Representing nature

The concept of social representations in sociological studies of conflicts over wildlife and nature

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Summary

The core question of this dissertation is how conflicts between people about wildlife or nature are related to the representations they have of the natural environment. Negotiations over wolf conservation and the meaning of biodiversity are the prime cases. Conservation conflicts are often examined in light of socio-demographic segmentation or statistical variation in values and attitudes. However, previous research also points to contrasting meanings attributed to nature and antagonisms between forms of knowledge as important conflict dimensions. There is a need to clarify what these knowledge conflicts reside in and how they can be approached analytically.

To this end, the empirical studies contained in this dissertation take as their point of departure Moscovici's neo-Durkheimian theory of social representations. Based on qualitative analyses of focus group discussions and individual interviews, the empirical studies suggest that people's position in conservation conflicts are not always related to their representations of wildlife or nature in an intuitive way. As a case in point, one of the studies showed that negative attitudes to wolf conservation were *not* mirrored in a negative image of the animal itself. This implies, among other things, that local resistance to wolf conservation is not rooted in cultural images of the "Big Bad Wolf".

Even if the empirical investigations indicate that adversarial positions in conservation conflicts are not always accompanied by divergent representations of the subject of controversy, they do show that nature representations play other important roles in debates about nature governance. First, representations constitute powerful symbolic boundaries between groups with antagonistic views on the protection of species and landscapes. Second, they frame conservation conflicts by determining both the topics of discussion and the non-negotiable premises underlying negotiations. Identifying implicit presumptions about nature in conservation debates is important because they influence political priorities and delimit the scope of possible action. Third, social representations of nature are sometimes actively turned into rhetorical instruments for knowledge resistance, as when non-experts appropriate scientific conceptualizations of nature to increase the legitimacy of their own arguments.

The empirical studies demonstrate that research on social representations, usually associated with consensus formation, can also shed light on conflict mechanisms. Applied to the study of human–nature relations, they illustrate the impact of collective cognitive phenomena on human–

nature interactions. This confirms the relevancy of the theory of social representations to the study of knowledge conflicts in the area of nature and the environment. However, to strengthen the position of the Moscovici school within the sociology of knowledge, future studies of social representations need to better account for social structure and overcome the common sense–science gap inherent to this school.

Contents

1. Introduction

Improving our understanding of how humans relate to the natural environment has perhaps never been more urgent than it is today. The human–nature question lies at heart of growing global concerns for the rapid decline of nature, with increasing pressure on remaining natural areas and loss of biological diversity. Yet the fraction of sociology dealing with such questions remains peripheral. To the extent that there exists a sociology of nature, it typically focuses on social controversies surrounding the conservation of wildlife and biodiversity, such as the protection of threatened species or political and social conflicts over the right to use and control the natural environment (Pellow and Brehm, 2013). An example of such conflict, highly relevant to the Norwegian context, is the debate caused by the reappearance of wolves, which brings to the fore deep social cleavages between those who are against and those who are in favor of their conservation.

Wolf conflicts and negotiations over the meaning of biodiversity are topics of the empirical investigations in this dissertation. Sociological studies of wolf conflicts in Scandinavia illustrate how social struggles over nature are embedded in broader socioeconomic trends and patterns. According to this literature, oppositional attitudes to wolf conservation must be understood in light of the general decline in agrarian economies, and as an expression of class antagonisms and rural resistance in the face of conservationist beliefs and urban eco-centric values (Eriksson, 2017; Krange and Skogen, 2011; Sjölander-Lindqvist, 2011). Increasingly, views on wolf conservation are being linked to normative and political orientations and associated with attitudes of xenophobia, climate change contestation, anti-elitism, and lack of trust in public management institutions (Krange and Skogen, 2020).

These studies of human–wolf relations also point to antagonisms between forms of knowledge as a core characteristic of conservation conflicts (Skogen et al., 2017: Chapter 6; von Essen, 2017). For example, scholars have repeatedly pointed to the clash between expert and "lay" knowledge as an important conflict dimension. In Scandinavia and elsewhere, rural resistance to wolf recovery and protection has been interpreted by social scientists as an expression of local distrust of expert knowledge in matters of nature conservation (for an overview of this literature, see Hovardas, 2018b; Skogen et al., 2017).

It seems difficult, then, to address conservation conflicts in a sociologically meaningful way without including perspectives on the knowledge of, and the divergent meanings attributed to, nature. If sociology has a strong devotion to the study of social antagonisms, it also holds a long tradition of approaching knowledge as a cultural phenomenon. Apprehending shared ideas as a foundation for group identity, social patterns, and formal institutions is almost common sense to many sociologists dealing with culture in some way or other. A key concept in this regard is collective representations.

In "De quelques formes primitives de classification: Contribution a l'étude des représentations collectives" (1901), Émile Durkheim and Marcel Mauss argued that members of the same society tend to develop common mental categories for classification that mirror the social structure of that society. Durkheim later expanded on these ideas, identifying culture with ways of interpreting the world and "the sociological theory of knowledge" with the analysis of how ideas of "time, space, genus, cause and personality are constructed from social elements" (1965 [1912]: 22). To illustrate this, he turned to religion, which he described as a collective symbolic force. According to Durkheim, the essence of all religion – the object of worship or the sacred – is neither God nor the forces of nature, but society itself.

As the precursor and model of all systems of knowledge, "primitive" religion seemed to be organized around a number of basic categories. Their contents or meanings, however, varied among societies (Durkheim, 1912). As opposed to the basic categories themselves, which appeared to be similar across the societies Durkheim drew his examples from,[1] their socially contingent significations reflected organizing principles of families and groups of people, such as the distribution of clans in space. It was this shared content of basic categories that Durkheim labelled collective representations and which he identified as the specific subject matter of sociology (Pickering, 2000: 2). Durkheim contrasted collective representations with individual representations, assigning the latter to the domains of psychology and human physiology (Durkheim, 1898: 274–276). His evaluation of the state of affairs of the social sciences over a century ago – pointing to the need for an alternative to prevailing economic, psychological, or biological explanations of human behavior and perception (Durkheim, 1898; Durkheim and

[1] Durkheim was not clear about what he meant by "categories," and he never defined the term "collective representation" (Pickering, 2000; Schmaus, 2004). The distinction made between the two is based on my own interpretation of Durkeim's *Classifications primitives* (1912) and *Les formes élementaires* (1912).

Fauconnet, 1903) – echoes in curious ways the current absence of influential sociological perspectives on human–nature relations.

Representation is now a faded concept in sociology. It figures here and there, such as in Bourdieu's (1989) account of symbolic power, in Latour's (1993: 7) fierce rejection of the concept as depicting a collection of "minds-in-a-vat", or in cultural studies of representations as artifacts (see Calhoun, 1997). In any case, its meaning is often unclear or taken for granted, and its prominence is far from Durkheim's vision of collective representations as the essence of the sociological endeavor (Pickering, 2000: 2).

This dissertation is an attempt to breathe new life into the concept of representation and to examine its suitability for studies of human–nature relations. To better understand ongoing knowledge conflicts and the role of social meaning in today's political battles over burning Amazonian forests, the devastating effects of petroleum extraction, melting poles, or the destruction of habitats of one million species (Tollefson, 2019), there is a need for clarification of what we mean by "knowledge conflicts." What is the "stuff" this knowledge is made of, and in what do these conflicts reside? Are they mere reflections of colliding material interests and struggles for control over natural resources, or does the study of representations of nature add something to the equation? If it does, how are culturally shared ideas related to social conflict?

1.1 Research questions

This dissertation is theory driven, and its core topic is representations of nature. Though Durkheim introduced the concept of representation to sociology, he also left some crucial questions unanswered. How representations come into existence and how they change are among the most important ones. For representation to be a potent approach to current societal matters of nature and the environment, there is a need to concretize what they consist of and how they can be approached empirically. For the empirical investigations, I have therefore taken as my point of departure an analytically-oriented neo-Durkheimian approach known as Moscovici's theory of social representations (Moscovici, 1961).

When Serge Moscovici (1961: Chapter I) departed from the notion of collective representations and replaced it with that of *social* representations, it was in an effort to adapt this "lost concept" to the study of modern societies. His ambition was, first, to develop a framework that accounts

for a plurality of coexisting everyday, or "lay," knowledges. Second, he attempted to describe what social representations are and how they are socially produced.

The objective of the dissertation is to explore the relevance of Moscovici's framework for research on conservation conflicts. The overarching question that binds the included articles together is, What role do social representations of nature play in negotiations or conflicts over wildlife or nature?

This question generates other questions about the relationship between consensus and conflict, and between "lay" and scientific knowledge. Concerning the relationship between consensus and conflict, the social representation concept is usually employed to describe and study *shared* meanings: for example, of nature (e.g. Gervais, 1997; Guimelli, 1989). The question, then, is how it can be mobilized to better understand conflicts and negotiations over nature. In other words, exploring how useful Moscovici's framework is for understanding knowledge conflicts amounts, among other things, to asking how shared meaning is related to social dissent. The first sub-question guiding the empirical investigations is:

1) *Do social groups with different positions in conflicts or negotiations over the use or protection of nature also have different social representations of nature, and are the conflicts grounded in diverging social representations?*

With regard to the relationship between scientific and "lay" knowledge, the theory of social representations belongs to a longstanding tradition in the social sciences that associates meaning or social construction with everyday, non-expert knowledge (e.g. Berger and Luckmann, 1991 [1966]; de Certeau, 1984; Goffman, 1959; Willis, 1978). Even though Moscovici was preoccupied with how ordinary people make sense of *science*, he confined the study of social representations to the sphere of everyday life and identified its content with the *common sense* knowledge of "lay" people. In light of the prominent tension between experts and non-experts in current debates on the natural environment, this distinction between science and common sense has become problematic. The second sub-question addresses the need to include science in studies of social representations:

2) *Moscovici approached the relationship between science and social representations as a one-way influence from science to the common sense knowledge of everyday life. To make the theory of social representations relevant to the study of current conflicts over nature, the reverse relationship must also be addressed: How do social representations, or common sense knowledge, influence scientific constructions of nature?*

More than in any other area of societal conflict, expert knowledge about nature and the environment is subject to "denialism" or contestation from members of the public (Björnberg et al., 2017). Science contestation poses another challenge to the uncoupling of social representations, or common sense, from science. As a phenomenon, it calls instead for explorations of how the knowledge of experts and non-experts collide, coincide, and draw on each other in political and social arenas where the worlds of science and ordinary life are intertwined. The third sub-question raised in the empirical investigations is:

3) *How can science contestation be approached from a social representation perspective? In practice, how are social representations of nature put to use when members of the public question or challenge environmental science?*

Two of the articles (Article 2 and 4) use the Norwegian wolf conflict as a case study. As mentioned above, previous research has linked this controversy to broader socioeconomic patterns of change and antagonism. Another paper (Article 3) investigates the impact of the cultural and political context on the scientific construction of biodiversity. Discussing the potential of the theory of social representations for the sociological study of conservation conflicts is therefore difficult without broaching the relationship between representation and social structure.

As the quintessence of a *social* phenomenon, the notion of representation furthermore raises the question of how human and nonhuman phenomena are related. The mere idea of knowledge as socially constituted is arguably anthropocentric (Ross, 2017). Explaining social phenomena with other social phenomena was, after all, the path Durkheim (1992 [1884]: Chapter 5) set for sociology. This human exceptionalism – the idea that humans are exempt from natural constraints – tends to get in the way of sociological considerations of how changes in the environment influence human interactions and institutions (Dunlap and Catton, 1994). When the

topic of research is representation of some aspect of nature, questions such as how nature itself might interfere with the social construction of shared ideas impose themselves.

It is not my aim to solve the problem of human exceptionalism in sociology or that of the causal relationship between ideas and social structure. Yet any serious attempt at conducting human–nature research involves a consideration of the relationship between social meanings and the physical environment they relate to, just as the ambition of breathing new life into the concept of representation in sociology begs for a reflection on the impact of structure on shared perceptions. These questions are not specifically addressed in the articles, but they will be raised in a more general discussion about the relevancy of the theory of social representations to the study of knowledge conflicts.

1.2 Core analytical concepts

For the purpose of identifying social representations in a given context, Moscovici (1961) proposed specific analytical tools, most importantly *anchoring* and *objectivation*. Anchoring concerns how groups of people make sense of new or disturbing phenomena, such as a new disease, through already existing categories of knowledge. For example, a number of studies have illustrated how AIDS, when it first appeared, was anchored to plagues, death, and perverted behavior (see Joffe, 1996). Objectivation, on the other hand, describes the parallel process of attaching images or other nonverbal signs to ideas, such as the widespread visualization of the COVID-19 virus as a gray ball with red dots. The point is not to evaluate the accuracy of the objectivated representation but to investigate which parts of the physical world we use to make sense of a phenomenon.

Two other analytical concepts, introduced by later contributions to the field of social representations, play an important role in the included empirical articles. While the anchoring of a phenomenon is often implicit or pre-reflexive, the categories themselves sometimes become topics of negotiation or conflict. When the categories put forth to make sense of a phenomenon are brought to the surface of social attention, they have recurrently been defined as *themata* (see Marková, 2017b). A timely example of a themata drawn from the environmental realm is the controversy over climate change and whether it should be classified as human made or as a result of natural variation.

