modified to become mutually beneficial.

# 5 Concluding Chapter

## 5.1 Evaluating the system: turning the carnivore issue into a production issue

It is stated under point 2.1.9 in the 2011 settlement that settlement parties are in agreement that the regional management and the regional population targets are to be evaluated within the next five years (Dokument 8:163 S (2010-2011)). As previously mentioned, both the field of lynx research in Norway and the system of geographical differentiation is still relatively young. As has been mentioned several times throughout this thesis, several aspects of the management system has been planned for further modification, only lacking the scientific data to make these changes. For instance, the previously treated system of compensation is one. Related to this, effective measures, which can be taken by the production in order to prevent damages caused by carnivores has been another. As previously mentioned, effective as of 2014, there is now a demand for a minimum of measures initiated by the production unit in order to receive compensation for losses to carnivores. Furthermore, the system as a whole, its effectiveness and potential improvements also have to be evaluated.

In this section, the majority of the empirical evidence will be based on the research report presented by Odden et al. (2014), on the predation of lynx on sheep. The report, which presents results from the Scandinavian lynx research program Scandlynx, has had several goals for its research. Among them to gain knowledge of the lynx' predation and movement, evaluate the accuracy of the compensational system (i.e. evaluate losses in relation to reported losses, and the possibilities of improving the system based on the plausibility of lynx attacks in a region), evaluate effective means for conflict reduction and co-existence, and evaluate the scientific methods and accuracy. The report, presenting surveillance data stretching from 1996 to 2013, suggests that there is much room for improvement in the future of Norwegian lynx management.

Odden et al. (2014) lists three preconditions for geographical differentiation/zone management to function as damage reducing. Firstly, that the zones are large enough to contain the lynx during a year. Secondly, that effective preventive measures (against losses of livestock to carnivores) are taken in these zones (Ibid). Thirdly, that the carnivores are removed effectively from the grazing prioritized areas (Ibid). In some regions, the current lynx zones violates the

preconditions for zone management to function as a damage reducing measure according to Odden et al. (2014). Put differently, the lynx is resisting the modification efforts enacted on it, presented in the policy documents.

For instance, presented in Odden et al.'s (2014) study, in Carnivore Region 8 (Troms and Finnmark), 24 grown lynx were kept under surveillance between 2007 and 2013. In the region, the female lynx used on average 800 square kilometers, while the male lynx on average used 1900 square kilometers (area used during a year, calculated using 95% of the observed positions excluding areas consisting of water) (Ibid). All of the 24 monitored lynx used areas that expanded beyond the current management zone (Ibid). Odden et al. (2014) goes on to state that it is obvious that it is biologically impossible to maintain the mandated number of lynx cubs within such a small zone (Ibid). The current lynx zone thereby violates the preconditions for it to function as damage preventive (Ibid). However, in regions 2,3,4 and 5 in southern Norway, the lynx demands significantly less area, and the carnivore zones seems to be large enough to inhabit the mandated number of yearly cubs (Ibid).

Evaluations such as these put the finger on the problem of modifying the biology of the lynx to society, namely that the modifications have to be adapted to the behavior of the lynx. This is why one must consider the modification process a co-modification (Asdal 2015a): in creating preconditions for co-existence, modifying the lynx to fit society demands society to be modified according to the behavior of the animal. This is important.

Of course, the system of geographical differentiation was based on the knowledge that the carnivores, the lynx included, inhabited large areas. This is also stated in the 2004 settlement, where it is acknowledged that in many cases the zones will have to cross county lines, as the carnivores move across large areas (Innst. S. nr. 174 (2003-2004)). However, how large has been an area of dispute, as there was a difference in opinion concerning the number, and thus sizes, of the zones when treating the settlement. The government proposed a number of six zones, in place of the eight that was passed through Parliament. Moreover, the knowledge about the exceptionally large habitats of the northern lynx was first gained in 2008 (Odden et al. 2008). This is an example of how the role of politics has been decisive in the absence of scientific data when settling nature. However, it is also an example of how the lynx function as an actor in the political valuation of the best way for reducing conflict.