Anchoring, objectivation, and themata are all related to the process of knowledge formation. Another way of looking at a social representation is as a multi-layered structure: *The core–periphery approach* distinguishes between the representational core and its periphery (see Moliner and Abric, 2015). The idea is that social groups must share a core of common and implicit assumptions about objects and phenomena for communication to take place. Yet other, more peripheral ideas attached to the same object or phenomenon evoke uncertainty and negotiation. Analytically, it is thus possible to distinguish between the negotiable and the non-negotiable parts of a social representation. Transferred to the climate change example, this means that at least some assumptions about what climate change is must be shared among many individuals, even if the drivers of climate change or its mere existence are debated. If, for instance, it turned out that a large number of people share the core assumption that climate change *is* altering weather conditions, then this would be an interesting insight and an illustration of how non-negotiable parts of a social representation frame both negotiations and the scope of possible actions and measures.

Moscovici's concepts of anchoring and objectivation are concerned with how social representations come into being. Themata and the core–periphery approach adds to this understanding by providing ways of analyzing negotiation in and between groups in the ongoing formation of social knowledge about nature. Together, they constitute the tools for my analysis of the role representations might play in negotiations and conflicts over natural resources.

1.3 Empirical cases

Even if this dissertation is theoretical in spirit, the discussions are to a large extent grounded in empirical examples. Four articles are included: Three research projects provide the qualitative data for one article each. The different sets of data have been used to explore particular dimensions of social representations of nature. The chosen topics of the three empirical articles correspond in different ways to problems posed by the fourth article, which was written as a general introduction to the theory of social representations for the scholarly field of human–nature research. In the following overview of questions raised in the included articles, I therefore begin with the latter.

Article 1 argues that social representations theory helps fill a gap in the area of human–nature research, offering a framework for grasping the diversity of social meanings involved in nature conservation processes. Core concepts in the theory are introduced and illustrated through references to empirical studies in the specific field of nature. Findings from three studies are more extensively reported and serve as case studies for a more general discussion of the possible benefits of and challenges to the application of a social representation framework to the field of human–nature relations. One of the chosen examples is the study described in Article 2. The first challenge concerns the lack of attention devoted to how representations of nature are influenced by nature itself in Moscovici's framework. The second relates to the insufficient exploration of the mutual relationship between social conflict and representations in social representation research. Finally, the third challenge has to do with the relationship between science and common sense: Is common sense not also a part of scientific knowledge, and does the definition of everyday knowledge as a distinct knowledge system mean that science cannot be studied as social representation?

Article 2 asks which role representation plays in conservation conflicts, and whether such conflicts can be understood as a result of diverging representations. The case study is the public controversy over wolf protection in rural Norway. Is the conflict rooted in divergent representations of the animals? In other words, is resistance to wolf recovery reflected in negative perceptions of the animal itself? Of the articles included in this dissertation, this is the one closest to a conventional social representation analysis, with an emphasis on how wolves are characterized, labelled, and classified among wolf adversaries and proponents. The applied method is a qualitative analysis of focus groups with inhabitants living within or close to wolf habitats. The identification of core perceptions of what kind of animal the wolf is is used to shed light on what the conflict is and is not about. The core–periphery concept is applied to explore the coexistence of consensual and conflicting ideas among groups who differ in terms of expressed attitudes to wolves.

Article 3 asks how common sense comes into play in the construction of scientific knowledge. Hypothesizing that science too is framed by cultural assumptions about the physical and social world, the social representation concept is tentatively applied in a context usually associated with science studies. "Public controversy" and "local resistance" are thus replaced by terms such as

"uncertainty," "negotiation," and "closure," which are more familiar to this field. The context in question is the elaboration of a scientific model for measuring the state of Norwegian nature, and the object of representation is the concept of biodiversity. On the basis of qualitative interviews, scientists' representations of biodiversity are analyzed. The notion of anchoring is used to shed light on how biodiversity is negatively associated with phenomena such as human interference with nature and the appearance of new species. Negotiations between researchers on how biodiversity should be operationalized along a continuum between what is "untouched" and what is "human made" are discussed in light of the themata concept, which is addressed in this study context as a form of conceptual uncertainty.

Article 4 asks how science contestation can be approached from a social representation perspective. The concept of objectivation is deployed to explore a growing tendency among wolf opponents to appropriate the wolf experts' own scientific knowledge constructions and to turn them against science itself. While anchoring and themata are commonly used to investigate how groups of people label and classify phenomena, objectivation turns our attention to how they define and construe physical or visual testimonies of the same phenomena. This paper examines how scientifically constructed objectivations, in particular DNA and GPS collar technology, are deployed by wolf opponents to question experts' credibility and to confirm longstanding local rumors of secret wolf releases and the spread of wolf–dog hybrids in Norwegian fauna. It is argued that the switch of attention from symbolic classification to the materialization aspect of representation makes objectivation a useful concept for exploring and challenging the borders between expert and non-expert knowledge.

1.4 Structure of the dissertation

Chapter 2 is devoted to the notion of representation. Departing from the Durkheimian formulation of collective representations as the subject matter of sociology, I describe how representations in the so-called French school of sociology are typically approached as symbolic structures. I then reflect on some of the problems the notion of representation raises with regard to the relationship between the social world and the realm of nature. Finally, I review some answers to the problem of human exceptionalism in sociology, with a particular focus on social constructionism and actor–network theory (ANT).

The topic of Chapter 3 is the theory of social representations. Its theoretical foundation is traced back to Moscovici's (1961) study of the public image of psychoanalysis in which the Durkheimian roots of the theory are the most evident. Moscovici's framework is nonetheless characterized by its practical orientation, and its core analytical concepts are presented and illustrated through select examples from studies conducted by other social representation scholars.

Chapter 4 introduces the contexts and projects that formed the background for the studies presented in the articles. The methods deployed for recruiting informants and for the construction and analysis of qualitative data are discussed. The analyses and results of the studies are summarized in Chapter 5.

The first two sections of Chapter 6 examine the empirical findings in view of theory and research proper to the field. Together they answer the research questions about the role of shared perceptions in conflicts over wildlife or nature and the relationship between common sense and science. Theoretical shortcomings and areas in need of further exploration that should be taken into account in future research on social representations of nature are highlighted. In the last two sections of Chapter 6, the relevance of Moscovici's framework to the broader sociology of knowledge is discussed. The discussion is guided by questions regarding how representation relates to social structure and to nature.

2. Conceptual background

Although Moscovici situated his own work at the intersection of social psychology and sociology (1961: 4), the subsequent development and theorizing of his framework has primarily taken place within social psychology. To discuss the relevance of the concept of social representations to the study of social negotiation or conflict, the concept needs to be situated within the sociology of knowledge. Approaching representations as *symbolic structures*, Moscovici shares common ground with the French school of sociology. The first section of this chapter reviews how the notion of representation has been approached in this Durkheimian tradition. Against this backdrop, Sections 2.2 and 2.3 recapitulate how the problem of human exceptionalism in sociology has been linked to the Durkheimian definition of collective representations as the subject matter of the discipline, and how some have addressed this problem.

2.1 Representation as symbolic structure

The coinage of collective representations was a late but crucial step in Durkheim's justification of sociology as an independent discipline with a proper subject matter. He aspired to nothing less than to build the foundation for a new discipline devoted to the exploration of this concept, of its genesis and its relation to social change and the emergence of "modern" society (Durkheim, 1912: Introduction). Although a few of his closest students carried out some notable studies in which a representational approach was put into practice (e.g. Halbwachs, 1925, on working class consumption and collective memory; Mauss, 1950a [1924], on cultural exchange), Durkheim did not achieve what he had hoped for. Instead, elements of his pre-symbolic period were picked up some decades later and reinterpreted as a defense of functionalism among scholars such as Radcliff-Brown and his followers in Britain and Merton and Parsons in the USA. In another sociological tradition, Durkheim came to stand as a founder of quantitative positivism (for an overview of the variety of interpretations of Durkheim, see Alexander, 1988). In neither case did the notion of representation receive much attention.

In the French speaking world, on the other hand, there seems to be a stronger continuity and consistency in the use of the notion of representation, running from Durkheim to Mauss, Lévi-Strauss, Foucault, and Bourdieu, to mention a few (see Martins and Guerra, 2013). Even Latour

has devoted a great deal of attention to the concept, charging it with responsibility for the flaws of contemporary sociology (1999: 6–7). Despite their many differences, the authors above (except Latour) share an understanding of representation as the foundation of a symbolic order that stands in a dialectical relationship with the social order.

While Durkheim was primarily concerned with how members of groups are symbolically united by collective representations that normatively guide their thoughts and actions, Mauss paid more attention to the counterparts of social inclusion: exclusion and social differentiation. Asserting that all social phenomena – "a word, an instrument, an institution, even the best of science" (Mauss, 1930: 17) – are arbitrary and follow no other logic than the one that makes sense to the people who enact it, he also maintained that such collective practices and related representations create and sustain symbolic boundaries between social groups, between insiders and outsiders.

Mauss was preoccupied with the practicalities of everyday life and how representations and symbolic differences are projected onto objects and sustained by bodily techniques (Lévi-Strauss, 1950; Mauss, 1935). For instance, he pointed out how gestural habit made it difficult for the French to use an English handle-equipped spade, and vice versa for the English trying to work with the traditional French handle-less shovel (Mauss 1930: 18). Mauss was always careful, however, to link practices and habits to representation. In his famous account of *potlatch*, or the gift, it is the Maori notion of *hau* ("the spirit of the giver in the gift") that generates the collective behavior of giving–receiving–returning (Mauss 1950a [1924]). This basic social institution, Mauss argued, is reflected in other institutions of law, economy, religion, aesthetics, and morphology (1950a [1924]: 274).

After the Second World War, Claude Lévi-Strauss carried on the tradition of studying societies through the analysis of symbolic classifications, which, he added, are usually organized around binary oppositions (Lamont and Fournier, 1992: 3). As much as Lévi-Strauss was opposed to Durkheim's positivist approach to "collective consciousness" as something external to individuals, he adhered to the French school of sociology in its insistence on the symbolic nature of social life and the force the community exerts on individual thought and action (Lamont and Fournier, 1992).

Lévi-Strauss's ambition, however, was to put the social nature of humans back into the individual. He did so by locating the symbolic relationship between society and its members –

the representations – in the structure of the unconsciousness (Clarke, 1978). Inspired by Mauss's theory of gift exchange as the origin of the social contract, he saw in this symbolic institution of reciprocity a universal structural principle, one that not only regulates social relations and precedes other social institutions but that is embedded in every individual mind (Levi-Strauss 1950). To Lévi-Strauss, basic concepts such as class and opposition are given and belong to a "proper sociological structure" that constitutes the foundation of the social order (1950: xvi).

Compared to Durkheim and Mauss, Lévi-Strauss's view of representation was more cognitivist in that the collective symbolic classifications that simultaneously bind individuals together through institutions, and distinguish one social group from another, are grounded in unconscious mental structures. Although his French precursors also acknowledged that representations must have a mental component, and even advanced the need for a "collective psychology" (Durkheim, 1898; Mauss, 1950b [1924]), Lévi-Strauss pushed the significance of this mental aspect much further. The social structure, he insisted, is founded in the mind, and it is this structuring of the unconscious that provides meaning to social practices, relations, and institutions (Lévi-Strauss 1958). Furthermore, while Durkheim sometimes emphasized the supremacy of the social order over the collective consciousness and at other times treated representations as the cause of structure (Rossi, 1973: 23), Lévi-Strauss attempted to resolve the question of genesis. In identifying the realm of the human unconscious as the mediator between the social system and the conceptual system of representations, he provided a dialectical solution to the problem of the social origin of the categories.

With Pierre Bourdieu, this dynamic between the order of the social structure and the naming and categorization of phenomena became an even more central concern. According to Martins and Guerra, it is his paradigmatic preoccupation with the "Durkheimian logic of social differentiation" (2013: 187) that firmly places Bourdieu in the French sociological school, with its devotion to the investigation of notions such as symbolism, representation, and social totality. As Lévi-Strauss's assistant, Bourdieu initially followed the tradition of studying culturally distant autochthonous societies with the ambition of deducing general principles that govern social life. Indeed, it was against the ethnographical background of gift exchange amongst the Kabylians that he outlined the social logic of practice and habitus (Bourdieu, 1977; see also Chanial, 2010).

Bourdieu later transferred the ethnological insights he had gained from North Africa to the study of domination and social differentiation in France. According to his theory of capital and class distinction, social life consists on the one hand of objective relations between individuals and groups who compete for powers (or capitals) of an economic, cultural, social, and symbolic nature (Bourdieu 1986, 1989); the competition for each capital is comparable to a game with its own rules, stakes, and strategies (Bourdieu and Wacquant, 1992). On the other hand, the objective social reality of resource distribution is also an object of representation. In that sense, the social world is a construction and symbolic capital is the power to construct it; that is the game of the symbolic field.

Bourdieu's view of representations as both embedded in and as a force of influence on power relations between social groups is particularly well outlined in his essay on social space and symbolic power (Bourdieu 1989). In the article, he argues that social space is not a geographical space but a symbolic one. Although it overlaps with geographical space in terms of gentrification, the social space is in itself a set of representations of social relations. It is this set of representations that is at stake. This implies that conceptual categories can be influenced and are subject to change – and that there is an advantage in gaining control over them. To have control over representations is to be capable of perceiving how one's own position in the social space is a result of what others conceive as self-evident – and to be able to change this *common sense* (Bourdieu 1989: 19).