The role of the lynx, as a social actor that has to be taken into consideration when organizing nature according to strategies for co-existence, has become ever more apparent in later years. It marks the effects of the strategies for including the animal into society. Furthermore, it marks a translation of the issue, from purely being a carnivore issue to increasing becoming an industry issue. The research presented by the Odden et al. (2014) and the Scandlynx project suggest that in the northern region, the size of the zone needs to be reconsidered. However, ever more apparent, is the focus on the modifications of the grazing production methods to the presence of the lynx.

As mentioned, the second precondition listed by Odden et al. (2014) for zone management to function damage reducing, is that effective preventive measures are initiated. This is a central issue in the settlements as well, and one where it is possible to detect the development throughout the three settlements presented. Already in the 1997 settlement, preventive measures on the side of grazing production is proposed as a necessity for limiting damages (Innst. S. nr. 301 (196-1997)). However, it is stated, more knowledge is needed in order to know what measures are effective (Ibid). The same may be said of the 2004 settlement, where it is stated that the arrangement of total compensation for losses of livestock to carnivores are meant to function as incentives for initiating measures (Innst. S. nr. 174 (2003-2004)). Furthermore, the settlement states that prepaid funds, paid out to effected parties in advance based on the plausibility of carnivore attacks, also should function as incentives for taking measures (Ibid). However, what measures to take was difficult to promote, as it was decided to initiate more research into the most effective measures.

Subsequently, few measures have been initiated at all. Odden et al. (2014) states in the study, stretching from 1996 to 2013, that with the exception of Carnivore Region 5, there is no evidence indicating that there have been executed any large structural alterations to grazing sheep production (p. 46). Not so much due to the resistance of the lynx to presented measures, but because of the grazing production's resistance to alter production means.

For instance, Odden et al. (2014) suggests, that if altering production means to include either increased frequent supervision or the use of fences, the predation of the lynx would have to alter if the current conflict level/number of incidents would persist. Furthermore, studies have shown that the lynx does not move above the tree line in the southern part of the country, and that moving grazing areas further up in the terrain could have a positive effect (Ibid). Especially considering another result of the study, which shows that lynx does not chose its movement and

habitats due to the density of grazing animals. The venison is the most important prey animal for the lynx in the southern part of the country, and given the choice, it will almost always chose venison (Ibid). However, given random occurrences, it is well documented the lynx will eat sheep. Hence the conflict. This is why it is preferable to develop grazing areas in proximity to areas with large concentrations of venison, as the lynx will likely favor it as prey over livestock. Although not too close, or in the same areas, as large venison concentration will mean larger chances of lynx encounters (Ibid).

As more and more of the lynx' habits are becoming apparent for society, it is becoming more and more evident that the modifications needed to create the premise for co-existence are relative to modifications of the societal structure to the behavior of the lynx. This, it may be said, is the result of the knowledge gained over the last years, the pending investigations as the settlements portray it. In this way, the connection between the documents and the resulting modifications to the management system is obvious. Translating the issue from a political to a technological issue, or a scientific issue, increasingly focusing on the development and resulting data gained from its surveillance, the issue has in later years increasingly become a non-issue. Using a term from innovation literature, this may be considered the input/output of the surveillance technological investments. As mentioned in a previous section, this translation of the issue has been in development throughout the three mentioned settlements. It is only now we are seeing the resulting modifications of the technological knowledge production.

Significantly, turning the issue technological is creating new frames for who is to treat it, or who has a say in it. Asdal (2015b) described how an issue, in the sense of it being a contested, politicized, and including a public of interested actors, can if fact become a non-issue.