The production of common sense, then, is "the power to produce and impose the legitimate vision of the social world" (Bourdieu, 1989: 20). Consequently, people's "schemes of perception" contribute to the making of that world; to change them, one has to change "the vision of the world and the practical operations by which groups are produced and reproduced" (Bourdieu 1989: 23). Naming and classifying are the tools of symbolic power, but the creation of a social category – such as a class, a diploma, or an official title – can only be successful if it fits an objective state of affairs. The naming of a social class, for instance, must to some degree reflect an objective reality. On the other hand, a social class can only influence the historical chain of events if it is recognized as such. In other words, changes in social relations require changes in representations.

The differences between "representation" as understood in the French sociological tradition and what is perhaps more commonly referred to as "meaning" in Anglo-American symbolic interactionism (e.g. Blumer, 1969; Mead, 1934) are difficult to grasp (although both terms are used in both traditions). In the English speaking world, the differences are typically apprehended within the agent–structure dichotomy (Martins and Guerra, 2013); a recurrent objection against, for example, Durkheim and Bourdieu, is that there is not enough room for agency in a social world where structure determines thought and action (see Peters, 2013). Set aside the fact that the two traditions try to explain different things, with symbolic interactionists emphasizing how agents interact to create symbolic worlds, and the French "representationists" focusing on how symbolic structures determine interaction (Myles, 2010: Chapter 3): Such criticisms overlook important differences regarding what structure is and the role of representation. To the extent that the two schools of thought contrast, the contrast is perhaps better understood within the dualism of representation–structure than that of agent–structure.

Bourdieu is among the few who refer to the former dualism in his criticism of ethnomethodology and what he labelled the "interactionist error" (1996: 38–46; 1989). Contending that interactionists see structure as the outcome of interactions and as something that can only be grasped through the study of the interactions themselves, Bourdieu argues that situational social exchanges must also be apprehended as reflections of preexisting social patterns.

These patterns, Bourdieu (1989) maintains, are not always expressed in interactions and can therefore not be reduced to them. In his view, social interactions usually refer to an external structure, more durable in time, where the references made can be of an implicit or strategic nature. Either way, they refer to something objective. For instance, the utterance "he is not highbrow" makes little sense if we do not take more objective social stratifications into account. Symbolically, the utterance refers to social categories external to the immediate situation and has an implicit meaning, such as "he is not highbrow for a university professor" (Bourdieu1989: 16). What is signified is a structure of social groups and classes, and this structure is upheld by representations – representations that ultimately can be acted upon, either to maintain or to change them. Hence, while symbolic interactionists often apprehend structure as the outcome of the interaction between members negotiating subjective meanings, the French school of

sociology approach structure as the genesis of shared representations – which might or might not be an object of subjective recognition and hence negotiation (see Deutscher, 1984).

Furthermore, there are subtle yet important differences between the French school of sociology and Peter L. Berger and Thomas Luckman, who built on both Durkheim's theory of religion and Mead's symbolic interactionism in their treatise on the social construction of reality. In Berger and Luckmann's theory, people's representations (or "typeficatory schemes") of social reality are both identical with and the origin of that reality – reality being identified with social institutions (1991 [1966]: 70–78). Even though the French scholars also tend to deal with representations as the genesis of the social structures of law, economy, and politics, they also, and sometimes predominantly, treat them as the result of those very same structures. And it is this element of determinism, or "structuralist constructivism" (Bourdieu, 1989: 14), which seems difficult to accept for social scientists with the ambition of preserving a place for the self, reflexivity, and free will in the symbolic construction of social life (Asimaki and Koustourakis, 2014; Hałas, 2004; Myles, 2010: Chapter 3).

There are also contrasts between the French school and the so-called "strong program in cultural sociology" associated with Jeffrey Alexander (e.g. Alexander and Smith, 2010). Alexander's (2003: 24–25) conception of "cultural autonomy" entails a sharp analytical distinction between culture and society as well as a detachment of the civil sphere from the broader economic and institutional structures of society. In contrast, the French body of literature treats representations as omnipresent. To analytically distinguish between culture as representation and the "harder" structures of society makes little sense in this perspective, since it is within and through these very structures that representations are enacted, solidified, and remade.

Finally, there seems to be a particularly strong cognitive element in the French sociological approach to representation as compared to other sociological approaches to symbolic meaning. The cognitive dimension is taken to its extreme in Lévi-Strauss's structuralism, but neither Durkheim, Mauss, or Bourdieu had any hesitation in employing words like "mental structures," (Bourdieu, 1989: 18), "psychic phenomena" (Mauss and Fauconnet, 1901: 19), and "consciousness/unconsciousness" (Durkheim 1992 [1884]: 6–7); and they all actively engaged with the relationship between sociology and psychology (e.g. Bourdieu, 1999; Durkheim, 1898;

Mauss, 1950b [1924]). “Hooked on” to the individual’s mind, representations seem, in this tradition, to reinforce the weight of structure on the members of a society or a social group.

2.2 Representation and the problem of nature

Along with other variants of social constructionism, sociologists of knowledge dealing with representations have been accused of neglecting the natural world. In a broad sense, the objections raised have to do with the lack of sociological consideration of nonhuman natures. More specifically, they target the problematic relationship between ideas and reality, between the social and the material world, and between human and nonhuman natures in studies of representations.

One objection relates to idealism and the pitfall of ending up with a refusal of reality (Lemert 1997). Aiming at social constructionism generally, it addresses the danger of defining knowledge as cause and reality as the effect of human consciousness. At its most extreme, this leads to the “intriguing, but impractical, conclusion that things-in-themselves are not necessarily there in themselves” (Lemert, 1997: 353). It is not so much the epistemological aspect of such a conclusion that troubles Lemert as its political consequences, since “hunger and starvation are both *real* and *there* for all intents and purposes” (1997: 353). The same could be said about the danger of treating the realities of climate change and loss of nature as mere projections of the socially constructed categories of “climate” or “biodiversity.”

Another criticism concerns the exclusion of nonhuman phenomena in sociological analyses of the relationship between ideas and social structure (Pickering 2000). Specifically targeting the symbolic structural approach, the concern raised is that of self-referentiality and the enclosed circle created by the mutual constitution of representation and social order. By way of illustration, the representations in Bourdieu’s account of symbolic capital are of the social world alone. His description of the interrelationship between social stratification, habitus, and symbolic power leaves no room for a nonhuman world. Surely the ethnological accounts of Durkheim and his French followers, Bourdieu included, are rich in details about the symbolic significance of objects. Still, if representations are grounded in social structures and institutions, which is the genesis of those structures and institutions? If the sole origin of the structure is representation, the argument becomes circular. The difficulty, then, is to explain origin and change. In a system

"in which everything depends on everything else […] how is the system 'primed' or set in motion" (Pickering, 2000: 163)?

Indeed, the Durkheimian notion of collective representations stands out as detached from the nonhuman world. Already in the 1950s, Worsley (1956) noted how Durkheim's view on religious representations as a product of the morphological units of society impeded him from taking human–nature relationships into consideration. If he had done so, Worsley argues, he would have reached the conclusion that categories are formed, not only from socialization through collective rituals and activities, but also from common needs and interests among individuals sharing the same physical environment, as well as from experience with nature itself (1956: 61). Detaching social life from the nature of the natural sciences was probably a necessary step to take at the turn of the 19th century. In light of the current and obvious entangling of social and environmental problems, there is nevertheless a growing need for clarifying the status of nature in sociology. How should nature be accounted for in studies of social life?

Sociologists of knowledge have responded to the problem of human exceptionalism in different ways. Among the best known approaches to nonhuman phenomena are actor–network theory (ANT) and variants of constructionism. There are, of course, other important perspectives on the relationship between humans and nature, ideas and realities, such as critical realism (Carolan, 2005a, 2005b). My focus on ANT and social constructionism is motivated by their opposed viewpoints on the role of representations in human–nature interactions. While social constructionism relies per se on shared concepts as a foundation for social life, ANT rejects the signification of collective representations altogether. The anti-representational foundation of ANT is most explicitly articulated by its key proponent, Latour, to whom I will pay particular attention in the following discussion.

The social constructionist reply to the challenge of nature in sociology is twofold. First, nature from this perspective is, above all, an example of a social construction – an idea, a category, a representation – with important consequences for human relations (Hacking, 1999; Macnaghten and Urry, 1996). This makes the impact of representations on social life worth examining, even if this impact remains relative. Second, however, there are limits to the explanatory power of social facts, and environmental social constructionists typically call for an incorporation of asocial variables into models and theories of social life (e.g. Dunlap and Catton, 1994).

Ian Hacking is among those who have defended the study of asocial phenomena from a social constructionist perspective. His argument is ethical and philosophical. Hacking's (1999) ethical defense of social constructionism about nature is simple: There is authority in knowledge and categorization. If a social construction can be understood as a matter that is taken for granted, then talk of social construction contributes to the unmasking of power relations and social oppression (1999: 58).

Hacking's (1983) philosophical argument is as follows: From an anthropological perspective, the first human invention was representation, or the ability to compare, group, and liken things and people (Hacking 1983: 130–146). Only then was "reality" invented. Certainly, the facts of nature – the "inner constitution of things" (Hacking 1983: 136) – were there before humans appeared. However, concepts such as "reality" or "nature" take on different shapes depending on how we represent the inner constitution of things. The idea in physics that the world is made up of atoms is, for example, but one of several ways of conceptualizing reality (Hacking 1983: 141).

A number of environmental constructionists have made the same point as Hacking. In a paper entitled "Towards a sociology of nature," Macnaghten and Urry (1995: 207) declare that "there is no pure 'nature' as such, only *natures*. And such natures are historically, geographically and culturally constituted". In a similar way, Jerolmack (2012) asserts that one of the main achievements of environmental sociology has been to demonstrate that nature is as much a social construction as race or gender. Enquiries into representations of nature therefore offer deep insights into social life.

In an influential article from 1980, Catton and Dunlap set out to break the vicious circle of the self-referentiality inherent to social constructionist ontologies by revising the Durkheimian thesis that social facts can only be explained by other social facts. So far, they write, sociology has been under the "human exceptionalism paradigm" (HEP). Almost a century after sociology managed to detach itself from psychological reductionism, it is now time to shift to a "new environmental paradigm" (NEP) and to start taking "environmental facts" seriously. Much like Durkheim's social facts, nature imposes "powerful ecological constraints" on the structure of society and how we think and act as humans (see also Dunlap and Catton, 1994).

Unlike social constructionists, actor–network theorists refuse to treat representation – or similar constructs such as ideology, discourse, or meaning – as qualitatively different from nonhuman entities. Latour's (2004: 32–41) discussion of "the pitfall of 'social representations' of nature" builds largely on a criticism of Durkheim as responsible for the contemporary social scientific denunciation of the inner properties of objects, and for treating nonhumans as "mere receptacles for human categories" (Latour 1993: 52–53). Latour's solution to the problem of nature in sociology is entirely dependent on this narrative, according to which "the moderns" who invented the "sacred society" (Latour 1999: 7) ontologically split the world in two: humans and their culture one the one side, and nonhumans and their natures on the other. One problem with this divide – and here Latour's argument resonates with the broader portrayal of social constructionism as idealist – is that it easily leads to the presumption that nature does not exist outside the realm of representation. It impedes the social sciences from seeing what is really happening in nature.

The ANT solution is to replace the social scientific work of purification with the "work of translation" (Latour 1999: 11) To translate, in the ANT sense of the word, is to retrace the paths of all entities involved in a given practice: for example, soil sampling in the Amazon forest by scientists (Latour, 1999: Chapter 2) or public resistance to wind turbines in Australia (Hall et al., 2013). Human and nonhuman actors, previously separated through the work of purification, must be brought back together and apprehended as what they really are: hybrid networks of heterogeneous materials.

In this context, "heterogeneous" implies that the social is made up not only of humans but also of nonhumans and that "all these other materials too" (Law, 1992: 381) have autonomous aims and properties that influence human activities. A social scientific break with the practice of purification means, in other words, to stop treating nature as a result of human activity or cognition. In practice, an ANT analysis of public conflicts over wind parks in Australia or elsewhere would consist of tracing the interactions between proponents, opponents, all the bits and pieces of wind turbines, the money involved, birds and bats killed by the blades, politicians, scientific reports – the list goes on (Callon, 1984; Latour, 2005: 128–133).

Actor–network theorists also define nature as constructed but not because it is culturally conceived. While Hacking and the aforementioned environmental sociologists are *social*

constructionists, ANT scholars are *ontological* constructionists – and the difference between the two has a lot to do with representation. To understand this difference, it is not enough to compare the status they assign to things: We also need to compare the role the they assign to the human mind. To clarify what I mean, I shall recur to Latour's (2005) distinction between "mediators" and "intermediaries."

2.3 Nature as mediator or intermediary

So far, I have used words such as "nature," "things," "objects," "asocial," "entities," and "nonhumans" in more or less interchangeable ways. Before delving deeper into the status of nature in the social sciences, a reflection on the use of terminology seems appropriate. In both everyday and scientific language, the word "nature" has multiple meanings, and the distinction between humans and nature is often blurred. Sometimes humans are understood as the *opposite of* nature, other times as *part of* nature, and yet other times as *having* a nature. In cases where the point is to make an analytical distinction between social and asocial worlds, the words "things" and "objects" are perhaps less unambiguous. On the other hand, they hardly encompass animals and other living beings, which are intuitively situated on the nature side of the classical human–nature dichotomy in the social sciences.

To replace the human/nature dichotomy with a social/asocial dichotomy is also troublesome, considering that some of the most influential scholars in environmental sociology (Latour, for one) have questioned the very meaning of "social." "Nonhumans" and "entities" are among Latour's favorite expressions, and while "nonhumans" is self-descriptive, "entities" embraces humans and nonhumans alike. It is perhaps because the word "nonhumans" seems to escape some of the above-mentioned confusions that its application has spread largely outside the context of ANT. In the following I will continue to use it freely.

In contrast to ANT, the various traditions dealing with representation often refer to that which is represented as an "object," approaching it as something qualitatively different from the representing "subject." In that context, and in accord with these traditions, I will sometimes employ the word "object" even if the target of representation is a living being, such as a wolf. As for "nature," some of the most urgent collective problems we face today are difficult to address without recurring to the word. Heretofore, I have used it in a broad sense, designating

phenomena such as forests, flowers, wildlife, weather, water, rocks, soil, and mud: in short, the physical world and life in general, human activities exempted. Despite the multiple significations of the word, and the difficulty of drawing a sharp line between humans and nature, I will continue to use it in this broad sense.

From the ANT point of view, the exemption of human activities from nature is both ontologically erroneous and detrimental to the social sciences. There are no objects defined by subjects in Latourian sociology: All are objects with a potential impact on other objects, and therefore potentially subjects with agency. Human activities are no different from other entities. They result from the interaction between all entities involved in specific processes leading to specific human activities. This all sounds strange and unfamiliar to the amateur ANT reader. Yet at the same time, some aspects of Latour's interactionism recall that of another framework familiar to most sociologists: symbolic interactionism, in particular ethnomethodology.

Indeed, Latour does cite ethnomethodology as one of the sources of ANT (Latour, 2005: 168n217), and there is a strong resemblance between Harold Garfinkel's description of "the man-in-the-sociologist's-society" as "cultural dope" (1967: 68) and Latour's account of the invention of a "sacred 'society' composed of 'minds-in-a-vat'" (1999: 7). The terms "cultural dope" and "minds-in-a-vat" both imply criticism of deterministic social scientific models in which the individual's thoughts and actions are guided by supra-individual structures of representations, norms, and institutions. To both Garfinkel's ethnomethodology and Latour's ANT, the composition of the social, whether "social" includes nonhuman entities or not, is local or singular in the sense that it is unpredictable and constantly reconstructed. To both schools, human meaning or conception are not cognitive constructs but produced by action in specific situations. While Garfinkel (2002) uses the term intersubjectivity to address this ongoing production, Latour (1996), to whom nonhuman entities are also social actors, prefers the word interobjectivity.

Despite some obvious differences between ANT and the ethnomethodological version of interactionism (see Latour, 1996), the resemblances are strong enough for the task at hand, namely to clarify how the status of things is related to the role of minds, and how interactionism at large (ANT included) is opposed to symbolic structuralism when it comes to explaining how humans think and act. In an attempt to clarify how interactionist explanations of how humans

relate to nonhuman phenomena differ from representational ones, I will borrow one of Latour's own examples. It has to do with fashion.

If there is a social difference in the appreciation of a detail in a fabric, such as the touch and shine of silk compared to nylon, how can this be explained? Do such social experiences simply pass through the thread, which act as "an *intermediary* transporting faithfully some social meaning – 'silk is for high-brow,' 'nylon for low-brow'" (Latour, 2005: 40, emphasis added)? If the answer is yes, the meanings attributed to the fabric refer to something more solid that exists beyond the situation, to a social structure of differentiation. Fashion is, in this perspective, symbolic, and the distinction between silk and nylon is "imported" from a more general knowledge system suggesting what "high-brow" and "low-brow" feels, smells, hears, and looks like. In essence, this explanation corresponds to what I have previously described as symbolic structuralism.

Indeed, Latour seem to have chosen this example as a way of confronting Bourdieu's approach to taste (Schiermer, 2016), and it is against this background that he proposes another, more radical, explanation of what fashion is. The social preferences for silk or nylon, he insists, come from within the situation, from the range of chemical and manufactural differences without which "*this* social difference might not exist at all" (Latour, 2005: 40). A piece of cloth should be seen for what it really is: an assembly of *mediatory* entities that produces outcomes specific to each place and each moment, depending on the particularity of the interactions between them. In Latour's vocabulary, an intermediary thus transports meaning without transformation and a mediator modifies the meaning they are meant to transport (Latour, 2005: 39). As a mediator, a *specific* silk thread may add something new to the situation, which is why the social appreciation of silk fabric remains unpredictable. There are indefinite local expressions of a network, and thus Latour's interpretation of fashion is an interactionist one.

A great deal of Latour's criticism of classical sociology is aimed at the school I have previously labelled "representation as symbolic structure." In particular, he criticizes it for overlooking things and other nonhuman entities (Latour, 1993). Standing alone, this accusation appears odd in light of the importance accorded to objects in the works of, for example, Durkheim, Mauss, and Bourdieu – whether the topic is totems (Durkheim, 1912), fashion (Bourdieu, 1984), or the body (Mauss, 1935). The "sticking point," to borrow an expression from Hacking (1999), rather

seems to be the role of the human mind in the constitution and reproduction of social life. Latour's novelty lies, in other words, not so much in his emphasis on the shaping role and performative properties of artifacts (see Caronia and Mortari, 2015) but in his definitive break with the French school of sociology and its continuous reference to psychology – starting with the disposal of representation as a cognitive construct. In the end, the question is perhaps as simple as this: Do the patterns and regularities of social life reside "inside" our minds or are they, as Garfinkel argues, "'fleeting' phenomena" (Vom Lehn, 2017: 248), constantly emerging from encounters between things and people in forever shifting situations?

In this broad perspective, the notion of representation belongs to a group of sociological constructs with an implicit social psychological component. Whether they are approached as categories (Durkheim and Mauss, 1901), typeficatory schemes (Berger and Luckmann, 1991 [1966]), frames (Goffman, 1974), or discourses (Foucault, 1972), such constructs build on a presumption that the transfer of knowledge – of how people are expected to think and act – must "hook on" to human minds. It is this inside replica of outside expectations that endows the constructs with explanatory power beyond the immediate situation, enabling actors to integrate social groups and to move from a familiar context to an unfamiliar one and to still know what is right and wrong to think and do.

3. Analytical framework: The theory of social representations

Through the years, scholars have attempted to define social representations in a number of ways (see e.g. Jodelet, 1984a; Moscovici, 1973, 1984, 1988; Wagner and Hayes, 2005). Most commonly, however, they are referred to as

> cognitive systems of values, ideas and practices with a twofold function; first, to establish an order which will enable individuals to orientate themselves in their material and social world and to master it; and secondly to enable communication to take place among the members of a community by providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual and group history. (Moscovici, 1973: xiii)

The social representation concept was first coined by Moscovici in a publication on how different social segments among the French public developed their own "folk" theories in response to the rapidly growing scientific interest in psychoanalysis in the late 1950s. Moscovici's (1961) doctoral thesis *La psychanalyse, son image et son publique* (the book version of which was translated into English in 2008 as *Psychoanalysis: Its image and its public*) remains today a major source of reference for students of social representations.

Moscovici's motivation for locating representations at the center of his work in 1961 was twofold. First, in *Les règles de la methode sociologique* [*The Rules of Sociological Method*], Durkheim explicitly encouraged further studies of how collective representations relate to other forms and expressions of knowledge, and of how they arise, transform, and interact with each other (Durkheim, 1992 [1884], cited in Moscovici, 1961: 3). Such a task, Moscovici argues, cannot be carried out without taking social psychology into account. It is only through consideration of the intermediary role of cognitive phenomena that the constitution and dynamics of "total social facts" can be understood (Moscovici 1961: 2).

Second, Moscovici observes, everyday knowledge has thus far been conceived of as copies or distortions of forms of knowledge embraced by the "elites" (1961: 8). Instead, they should be approached as independent "cognitive systems" that follow their own logic and that have a proper language. Moscovici agrees with Durkheim that all forms of knowledge are

representations; however, he insists that *social* representations are unique to the realm of common sense in everyday life. He defines the difference between forms of knowledge in terms of purpose: While common-sense knowledge provides people with clues about what they should think and how they should behave, the rationale behind science and technology is the discovery and governance of the natural world (Moscovici, 1961: 307). The logic of common sense, then, does not lie in its ability to copy science or other elitist forms of knowledge but in the sense it makes to people in their daily lives. By reinserting the notion of representation into the post-WW2 landscape of the social sciences, Moscovici aimed to go beyond concepts such as attitudes, stereotypes, and opinions to study everyday knowledge as autonomous "theories" or "branches of knowledge" (see also Moscovici, 1973).

Moscovici's seminal work thus created a twofold agenda. Initially, he sought to modernize the study of knowledge construction and transformation by replacing Durkheim's static *collective* representations with the more dynamic *social* representations (see also Moscovici, 1993a) and by linking the sociology of knowledge to social psychological processes. However, by choosing psychoanalysis as the object of representation, and with the ambition of "rehabilitating" common sense (Jovchelovitch, 2007: 49–50; 2008), Moscovici set out on a path that inevitably led to a consideration of the relationship between different forms of knowledge – between common sense and science.

For those familiar with the theory of social representations, I lean in the following summary of the framework on the first two parts of Moscovici's *La psychanalyse*, in which the concept of social representation is developed, and not the third part, which proposes a typology of forms of mass communication (see also Jodelet, 2011). Furthermore, I rely on the first edition of the published work and not on the later ones, in which the discussion of "socioeconomic determination" (Moscovici 1961: 337–350) was removed. The choice of supplementary sources and the focus on some elements of the theory at the expense of others is primarily guided by the role these elements play in the included Articles.

3.1 Common sense according to Moscovici

Moscovici's doctoral thesis on the social representation of psychoanalysis appeared just a few years before Berger and Luckmann (1991 [1966]) published their book on the social construction

of reality. The French social psychologist shares with the American sociologists – and other variants of symbolic interactionism and phenomenology – an iconoclastic attitude to the mechanical and behaviorist explanations of human behavior that dominated the social sciences in the 1950s and 1960s (Deutscher, 1984: 75, 98). Another common characteristic is their preoccupation with common sense as a form of knowledge distinctive to everyday life.

On the basis of survey and interview data, Moscovici (1961) discerns three dimensions of the public perception of psychoanalysis: people's attitudes to psychoanalysis, their exposure to information about it, and the image they have of it. Although he examines all three aspects and the relationship between them, he devotes most attention to the last, perceptual, dimension. Moscovici identifies a considerable number of imagery elements in his analysis. Some seem to vary according to the respondents' social class, education, age, gender, religious identity, and political preference. For example, while informants from the French upper and upper-middle classes frequently associated psychoanalysis with religious confessions, informants from the working or lower classes more often described it as a simple conversation (Moscovici, 1961: 53–54).

Furthermore, people's perception of psychoanalysis seemed to be affected by their political and religious orientations. For instance, informants who identified themselves as Marxists or communists tended to interpret the growing popularity of psychoanalysis in the 1950s as just another sign of the intrusion of the American capitalist lifestyle into French society. Framing psychoanalysis as a matter of class struggle, they saw it as a bourgeois weapon turned against the working class to neutralize them and to dismiss them as neurotic deviants. Catholics, by contrast, often framed it as a question of morality and perceived it as a threat to Catholic sexual norms and to the priest's status as the true receiver of confessions (Moscovici, 1961: 201–204, 221–231).

Other elements of representation appeared as more consistent across groups and segments. Held together, they seemed to form some sort of model or theory. Quite consistently, psychoanalysis was described as a scientifically-based therapeutic method that uses words and language as healing instruments. The target of this practice was perceived by the public to be the human unconsciousness and its suppressed relation to the consciousness. The goal of the therapy was understood to be the resolution of complexes that came out of this suppression (Moscovici, 1961:

27–43). The dichotomization of the human psyche into two separate spheres, the "conscious" and the "unconscious," as well as the conflictual notion of "suppression," formed a *figurative scheme* of the "complexed" personality:

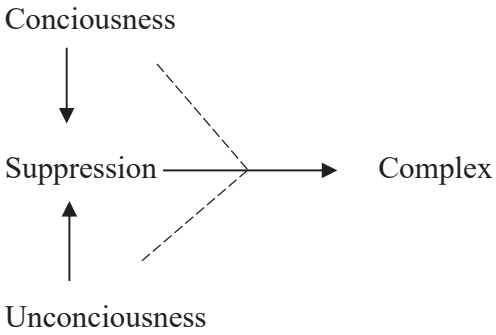

Figure 1. Figurative scheme of the social representation of psychoanalysis (adapted from Moscovici, 1961: 296, with permission)

This image of the human psyche gave rise to new interpretations of the human personality. Abstracted from the restrictive sphere of psychiatry and projected onto the everyday lives of ordinary people, it also gained relational meanings: Maladaptation was interpreted as suppressed needs and desires, parents were blamed for their children's behavioral problems and for being the source of their unresolved complexes, and nutrition problems in children were understood as unconscious jealousy of smaller siblings – just to mention a few examples (Moscovici, 1961: 313–330). These common-sense ideas went beyond like or dislike, knowing or not knowing: They were elements of an organized image. The informants' attitudes to the proliferation of psychoanalysis in the 1950s, what they knew about it, and where they knew it from were dimensions of this representation, nuancing the impact, relevancy, and meaning the new image of the human personality and interpersonal relations had to different groups. The analytical step Moscovici took, however, was to abstract this image from the totality of survey and interview data and to propose its imaginary content as the nucleus of the social representation of psychoanalysis – as a "folk" theory in expansion.