> Turning something into an issue might also imply that it becomes, in certain important ways, a *non*-issue; a question to be handled exclusively by certain issue-experts, excluding persons or groups with an interest. (Asdal 2015b: p. 75)

Though this is not fully the case yet within the lynx management, and perhaps never fully will be, there has been a development toward turning the issue back over to the sciences. A result of this has been that the arguments presented by the grazing industry representatives, in its reluctance to alter production means and methods, as well as its criticism toward changing the compensational system, is increasingly being ignored in place of scientific evaluations of the best way of decreasing conflict and strengthening the system of geographical differentiation. In this way, the carnivore issue is increasingly becoming a non-issue. A significant result of this

has been the development of knowledge about alternative production measures, as previously discussed in the compensation section.

The knowledge created about the lynx, its behavior and movement, thus increasingly turns the focus of necessary modification over to the production side of the conflict. Evaluations of the effects of the already applied measures indicate this.

The final precondition listed by Odden et al. (2014), effectively removing carnivores from grazing prioritized areas, and the subsequent evaluation of this, indicates that quota hunting is the only way to keep the conflict level stable. It is suggested that with the methods currently used by the grazing production, i.e. letting the animals graze unsupervised in outfield, the only factor determining the level of conflict is the size of the lynx population (Ibid). Quota hunting is the only regulatory measure on a large scale. However, as the population target is to be kept stable, both nationally and locally, this means that the conflict level also will remain stable as long as no additional conflict reducing measures are initiated. Decreasing the conflict as much as possible, as defined in the twofold target, is thus dependent on modifications of production means.

Furthermore, taking out so-called troublesome individuals has, as mentioned, been another part of lynx regulation. However, Odden et al. (2014) suggests that the effect of this on lynx is limited, at least long term in areas with coherent populations of lynx: Research suggests that most lynx in a population, given availability, are capable of killing sheep (Odden et al. 2014). The total effect of removing one lynx on next season's losses of sheep (in Nord-Trøndelag, Hedmark and Telemark) were 13 for male and 2 for female lynx, and the effect was visible only in grazing season (Ibid). In this way, the lynx resists both the efforts of enacting control over individual animals, as well as the very title troublesome. In areas with coherent populations of lynx, the effect of shooting lynx on the loss of sheep is short-term, as the areas quickly are taken over by other lynx that also hunts sheep (Odden et al. 2014: p. 42). However, in areas without coherent lynx population, or in the outskirts of areas with coherent populations, the damage limitation effect will be significantly bigger and more long-term (Ibid). This would suggest two things: firstly, that the effect of geographical zone management has the potential separating grazing animals and carnivores. Secondly, that this depends on alteration of the grazing industry in areas prioritized for carnivores, either by modifying the production means or by moving production to other areas.

The statistics presented indicate the same thing as previously stated: that the level of conflict is relative to the number of lynx in the population, unless additional measures are taken.

## 5.2 Conclusion: what has been settled?

The second question posed in the introduction asked what kind of society the strategies presented in the settlements create. Although most, if not all of the previous sections in this thesis, have in some way answered this question, it has perhaps not been addressed directly. In concluding this thesis, looking upon what kind of society has been constructed through the active valuation processes known as the carnivore settlements, and their subsequent enactment, might be a fitting perspective. As such, asking the question "what has been settled?" marks the concluding leg of this exploration.

It many quite concrete ways, the systemic nature currently valued as the best way of obtaining co-existence between lynx and other societal interests, i.e. the system of geographical differentiation, has become a settled reality for all the actors currently inhabiting Norwegian outfield. Subsequently, much in the physical reality of nature has altered, or been modified, according to the values created in the settlements since their construction.