Since the publication of Moscovici's *La psychanalyse*, studies of social representations have grown into one of the most important approaches to collective meaning-making processes in

social psychology (Sugiman and Gergen, 2008). One of the characteristics of the field is its large scope of empirical applications, embracing a range of topics and methods, qualitative and quantitative alike. Health remains a dominant area of research, along with educational issues. Many other topics have nevertheless been explored from a social representation angle, including ethnicity, minorities, drugs, technology, democracy, sexuality, and the natural environment. A fair share of social representation studies are of an interdisciplinary character or originate from disciplines outside social psychology, such as linguistics, anthropology, and sociology (for an overview of the later development of the field, see Wachelke et al., 2015).

What seems to unite this research is a common preoccupation with socially shared associations, notions, and systems of categories regarding an object or phenomena and how they are reflected in everyday language or practices. Another characteristic is the recurrence of core theoretical concepts, such as the above-mentioned figurative scheme, or anchoring and objectivation, which will be discussed later in this chapter. In applied research they have become instruments for the analysis of talk, texts, images, and behavior through which common-sense knowledge is expressed. In this sense, the social representation concept is as much an analytical framework as a theory.

One of the best known studies of social representations in the area of health research was conducted by a French sociologist in the 1970s. A student of Moscovici, Herzlich (1969) set out to examine common-sense theories of health and illness. By means of qualitative content analysis of recorded interviews with 80 persons from Paris and Normandy, Herzlich identified common themes and concepts brought up by the informants and sought to understand how these were internally related to each other (Herzlich, 1969: 28). While the informants recurrently perceived health as something that is given, naturally associating it with the self, illness was conceived as unnatural, something that is induced by modern life in unhealthy urban environments.

In everyday life, Herzlich's informants associated illness with the interruption of daily occupations. Ill persons came to see themselves as passive and non-participant in contrast to the active others (Herzlich, 1969: 116). The distinction between health and illness was anchored in the image of an ongoing conflict between the unhealthy and stressful lifestyle associated with "society" and the inherent health ingrained in the self. To the informants, illness occurs when individuals are unable to resist the negative pressure from society – when their natural "health

reserve" is exhausted (Herzlich, 1969: 92). Inspired by Moscovici, Herzlich translated her findings into a figurative scheme that describes the representational relationship between health and illness (1969: 121).

Jodelet's (1989) study of the social representation of madness is another early and influential contribution to the field. In contrast to Moscovici's mixed methodology and Herzlich's qualitative analysis of in-depth interviews, Jodelet carried out ethnographic fieldwork in Ainay-le-Château in the center of France. The rural municipality was turned into a "colony for the mentally ill" already at the beginning of the 20th century. For the purpose of integrating patients with psychiatric and mental disorders into society, previously institutionalized patients were accommodated in the private homes of village "hosts." In choosing the colony as her study site, Jodelet (1989: 41) wished to examine not only non-expert theories of madness but also their practical realities.

Jodelet's account of everyday life in the colony unraveled a complex common-sense theory of madness. Drawing on field notes and interviews, she showed how the "native" villagers conjointly formulated and structured core ideas about how madness emerge from a dysfunctional relationship between the organic body, the nerves, and the brain. According to Jodelet, this enabled the villagers to group the mentally ill into different categories and to adjust their own behavior towards them. One of the characteristics of this non-expert model of mental illness was a stark opposition made between those whose illness was attributed to a degeneration of the brain and those affected by a "nerve dysfunction." In the first case, the source of the illness was understood to be external, caused by an accident or a trauma; as for those categorized as "nervous," their defect was interpreted as the result of a degenerate "blood line" (Jodelet, 1989: 222–229).

In order to make sense of the lodgers' illnesses and behaviors, the hosts drew on their own experiences from daily rural life. For instance, they likened the organic process leading to madness to the "turning" of dairy, and they compared the "primitiveness" of the mentally ill with their domestic animals (Jodelet, 1989: 181–187, 290). The hosts' conception of madness was fundamentally anchored in the distinction between "us" and "them" and brought to the fore the topic of contagion. In the households, the hosts' fear of being "polluted" by the deviant others gave rise to daily rituals aimed at keeping the mentally ill at a distance. The lodgers ate

apart, were prevented from coming into contact with any water used for cleaning or cooking purposes, and their laundry was done separately. In Jodelet's work, it is these detailed portrayals of everyday life in the colony that shed light on how social representations are reflected in action.

3.2 The formation of social representations: Anchoring and objectivation

Moscovici (1961, 1984) describes two processes through which new representations come into being: anchoring and objectivation. Objectivation involves the attribution of form to ideas, the transformation of something abstract into something more concrete. Through objectivation, ideas are delimited, defined, and modelled into recognizable contours. The essence of a vague, disturbing, or unfamiliar phenomenon, concept, or situation is provided with an actual form that makes it easier to grasp and make use of in everyday discourse and practice.

In *La psychanalyse*, Moscovici (1961: 317) defines objectivation as the transformation of a common-sense theory into an image, and he identifies the figurative scheme in Figure 1 as an objectivation of the social representation of psychoanalysis. What exactly counts as an objectivation in applied research has been interpreted in different ways in later publications in the field. For instance, Wagner and Hayes have argued that objectivations are equivalent to what is elsewhere referred to as metaphors (2005: 177), and they use the analogy made between madness and the turning of dairy in Jodelet's (1989) study as a classic example of objectivation.

The different interpretations and applications of the objectivation concept among social representation scholars are further discussed in Article 4. What unites them seems to be this: Inasmuch as a social representation can be comprehended as a set of interrelated ideas, objectivation is understood as the ascribing of something tangible to those ideas. An example of objectivation from later social representation research can be found in Smith and Joffe's (2013) study from England of how the public and the media often use pictures or descriptions of melting glaciers and extreme flooding as images of global warming.

Joffe's (2015) publication on the importance of the self-control ethos in social representations of derogated out-groups provides another example of objectivation. Taking poverty as the object of representation, she shows how ideas about poverty are shaped by a stereotypical image of the poor person. Of all out-groups, at least in western societies, it seems that it is above all the image

of poor single mothers that has come to personalize (and thus materialize) poverty. Portrayed as neglectful, unemployed, sexually irresponsible, and with many children, poor single mothers are typically conceptualized as welfare parasites without control over their own lives (Joffe, 2015: 378).

The integration of an image into the common-sense universe is ensured through anchoring. Anchoring means that existing labels and categories are projected onto new or disturbing phenomena in order to give them a common meaning. The poverty example illustrates how anchoring and objectivation are two facets of the same process (Moscovici, 1984: 29). If the image of the poor single mother is an objectivation of poverty, the very idea encapsulated in the image is that of lack of self-control. According to Joffe (2015: 374), lack of self-control is, in social imagery, defining of many out-groups, such as gay people (lacking sexual restraint), obese people (lacking control over their urges), drug addicts (lacking self-discipline), and the poor (lacking control over their destiny).

In *La psychanalyse*, Moscovici describes how the new concept of "complex" was anchored to the more familiar category "pathological" (as opposed to "normal"). By the same token, the meaning of "pathological" changed to include new kinds of behavior and people, such as "neurotic" or "complexed" persons (Moscovici, 1961: 318–334). Moscovici underscores that the embedding of new phenomena in existing frames of categories is socially contingent. As an object of representation, psychoanalysis signified different things to different social groups and was accordingly labelled and classified in divergent ways. Among those who associated it with class struggle, psychoanalysis was naturally anchored to categories such as social class (bourgeois–working class) and class relations (oppression). Those who framed it as a matter of religion and morality, by contrast, anchored it to the notion of sexual taboo and labelled it a threat.

3.3 Themata and the core–periphery hypothesis

An essential assumption in the theory of social representations is that the formation of common-sense knowledge necessitates an agreement among group members on how to interpret a concept, a thing, a living being, or a situation. Because new knowledge necessarily builds on old knowledge, social representations are both conservative and creative, consensual and divergent

(Sartawi, 2015). The conservative facet of a representation relates to the implicit presumptions group members share about their physical and social environment. For presumptions to be implicit, they also have to be consensual. In Joffe's example, the social designation of an out-group relies, for example, on an implicit understanding of what it means to exert self-control and what lack of self-control looks like. Consensus is, in other words, an inherent property of labels and categories.

This does not, however, imply that basic categories of interpretation are universal or never subject to dissent. At times, when conflicts arise about how to classify a phenomenon, it is not only the interpretation of the phenomenon that poses a challenge but also the very categories we use to classify it – whether the issue at stake is a stigmatized group or an anomaly in the natural environment. When basic categories of thinking emerge from the realm of the implicit and become a topic of controversy, social representation scholars have addressed them as *themata.*

The concept of themata was introduced by Moscovici in the 1990s and further developed by Marková (2003, 2015, 2017b), another influential social representation scholar. Drawing on Holton's (1973) philosophy of science, Moscovici describes themata as enduring and stable cognitive units that "motivate or compel people in their cognitive search" (1993b: 163). According to Marková, themata are typically structured as antinomies, such as nature/culture, good/bad, and male/female. In everyday communication, such underlying antinomies are usually not subjected to discussion or negotiation. However, if their normative foundations are put under pressure or become blurred due to changes in the social or physical environments, the boundaries between the opposed categories may become a topic of public dissent and debate (Marková, 2015) .

In the scientific literature on social representations, there are several examples of themata that seem to underlie everyday conceptualizations of nature and the environment (see Castro, 2015). In the previously mentioned study of representations of global warming, Smith and Joffe (2013) identified, for example, the themata of self/other, natural/unnatural, and certainty/uncertainty. A study of the anchoring and thematization of genetically modified organisms in the Portuguese press showed how the public debate on biotechnology was shaped by themata such as risk/safety, health/illness, and nature/culture (Castro and Gomes, 2005).

The notion of themata is not easily distinguishable from that of anchoring. Moscovici (1993b) suggests that anchoring can be understood as the process in which themata are filled with a content relevant to the situation. Themata are, according to Moscovici, canonic antinomies whose significations vary according to the situation and the object of representation. Conversely, the meaning of the object of representation is influenced by how the same antinomies have been used in other places and at other times (see also Moscovici and Vigneaux, 1994). For example, the signification of "natural" and how it contrasts with the meaning of "cultural" depends, among other things, on whether the object of representation belongs to the world of humans or of nonhumans.

While themata have primarily been used to identify situations in which previously implicit categorizations come into view, the core–periphery hypothesis describes how and why this can happen. In *La psychanalyse*, Moscovici notes how some ideas about psychoanalysis appeared as more consensual, and therefore more fundamental, to the common-sense theory of psychoanalysis than others (1961: 323). The "stable core" of the social representation of psychoanalysis, he suggests, seems to be the idea that the human psyche is split between an upper level of consciousness and a lower level of unconsciousness. Expanding on these observations, Abric has proposed an analytical distinction between the stable *core* and the more flexible *periphery* of a social representation (Abric, 1993; Moscovici and Vigneaux, 1994).

The stable core consists of fundamental beliefs that are shared by many people. It provides meaning to new situations and constitutes the normative dimension of the representation and the basis upon which new knowledge is established (Abric, 1976: 180; 1996; Wagner and Hayes, 2005: 182). The shared ideas of the core are considered to be more profoundly embedded in culture, history, norms, and language than the peripheral and less consensual ones (see also Abric, 1993). Moreover, the flexible periphery depends on the consensual core. For diversity or even conflict to occur, the representational objects that are subjected to different interpretations or evaluations must be collectively defined in a meaningful way. In other words, dissent necessarily rests on consent, whether it is about the essential meaning of psychoanalysis, poverty, health, or nature.

Given the role of the stable core as generative of meaning, consensus must be understood as more than simple agreement. Another way to understand the distinction between the core and

the periphery is to think of the former as non-negotiable beliefs and the latter as conditional and contextual beliefs (Moliner and Abric, 2015). The role of the periphery is to anchor core ideas to the environment. It fills general categories with content relevant to the context.

The embeddedness of representations in local environments lays the ground for possible changes in the representational core (Moliner and Abric, 2015). Guimelli's (1989) study of social representations of hunting and nature among hunters in southern France provides an illustration of this dynamic. In the area of Languedoc, an outbreak of the disease Myxomatosis among wild rabbits led to a reorganization of local hunting practices. In response to the threat the situation posed to the ecosystem and therefore to the hunt, the hunters in the area incorporated nature conservation measures into these new practices.

Combining field work with content analysis of hunting magazines published over a long period of time, Guimelli (1989) found that the new practices were accompanied by a partial transformation of the hunters' representations of nature and hunting. Prior to the Myxomatosis outbreak, the hunting discourse had revolved around weapons, dogs, knowledge of game, the value of meat, and game gastronomy. In short, the repertory at work was that of hunting skills. After the outbreak, an environmentalist repertory was incorporated into the traditional one, and a new representation of nature as a place with intrinsic value emerged. As for the practice of hunting, it was no longer exclusively associated with hunting skills but also with nature preservation and respect for animals. These ideas were, however, not entirely new to the hunters. Prior to the outbreak of the disease, they figured as peripheral elements of the hunters' social representations of hunting and nature. What was new was that they were now core beliefs.

According to Abric's original formulation of the core–periphery hypothesis, new ideas enter the periphery before they (possibly) enter the core (see Moliner and Abric, 2015: 89). This is also how Guimelli (1989) interpreted the emergence of the new representation of nature as a place in need of conservation and the new association of hunting with nature management. As a result of the changes in hunting practices, peripheral ideas had been absorbed into the core and had led to a "soft transformation" of the representation.

3.4 The social determination of representation

Already in the preliminary remarks of *La psychanalyse*, Moscovici (1961: 1–24) situates his work within the sociology of knowledge. He makes ample reference to Merton and draws on contributions from Marx, Mannheim, Gurvitch, and Scheler, just to mention a few. In choosing social representations as his object of research, molding it against the background of Durkheim's sociology of religion, he confirms his position as "heir to a strong French sociological tradition" (Rateau et al., 2011: 477). Answering questions posed by Durkheim about the genesis of representations, Moscovici identifies mechanisms involved in their formation and transformation.

In a discussion on the determination of representations, Moscovici (1961: 337–350) credits Marx and Engels as well as Durkheim for being the only sociologists addressing the crucial question of how knowledge constructs are linked to the organization of society. Yet, in his view, their theories fall short of demonstrating in what way socioeconomic factors intervene in the development of different forms of knowledge. Marx and Engels's hypothesis of the material conditioning of intellectual products was, according to Moscovici, historically groundbreaking but too programmatic for empirical application. As for Durkheim's account of collective representations, it left the difficult task of figuring out the causal relationship between meaning and social order to his successors (Moscovici, 1961: 338).

On the basis of his own empirical analyses, Moscovici concludes that the driving forces behind the formation of social representations must be both internal and external to human beings. He identifies the internal determinants with the universal human needs for group identification and action orientation and with the processes of anchoring and objectivation. At a broader level, he argues, the social representation of a phenomenon is historically contingent. Hence, the spread of psychoanalytical ideas was not accidental but enhanced by the growing status of science and emerging interest in expert knowledge among the French public in the 1950s (Moscovici, 1961: 359–360). As previously mentioned, the proliferation, acceptance, and interpretation of these ideas was constrained by material and social conditions related to, for example, occupation, education, sex, and gender. Finally, people's perceptions of psychoanalysis seemed to be guided by what Moscovici refers to as "systems of orientation" (Moscovici, 1961: 345), such as the

norms, values, and interests that motivate the beliefs and actions of religious and ideological social constellations.

It seems, then, that – just as with Durkheim, Strauss, and Bourdieu – Moscovici approaches structure as determining material and social patterns that cannot be reduced to the outcome of concrete interactions. He furthermore sees representations as the means by which the social order imposes itself upon individuals (1984). However, even if that is the conclusion to which the analysis of the public image of psychoanalysis brought him, it does not mean that he left no room for agency in the formulation of his theory. In *La psychanalyse*, he explicitly addresses the need for future research on the reverse mechanism, that is, on how the representations of groups and individuals might lead to structural changes in the long run, emphasizing that the assessment of such causalities lies beyond the scope of his (statistical) analysis (Moscovici, 1961: 349n1). Had he not been so cautious, Moscovici could have used his own qualitative analysis of the impact the new image of the human personality had on everyday interactions (see Section 3.1) to make a stronger case for the dialectical nature of the relationship between representation and structure.

4. Methods

One of the things that distinguishes the theory of social representations from a number of similar approaches to social meaning is its concern with the *content* of social communication. While, for example, American social constructionists often consider the "focused interaction," or how members construct the situation in which they participate, as their object of study (Silverman, 2004: 95), social representation scholars are usually more interested in what the constructed reality of a social group appears like. In the included empirical studies of representations of wolves and biodiversity, the aim was to capture informants' descriptions of these phenomena. What kind of animal is the wolf? What is the meaning of biological diversity?

After a short reflection on some methodological aspects of the literature review presented in Article 1, this chapter presents the contexts in which the three empirical, or primary, studies were carried out. Methodological strategies with regard to the preparatory phase of the studies, the organization of focus groups and interviews, and the analysis of text and sound are furthermore discussed. The chapter rounds off with a reflection on ethics and anonymity. The quality and limitations of the data are discussed throughout the chapter in sections of relevance to the nature of the limitations.

4.1 Narrative review of research on social representations of nature

When Article 1 was published in 2012, research on social representations of nature was scarce and spread over a limited number of individuals across different countries. The motivation for writing the paper was to situate this research within the field of human–nature studies. This implied presenting the theory of social representations in a manner that was easy to grasp for a broader, multidisciplinary audience. Furthermore, we saw the review as an opportunity to assess and discuss the strengths and weaknesses associated with the theory and to point out gaps and opportunities for future research.

Although the number of terms and criteria used to classify types of literature review is rapidly growing (Barnett-Page and Thomas, 2009; Snyder, 2019), they seem to fall into two broad categories: narrative and systematic reviews (Wang, 2019). While a systematic review is a research methodology, a narrative review most often does not report on how the included

literature was found and selected (Cipriani and Geddes, 2003). Typically, narrative reviews are considered to be expert opinions on given topics, and their greatest weakness is held to be their subjective and therefore potentially biased presentation of past research (Ferrari, 2015).

In line with this description of narrative reviews, Article 1 does not specify how and why the examples and cases discussed in the paper were chosen. This could be interpreted as a limitation, leaving the reader wondering if there exist other studies about social representations of nature that draw other conclusions about the framework's strengths and weaknesses in the area of human–nature relations. However, in light of the narrow topic and the limited size of the field, as well as the co-authors' varied geographic background (coming from the Netherlands, Portugal, Greece, Scotland, the UK, and Norway), we considered the authors' aggregated overview of existing literature on the topic to be extensive at the time of publication.

More importantly, the choice of review format depends entirely on the goal of the review (see Baumeister and Leary, 1997). The aim of Article 1 was not to give a systematized overview of the emerging field or to discuss some specific piece of evidence; rather, its objective was to use previous research to illustrate the relevance of Moscovici's theory to the study of human–nature relations. The selection of relevant examples and cases was made with this objective in mind. It was also made with the aim of providing a simple introduction to the theory and a guide to accessible literature for further reading. As such, we chose to limit the selection of literature to publications in English only.

For the purpose of illustrating a complex theory, we prioritized depth over breadth and selected three examples, or cases, for more thorough discussion. For the selection of the three cases, the co-authors initially came up with a number of different suggestions based on their own or others' research. After discussing the suggestions, we agreed upon a criterion for selection: namely, how tightly the cases connected the empirical analysis to the theoretical framework. We also sought a combination of cases that illustrated different theoretical aspects or concepts. One of the selected cases was the study of core and peripheral elements of wolf representations presented in Article 2.

4.2 Context of empirical studies

Articles 2, 3, and 4 were written in the context of three different research projects conducted at the Norwegian Institute for Nature Research (NINA). The table below provides an overview of the projects associated with each article as well as the methods used for recruiting informants and for the production and analysis of data.

Table 1: Projects associated with the empirical articles

ARTICLE	***Social representations of the wolf (Article 2)***	***The ambivalent nature of biodiversity: Scientists' perspectives on the Norwegian Nature Index (Article 3)***	***Applying social representations theory to the study of science contestation: Objectivations of "fake wolves" (Article 4)***
Associated project	Large carnivores and human communities ("First wolf study")	The Norwegian Nature Index	Human experiences with wolves ("Second wolf study")
Recruitment strategy	• Purposive selection of key informants and gatekeepers • Snowball sampling	• Purposive selection	• Purposive selection of key informants and gatekeepers • Snowball sampling • Self-selection through Facebook
Production of data	• Focus group interviews	• Individual interviews	• Focus group interviews
Number of groups and informants	• 9 focus groups • N = 45 informants	• 10 individual interviews • N =10 informants	• 9 focus groups • N = 42 informants
Type of data and use of software	• Recorded interviews • Sound-coded and partly transcribed in Hyper Research	• Recorded interviews, notes from one interview • Transcribed and subsequently coded in QSR Nvivo	• Recorded interviews • Transcribed and subsequently coded in QSR Nvivo
Analysis of sound and text	• Informed inductive coding • Sorting codes into categories • Construction of themes	• Informed inductive coding • Sorting codes into categories • Construction of themes	• Informed inductive coding • Sorting codes into categories • Construction of themes • Recoding and categorizing text for the purpose of identifying objectivations

In terms of research topics, study areas, types of informants, and data construction, the two projects "Large carnivores and human communities" (hereafter "the first wolf study") and "Human experiences with wolves" (hereafter "the second wolf study") bore strong resemblances. In both cases, I collaborated closely with colleagues at NINA. We conducted the majority of the interviews in pairs; together we discussed, analyzed, and communicated the results in a number of reports and papers. Articles 2 and 4 of this dissertation constitute only two of these publications. My independent contribution to the projects focused on the role of social representations in conflicts over wolf conservation.

The first wolf study was part of a broad project funded by the Research Council of Norway and the Norwegian Directorate for Nature Management (currently the Norwegian Environmental Agency). The broader purpose of the project was to gain a better understanding of the social dynamics and patterns affecting Norwegians' attitudes to the management and legal protection of four large carnivore species: wolves, brown bears, lynx, and wolverines. The research was conducted in two municipalities in the southeast of Norway, Trysil and Halden, both of which are strongly affected by the presence of wolves.

Trysil and Halden are situated within the politically defined management area for wolves. This so-called wolf zone, to which the distribution of wolves has been limited, covers only about five percent of Norwegian territory (Trouwborst et al., 2017). For the purpose of the broader project, it was important to reach beyond communities with exclusive ties to the primary sector in order to gain insight into other perspectives on the presence of large predators than those concerning the loss of livestock. As such, one of the differences between the two study areas in the first wolf study is that, while Trysil is characterized by its rural economy, Halden covers both rural and semi-urban communities (for a more detailed description of Trysil and Halden, see Article 2).

The second wolf study was commissioned and funded by the Norwegian Environmental Agency as one in a series of projects aimed at increasing the knowledge foundations of Norwegian large carnivore management. The aim of our sub-study was to gain knowledge about the emotions, reactions, and interpretations evoked by actual experiences with wolves. Two study sites within the management area for wolves were selected: The area surrounding Lake Osensjøen in Hedmark County, and the municipalities east of Østmarka Forest, next to the capital Oslo.

The district of Lake Osensjøen is sparsely populated, with small hamlets surrounded by forests. The area has been inhabited by wolves for several decades, and a large number of wolf encounters have been reported in the area. In 2018, at the time of the study, much media attention had recently been drawn to one of the local packs, the so-called Slettås pack. According to local inhabitants, wolves from that particular pack frequently visited human settlements. With the declared goal of alleviating conflicts in the area, the pack was shot with permission from the Ministry of Climate and Environment in January 2019.

In recent years, human–wolf encounters have become more common throughout Europe, even in some densely populated areas and cities. Therefore, in the second wolf study, we sought to include informants with a more urban background. Compared to the district of Lake Osensjøen, the municipalities east of Østmarka Forest are more densely populated. As described in Article 4, the area is marked by increased urbanization, with rapid population growth and a large share of the population commuting to Oslo for work.

While the dissimilarities between the study areas in both wolf studies could have laid the ground for a comparison of representations between communities with different demographic profiles, informants from rural and more urban areas are treated as one population in both Article 2 and Article 4. The demographic differences among the informants are not at the forefront of the analyses of wolf representations. This is not to say that demographic factors are unrelated to wolf representations. However, as much as urban–rural antagonisms do play a role in wolf conflicts (Eriksson, 2017; Krange et al., 2017), the relationship between attitudes to wolf conservation and representations of the animal species is not necessarily a reproduction of the relationship between demography and attitudes to wolf conservation. Characterizing the varieties and similarities of representations, as well as their internal relationships to attitudes to wolves, thus took priority over anchoring the representations in demographic categories (Bauer and Aarts, 2000). As shown in Article 2, the presented image of the wolf actually turned out to be surprisingly consistent across study sites and attitudes.

Article 4 focuses primarily on the link between anti-wolf discourses and science contestation. Regardless of whether they lived in the rural district of Lake Osensjøen or in the more urban areas close to Østmarka, the accounts of “fake wolves” given by informants with negative attitudes to wolf conservation bore strong resemblances to each other. In many cases, they even

referred to the same events. For instance, informants from the area of Østmarka often told stories they had heard or read about the Slettås pack in Hedmark County to fill in their own accounts about experiences with wolves displaying "unnatural" behaviors (Skogen et al., 2018).

In contrast to the wolf studies, I conducted the Nature Index project independently. The study took place in a scientific environment, and the informants were all biologists. The project was funded by the Norwegian Directorate for Nature Management as a small social science supplement to the much broader project devoted to the development of the index. The objective was to provide a social scientific perspective on how the biologists approached uncertainty and the concept of biodiversity in the context of constructing a nature index.

The Nature Index was initiated by the Norwegian government in 2005. The goal was to create a measure of the state of biodiversity in different areas and for different kinds of nature. The methods were to be designed and approved by major research institutions responsible for the monitoring of Norwegian nature and were to be "scientifically sound" (Nybø et al., 2012). A total of 125 scientists contributed to its construction. The scientists were distributed across a range of different academic institutions and possessed different expertise on different species, landscapes, or other types of nature.