Primarily, the introduction, or re-introduction, of the lynx into society has been a substantial effect of the strategies, and looking at the pre-2004 management system in retrospect, its role within society has become ever more defined over the last few years, and as such, ever more integrated. Due in large part to the knowledge attained of its behavior, movement and predation, it has grown in size as a social and political actor, and in such a way become a central actor in defining the social reality of Norwegian society. In this way, technology has increasingly been a substantial ingredient in creating the modern societal collective between lynx and its fellow inhabitants. Håkon Stokland (2014) wrote about the use of surveillance technology on wolves, deeming it a necessity for modern society, both in terms of co-existence and for the conservation of biodiversity in general. On the same note, he brought up the paradox that the carnivores are perceived less favorable of both those in favor and those against the conservation of carnivores in Norway, siting Figari and Skogen (2011). This remains a topic too big to be explored further here, except to say that within the current system of management, surveillance technology remains an absolute necessity for the premise of co-existence. Especially if additional measures

are not imposed to prevent further conflict between the animal and other conflicting interests. It functions as the lynx' introduction into the social sphere, and is the only real way of learning how to adapt to it, as well as the other way around. As such, the physical reality of the Norwegian outfield has become an increasingly technological reality, and given the continuing trend of increased investment in surveillance technology, will continue to be so.

Several approaches to modifying biological entities within the field of science and technology studies have brought up the question of whether it is justifiable to speak of a new species when the modification efforts have made substantial alterations to the entities they treat. Asdal (2015a) discussed the creation of a new species of cod, as the constructed product of farmed cod showed clear differences from its wild relative. Likewise, Jacobsen (2014) discussed the creation of a modern chicken in the broiler production, obviously different in nature from its free-range relative. With significant similarities to the lynx, Stokland (2014) discussed whether the Norwegian wolf within the current management system could be considered a new animal. Have the modification efforts enacted on the lynx created a new species of the animal? This is a topic in need of further investigation, as this thesis has not touched upon the biological alterations of the lynx except to point to the specific biological conditions it is placed under, i.e. a politically defined limit of viability and the confinement of its movement to certain areas. As such, it could be said that the current lynx is living a different life from its ancestors, simply by the conditions that it lives under. Furthermore, its increasingly socio-technical existence could be said to be markedly different as well. However, it is primarily its newfound role as a defining social actor in the political sense, which makes the lynx a modern version of itself. In this way, the enactments of the values created by the settlements have proven effective. As such, the social structure containing the lynx have settled in very concrete ways.

The construction of the lynx, as a specie which inhabits certain areas, and which extend to a certain number of individuals, has in many ways been a varied sort of success. Though the borders of the system of geographical differentiation has at times been difficult to uphold, and the population number for lynx has varied between substantial highs and critical lows, the knowledge attained from resulting successes and failures of the current system and additional research, the premise for obtaining the values constructed through the settlements remains positive. This depends, as treated, as much on the modifications of society as the construction of the lynx. Apart from the legal and political reality, as well as the mapped up borders, governing outfield, the stability of the system remains an area for improvement. As such, the

system may in some ways not be said to be settled completely. Although it has come a long way in some ten years, and remain a young structure still.

Creating a viable social structure involving the lynx has throughout this thesis been an issue concerning decreasing the conflict level between the two interests of a viable lynx population and a viable grazing production in Norwegian outfield, i.e. the twofold target. The conflict of interests persists in the continuing lynx/grazing animal encounters, with large societal costs, both in terms of monetary compensation and hostility. However, the social reality that the two interests are faced with is very much a settled one. There is no denying the physical reality of prioritized geographical differences, for instance, even though the borders on the maps are invisible to the animals themselves. As such, taking a page out of Foucault's (1978) book, although invisible, the governmental strategies are enacted on its subjects in very real terms. They function in very clear ways, even though the physical objects they treat are a long way away from Parliament. In this way, outfield is a changed reality mainly for the grazing industry. For the lynx, they were hunted before, and continue to be without much chance of reflection on the matter. However, the *governmentality* (Ibid) is enacted on the industry in several ways. In terms of shared geographical priority with carnivores, retained compensation without taking a minimum of measures, and increasing scientific documentation suggesting that alteration to production means is a necessity, the industry is faced with the choice of either modifying according to its carnivore inhabited reality they face or accept the losses. In such a way, there remains a question of what to do with the industry issue in terms of obtaining a viable outfield, according to the twofold target.

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