From the beginning of the process, the index was situated at the crossroads of political goals, economic interests, and scientific methodology. Designated as an evaluation tool for policy making, and pointing to sites or nature types of "high value," the stakes involved in the design of the index were considerable. By way of illustration, if the index suggested that the Norwegian forests were in an overall "good" state, this was likely to have a negative impact on the amount of restrictions imposed on the forest industry.

4.3 Analytical pre-work

To ask the right questions or to know what to search for in the analysis of interviews or focus group discussions, some anticipation of the content of the representations was required. In the first wolf study, I had little prior knowledge of the object of representation: the wolf. Like most people, however, I had intuitive thoughts about the animal. For a period, I wrote down these associations as they emerged. I also asked friends and family members to describe their immediate associations with wolves in one or a few words. This approach is reminiscent of what

is referred to in qualitative research as memory work (e.g. Widerberg, 2010). The aim of memory work is to problematize what is taken for granted by writing down memories of some event. Although my notes were not memories but associations, the goal was the same.

When I started to work with the Nature Index project, I had already gained some experience in the analysis of associations and implicit ideas. This time, however, I was concerned about being unable to make the scientists freely associate around biodiversity, expecting them to lecture me instead on its various scientific definitions. I needed topics, keywords, or questions that could trigger everyday perceptions. I therefore asked seven biologists who worked at my own institute to write down what they associated with biodiversity. As it turned out, both my colleagues and the informants I interviewed later were more than eager to come up with immediate associations and discuss their own implicit understandings of the concept. The small association task nevertheless enabled me to identify some angles from which the biodiversity topic could be approached. One approach to the question that I identified and included in the interview guide was to try to make the informants reflect on the relationship between the concepts of biodiversity and nature.

This kind of preliminary or informal analytical work involve, in the words of Fog (2004: 15) "invisible processes" that are seldom described in the literature, though they tend to exert an influence on the results. For example, in the first wolf study, the "memory work" or association task revealed four broad themes, or dimensions of representation, around which the interview guide was organized: the wolves' place and function, their nature and behavior, the relationship between wolves and other animals, and the relationship between humans and wolves (see Appendix Ib).

At the time of the second wolf project, I was more familiar with the social representation field and had already conducted a study on wolf representations. One of the lessons I had learned from the first wolf study was that talk of real life experiences with wolves often gave rich descriptions of the animal's character and behavior. As the broader topic of the second wolf study was precisely experiences with wolves, a more narrative approach seemed natural. Even though the broader study covered other aspects of human–wolf relations, the informants' accounts of human–wolf encounters represented the most important source of data for the analysis of objectivation in Article 4.

4.4 Focus groups

Articles 2 and 4 are based on analyses of focus group discussions. The selection of informants in the two studies did not in any way pretend to reflect the socioeconomic diversity of the study areas. In both cases the selection was purposeful, or "analytically selective" (Halkier, 2002: 30). According to Halkier, the composition of different focus groups should first and foremost ensure that key characteristics in relation to the matter under scrutiny are represented. For the purpose of the study presented in Article 2, it was above all important to include people with different opinions on the presence of wolves. In the second wolf study (Article 4), we sought to recruit informants who had also encountered wolves.

In the first wolf study, we initially sought out key informants among local nature managers and attempted to recruit gatekeepers from relevant social milieus (see Gaskell, 2000). We reached out to associations and organizations related to the use and protection of nature, such as nature conservationists, hunters, farmers, and land owners. For the most part, these were interest groups with an official stance on wolf conservation. Presuming that the wolf issue was also an important topic of conversation in the daily lives of local people, we furthermore wanted to get in touch with more informal social networks composed, for example, of coworkers, people related through leisure activities in nature, or simply neighbors.

For the recruitment of focus group participants, we relied both on the help of identified gatekeepers and on snowballing (Bertaux, 1982). For example, during an interview with a nature manager, we got to know that the person in the neighboring office was a local resident with a strong private involvement in debates on wolf conservation. After the interview, we approached the person next door, who immediately said that he was willing to help us out and put together a focus group. As we were channeled further in the social networks, we gradually gained an overview of social connections, constellations, and even family relations.

Altogether we conducted 20 focus group discussions with 80 informants in the first wolf study. Since one of the advantages associated with focus groups is that one can directly observe similarities and differences between the participants' perceptions (Morgan, 1997: 10), I chose to base the analysis of wolf representations on the sessions I had personally participated in, which

were nine in total. Further characteristics of the nine groups and the 45 included participants are described in Article 2.

The research group's interview guide for the first wolf study included a range of topics on large carnivore management (Appendix Ia). During the discussions, the informants usually brought up most of these topics by themselves. This allowed us to keep an open and flexible approach to the course of the interviews (Flick, 2007). To ensure that issues of relevance to the analysis of wolf representations were properly covered, I also developed my own, separate guide (Appendix Ib). This was more a way of thinking through and testing out different ways of approaching wolf representations during the interviews than a binding list of questions.

In most cases, general discussions about large carnivores quickly turned to revolve around wolves. Whenever this happened, I used the opportunity to ask for clarifications or elaborations as a way of provoking descriptions or discussions about what kind of animal the wolf is. I also asked the informants directly what they associated with the animal species. This evoked rich descriptions. Another question that revealed important information on wolf perceptions was whether we can tolerate mixtures of wolves and dogs in Norwegian nature. These and other questions that triggered talk about the wolves' nature and behavior were transferred to later interviews. Other questions in the interview guide on wolf representations were never asked because they appeared to be superfluous or out of place in the interview situation.

In the second wolf study, we proceeded much in the same way as in the first, relying on gatekeepers and snowballing for the recruitment and organization of focus groups. Furthermore, we sought out informants who had met, seen, or experienced wild wolves in other ways. In the area of Lake Osensjøen, wolves had frequently been observed close to people's houses. To identify and contact inhabitants who had recently been visited by wolves on or close to their property we used the digital registrations of the local wolves' movement patterns mentioned in Article 4. In the more densely populated and less transparent municipalities around Østmarka, the identification of people who had encountered wild wolves was more challenging. Besides relying on gatekeepers, we reached out to people through a public Facebook group for users of Østmarka Forest, entitled "Østmarka" (Appendix V). This strategy resulted in the organization of two focus groups.

In addition to organizing focus group interviews, three individual and three two-person interviews were conducted as part of the second wolf study. To keep the material in the corpus as homogeneous as possible (Bauer and Aarts, 2000: 31), these were later excluded from the analysis of objectivation presented in Article 4. The nine groups and 42 informants included in the analysis are further described in the article. As in the first wolf study, we had an open approach to the course and content of the discussions. Beyond issues directly related to human–wolf encounters, the interview guide included topics related to risk and fear, dog-keeping in areas with wolves, wolf governance, and social trust (Appendix III). Already in the first interview, we noticed that encouraging the informants to relate their personal experiences with wild wolves automatically brought up several of the other topics as the informants naturally linked them to their own experiences. As a consequence, we adapted our strategy to focus even more on such accounts in later interviews.

In both wolf studies, the interviews took place in different environments, depending on what was convenient for the participants. In some cases, we borrowed a room in the local town hall, at the library, or at a nearby hotel. Other times, the interviews were conducted at the informants' workplace or in the premises of an association. Finally, some groups were gathered in one of the informants' homes.

Leaving the task of setting up focus groups to gatekeepers entails a significant element of self-selection (Gaskell, 2000; Leung and Savithiri, 2009). In the case of the wolf studies, this had both positive and negative consequences. On the positive side, the recruitment strategy ensured that the groups were drawn from preexisting networks. They constituted the kind of "strong" or "natural" groups Bauer and Gaskell (1999) believe comparative analyses of social representations ideally should be based on. In contrast to statistical segments, which are not anchored in existing social networks per se, natural groups are composed of members with a common project and a shared awareness of the group's history. They are, in other words, self-referential (Bauer and Gaskell, 1999: 175–166; 2008).

The use of self-referential groups also has the advantage of avoiding what social representation scholars have called the problem of epistemic circularity (Wagner and Hayes, 2005: 312). This occurs when groups are defined on the basis of shared representations and vice versa (see also Potter, 2019). In the two wolf studies, the majority of the groups were indeed segmented in terms

of attitudes to wolf conservation – but not because we used attitudes as a criterion for organizing groups. Rather, the shared views reflected how the various social milieus from which the focus groups were drawn were differently affected by the presence of wolves. The group members' shared opinions on whether the Norwegian wolf population should be protected, reduced, or eradicated is best understood as the result of the kind of common project Bauer and Gaskell describe.

In the focus group literature, segmented focus groups are often described as "homogeneous." Morgan argues that homogenous groups are preferable to mixed groups, which can easily result in uncomfortable situations, or, in the worst cases, open conflict (Morgan, 1997: 37). On the other hand, too much homogeneity may lead to one-sided thinking or a lack of interaction due to the strong social control the members exercise over each other (Halkier, 2002: 31; Grønkjær et al., 2011). As a rule of thumb, the participants should feel comfortable enough in each other's company to express themselves freely (Morgan, 1997: 36). In both wolf studies, a few of the groups were somewhat mixed in attitudes. For example, this was the case in some of the neighbor groups. Importantly, however, the members of these groups shared other characteristics. They knew each other well, and they appeared to be at ease in the interview situation.

A negative consequence of the self-selection associated with the snowballing strategy was that we lost some control over the groups' internal composition. A notable effect of this was the underrepresentation of women in both wolf studies. In the first study, we organized a separate group with women (not included in the analyses of wolf representations) to try to compensate for some of this. However, as pointed out by Morgan (1997: 37), a comparison of perspectives among different social categories requires a certain number of focus groups representing each category. Although the focus group discussion with women did not uncover new perspectives or different combinations of viewpoints and perceptions, we cannot conclude from this that women do not have different perceptions of wolves. The relatively weak representation of women may have left out important perspectives or nuances from the analyses in Articles 2 and 4. The fact that the self-recruitment process led to an overrepresentation of men is in itself an invitation to explore gender perspectives on wolf conservation conflicts in future research.

4.5 Individual interviews

The interviews in the Nature Index project were conducted in the winter and spring of 2011, just after the first results of the scientists' work on the Nature Index were officially launched in December 2010. The 10 informants came from various institutes and research environments. They possessed different expertise and represented different nature types and major ecosystems. Furthermore, they had played different roles in the joint effort of constructing the Nature Index. Some had been involved over a long period of time and had extensive knowledge of the many stages of the broad project. Others had only taken part in one of the stages: for example, the data contribution phase.

The interviews took place at the scientists' own offices at their own workplaces, and they lasted between one and three hours; in most cases they lasted around two hours. All but one of the conversations was recorded and subsequently transcribed. On one occasion, after attending a seminar on the Nature Index, I got the opportunity to interview one of the busiest and most heavily involved scientists on the spot. Since the interview was not scheduled in advance, I did not have the equipment to record it and took notes instead. To compensate for the loss of data, I subsequently sought out the informant on several occasions to ask for clarifications or confirmation of my interpretations.

The choice of individual interviews was both pragmatic and analytically motivated. From a practical point of view, the involved researchers corresponded to the kind of informants Gaskell (2000: 48) describes as "busy" or "high-status." Finding a convenient time for an interview with a whole group of researchers working in different parts of Norway was simply too difficult. In addition, there was a noticeable tension between the involved scientists concerning what the Nature Index was supposed to represent. I wanted to explore in depth what these tensions resided in, and I felt confident that the informants would speak more freely in a one-to-one conversation.

In-depth interviews are time-consuming, and the small budget of the study imposed limitations on the number of interviews. The selection of informants did not reflect the variety of functions and expertise held by the scientists who participated in the construction of the Nature Index. Although the scientists were recruited from various research environments, not all participating institutions were represented. This may have influenced the results. The views and opinions of some groups of experts might have been overlooked, leading to gaps or biases in the presentation

of how the involved biologists conceptualized biodiversity. On the other hand, the selection of informants contained enough variety to say something about how biodiversity was understood and operationalized in the Nature Index. More generally, the use of in-depth interviews provided a holistic understanding of the conditions affecting the scientists' views of their own role as experts, uncertainty, the object of research, and the scientific process of constructing a measure of the state of nature.

While the use of focus groups contributed to situate individual informants' utterances within a context of social interaction in the wolf studies, I relied on other forms of contextual information in the Nature Index project. As an employee at one of the environmental research institutions involved in its formation, I had access to arenas where I was able to observe many of the scientists at work from the "inside." Therefore, to complete the knowledge I had gained from the preparatory association task and later from the interviews, I drew on spontaneous discussions with biologists as well as the information and impressions I had gained from participating in meetings and seminars devoted to the Nature Index.

As in the wolf studies, I had a tentative and flexible approach to the interview guide (Appendix II). The informants were generally eager to talk about their own contribution to the construction of the index and to share their perspectives on the pleasures and troubles associated with the extensive collaboration the process entailed. My main strategy rapidly became to encourage them to talk about the process as a story, starting with how they first heard about the Nature Index. The above-mentioned strategy of asking what they associated with biodiversity was another important strategy.

4.6 Analyses

The goals of exploring different perceptions and observing processes of consensus and disagreement are good reasons for choosing focus groups over individual interviews (Gaskell, 2000). Pointing out that social representations are generated, negotiated, and expressed in everyday conversation, Lunt and Livingstone (1996: 87) argue that they "are an ideal field for the application of focus group techniques." For the analysis of core and peripheral elements of wolf representations in Article 2, the interaction in the focus groups provided a unique

opportunity to observe underlying presumptions or *reasons* behind different viewpoints that appeared to be taken for granted.

As mentioned in Chapter 3, the relationship between the core and peripheral elements of a social representation has primarily been studied through social psychological experiments. Although the method was different, Abric's (1993) description of the core element as non-negotiable was crucial to the analysis of shared and conflictual ideas presented in Article 2. During the sessions, I tried to identify undisputed reasons for the informants' thoughts and arguments about wolf conservation as well as statements that provoked reactions from other members of the group. I paid particular attention to their body language. Nonverbal utterances, such as eager nodding and frowning, contain valuable information that requires not only ears but also eyes. It was partly on the basis of such observations that I identified core representations of the wolf. As such, by providing insight into ideas that appear obvious to the single informant (Morgan, 1997: 11–12), focus group discussions are perhaps just as suitable for the analysis of implicit assumptions as experiments.

Instead of directly transcribing the interviews, the focus group discussions in the first wolf study were audio-coded. Listening to exchanges between the participants can provide information that is difficult to extract from a text (Waterton and Wynne, 1999: 133). I needed, among other things, to recall situations where the informants used body language or nonverbal sounds to express agreement, doubt, or discord. The obvious character of the informants' ideas about the wolves' "pure" nature was, for example, most clearly expressed through aversive or almost offended collective acclamations each time the topic of wolf–dog hybrids was raised.

Using HyperRESEARCH, approximately 16 hours of recordings were arranged in shorter sequences. Each sequence was assigned an open title or description. Already at this stage, some of the codes were tentatively linked to themes based on observations from the interviews and topics in the interview guide. Other and new themes emerged during the process. When all the interviews were arranged in sequences, I went through the code list, grouped audio sequences with similar topics, and listened to them again. Repeating the process once more, I gradually developed the themes that formed the basis for the final analysis. In the last step, all the sequences that fell under these themes were transcribed, and the excerpts formed the basis for the written presentations of the analysis.

In the second wolf study, the recorded interviews were transcribed and QSR Nvivo was used to carry out an analysis along the same lines as described above, alternating between the text, codes, and themes. However, while some analytical themes were identified at an early stage of the first wolf study, the analysis presented in Article 4 was more empirically driven. Already in the first two interviews, we noticed that science and scientists had become an even more central concern to wolf adversaries than in the first wolf study. During the coding process, I became aware that negative utterances regarding science were recurrently linked to scientific methods and devices. This led me to delve into the literature on objectivation and to reanalyze the text, paying particular attention to the role of objects in the informants' accounts and arguments.

I had no prior experience in approaching representations as objects, and the social representation literature contains relatively few publications on objectivation as such. Discussions of the practicalities involved in the analysis of objectivations are even fewer, and the use of the concept is inconsistent. Struggling to understand how I should go about identifying objectivations, I realized that I first needed to come to terms with the meaning of the concept. A substantial part of Article 4 is therefore devoted to a discussion of what objectivation is in the field of social representations and how it can be approached analytically. Although this cycling back and forth between the data and the theory resulted in a practical approach to objectivations as *items*, I found it difficult to shift my attention from how the informants categorized and labelled wolves to focus on objects instead. My unfamiliarity with analytical approaches to materiality makes Article 4 a highly explorative attempt at putting the concept of objectivation into practice.

In the Nature Index project, the interviews were transcribed, and QSR Nvivo was used to code and thematize 331 pages of text. The first round consisted of an open coding process in which the material was broken down into 460 text sequences that were described by one or more key words or sentences. During this coding process, categories and subcategories were gradually developed. Some of the main categories were "the Nature Index as process," "the Nature Index as practice," "ambivalence," and "associations with biodiversity." Some of the subcategories under "associations with biodiversity" were "untouched/humanized", "old/new", and "native/invasive". The encoded text sequences were then organized and grouped according to the defined categories and subcategories.

At times, the detailed analysis made it challenging to keep an overview of the patterns that connected the text sequences to the informants' social positions and the broader context. During the analysis, I often had to take a step back and reinterpret the data in light of the main messages embedded in the informants' accounts. One such message was – although no one said it outright – that they were strongly ambivalent about the methodological aspects of the Nature Index and thus about the index itself. For the more general interpretations of the discord between biologists on how the concept of biodiversity should be operationalized and the political impact on the Nature Index process, my informal observations of the scientists "at work" were an invaluable source of information.

4.7 Ethics and anonymity

In all three projects, an information letter was composed prior to contacting key informants, potential interviewees, or (in the case of the wolf projects) representatives of local institutions that we wished to inform about the research (Appendix IV). The letters described the purpose of the research, who funded it, the normal course of an interview or a focus group discussion, and how the results would be communicated and published. They also clarified the informants' rights according to Norwegian law on data protection[2] and general ethical guidelines in social research. More specifically, they contained important information about the recording of interviews, data storage, procedures for anonymization, voluntary consent, and the possibility to withdraw from the study at any time up until the publication of results.

In all three projects, this information was repeated at the beginning of the interview, as was the request for the informants' permission to record the discussion or conversation. Article 7 of the General Data Protection Regulation (EU, 2018) specifies that it should be as easy to withdraw consent as to give it. In line with this, the informants were told that if they wished to withdraw their consent after the interview they could simply notify one of the involved researchers (or researcher) by email or telephone.

In both wolf studies, the informants were to a large extent recruited from small and transparent local communities. In these social environments, the wolf issue arouses both commitment and

[2] The Norwegian implementation of the General Data Protection Regulation (EU) is available at https://www.datatilsynet.no/regelverk-og-verktoy/lover-og-regler/ (only in Norwegian).

resentment. Some of the informants said that they avoid openly expressing their view on the matter to avoid conflict or for fear of social sanctions. The participants' anonymity appeared all the more important. In Articles 2 and 4, statements that might lead to the identification of participants – such as the names of places and people, and revealing details contained in the informants' accounts of events – have been omitted or anonymized. In Article 2, which compares representations across groups, we chose to specify the nature of the groups the excerpts are drawn from (e.g. hunters or conservationists). However, information about whether the interviews took place in Trysil or Halden have been left out. In Article 4, which largely focuses on the representations of wolf adversaries, the study sites have been specified but not the nature of the groups.

At an early stage of the Nature Index project, I had a conversation on the phone with a potential informant. During the conversation, the biologist confronted me with some difficult questions regarding confidentiality and anonymity. He wanted to know whether there were other researchers involved in the study – and if so, who? He also asked if I truly believed that full anonymity in the dissemination of the results was possible, and how it would be done in practice.

Thus far, I had only been involved in studies in which the participants were "lay" people. I realized that my previous reflections on such questions had not been specific enough, and that I had dealt with anonymization in a rather formalized way: for example, by referring to procedures for anonymization as the removal of names and other identificatory elements. I had also not given enough thought to when anonymization is required or desirable and when it is not.

Anonymization is a qualitative operationalization of the requirement of confidentiality in research (Walford, 2005: 85). While confidentiality refers to the management of secret or private information that has been disclosed in confidence, anonymization is specifically defined as "the removal or concealment of research participants and sites, as well as the omission of information that may lead to recognition of participants or sites" (Tilley and Woodthorpe, 2011: 198). In Norway, requirements of confidentiality in qualitative research are formalized in specific ethical guidelines for the social sciences (NESH, 2016). Besides providing information about legislation on the use and storage of personal data, the guidelines emphasize that "the research material must usually be anonymised" (NESH, 2016: Guideline 9). In this context, "usually" refers,

among other things, to individuals who have not "voluntarily sought public attention, or have accepted positions that entail publicity" (NESH, 2016: Guideline 7).

The expectations expressed through legislation and in ethical guidelines have been subjected to criticism and have led to a debate about the limitations and costs associated with anonymization (for an overview, see Kelly, 2009). Wiles and colleagues (2008), for instance, point out that, beyond the use of pseudonyms, problematic implications of protecting informants' identity are rarely discussed. In practice, they argue, the complete de-identification of persons and localities in publications of ethnographic or qualitative research is often not possible: nor is it always desirable.

The Nature Index study illustrates one problematic implication associated with anonymization. In this study, the informants were scientists conducting research for the public good and with public funding. In that sense, the informants had indeed "accepted positions that entail publicity." On the other hand, and as previously mentioned, the process of molding the knowledge of more than a hundred scientists with different backgrounds and institutional cultures into one standardized measure was far from smooth. Tensions were palpable, and it became clear that, if I wanted the informants to feel at ease in the interviews and to be able to speak freely, I had to promise to do what I could to protect their identities. Beyond omitting or changing names, age, gender, and other identificatory characteristics in the written publications, this also entailed removing or obscuring the informants' institutional affiliations and professional specializations. As such, quotations and illustrative examples containing references to, for example, specific species or events, had to be rewritten in ways that prohibited the informants' colleagues, funders, and others from identifying them.

This came at a cost and led to an apparent weakness of the analysis in Article 4. One of the major insights from the sociology of scientific knowledge is that scientific understandings and practices have a social and cultural foundation (e.g. Kalleberg, 2007; Latour and Woolgar, 1986; Tranøy, 1986: 145) and that the ideas and concepts of science exist and change within the framework of an institutional matrix (Hacking, 1999: 10). Feeling obliged to obscure or anonymize the informants' specializations and institutional affiliations, I deprived myself of the opportunity to enquire more deeply into the relationship between the scientists' representations of biodiversity and the institutional matrices in which they were embedded.

5. Summary of articles

Article 1: Understanding people's ideas on natural resource management: Research on social representations of nature

Buijs A, Hovardas T, Figari H, Castro P, Devine-Wright P, Fischer A, Mouro C and Selge S (2012) Understanding people's ideas on natural resource management: Research on social representations of nature. *Society & Natural Resources* 25(11): 1167–1181.

This article speaks to the multidisciplinary area of social scientific research on human–nature relations. In response to a general need for a better understanding of how nature perceptions intervene in environmental conflicts, a number of studies on social representations of nature have been conducted. The objective of this article is to provide a general introduction to the theoretical framework underlying these empirical investigations and to discuss its theoretical and empirical value to the field of human–nature studies. Situating Moscovici's theory of social representations among other socio-psychological perspectives on meaning as socially constructed, we clarify its specificities and present some of its core concepts. Based on a review of existing literature on social representations of nature, we illustrate what kind of knowledge the framework produces and discuss its value to the field of human–nature studies. Three case studies are explored in more depth for the purpose of demonstrating how the theoretical assumptions are put into practice.

Five good reasons for integrating the concept of social representations into research on human–nature relations are provided. First, as compared to more conventional socio-cognitive constructs such as "beliefs," "attitudes," or "values," social representations are analytically anchored to specific groups and situations. As such, they stand out as more contextualized. Second, the social representation concept accounts for both unity and diversity in social thought, thereby contributing to a better understanding of nuances and complexities in knowledge constructions. Third, the theory gives important insights about the mechanisms involved in the absorption of science into everyday knowledge. Fourth, in addition to providing knowledge about how socially shared ideas are produced, the framework allows for the study of how social representations serve as "resources" for debating and contesting the knowledge of others. Fifth, Moscovici's

association of representations with socio-material conditions lays the groundwork for new perspectives on the genesis of nature perceptions.

However, the link between social perception and socio-material conditions seems insufficiently explored and developed in empirical applications of the framework. In the reviewed body of literature on social representations of nature, there is a lack of attention to how representations evolve and change with time and the factors that lead to change. A second challenge relates to the absence of theoretical and empirical attempts to clarify exactly how shared perceptions interfere in conflicts over nature. Finally, the review points to an insufficient understanding of lay–science antagonisms in the broader field of social representation research. As conceived by Moscovici, the theory does not pay attention to how science is influenced by common sense. In view of the prominence of lay–expert conflicts in the area of nature resource management, this theoretical shortcoming needs to be dealt with in future research on nature representations.

Article 2: Social representations of the wolf

Figari H and Skogen K (2011) Social representations of the wolf. *Acta Sociologica* 54(4): 317–332.

The study context of this article is the reestablishment of a wolf population on Norwegian soil. The questions posed are how representations of wolves come into play in such conflicts and whether people with different attitudes to the presence and legal protection of wolves also hold different images of the animal species.

Focus group interviews with inhabitants from two local communities strongly affected by the reappearance of wolves formed the basis for the analysis of wolf perceptions. The core–periphery approach was used to distinguish between shared and contrasting representations in and between groups with different attitudes to wolf conservation. The separation of core ideas from peripheral ideas involved, among other things, a close examination of what appeared to be underlying presuppositions, as opposed to matters of ambivalence and negotiation, in discussions about the wolves' nature and behavior.

Independently of attitudes to wolf conservation, the informants shared a positive image of the wolf as a superior, impressive, and socially inclined animal: wild in essence and pure in its autonomy and independence of humans. Due to the implicit and consensual nature of these ideas, they were classified as core elements of the social representation of wolves. However, proponents and adversaries of wolf conservation displayed divergent interpretations of the local landscape in which the wolves have settled.

To the adversaries, the wolves' wild nature stood in a contradictory relationship to traditional rural economy and the idea of local nature as humanly managed land. To the proponents, who tended to view local nature as sites of wilderness, there was no such contradiction. Subjected to negotiation both within and between groups, the informants' contrasting understandings of local nature were classified as peripheral elements of the social representation of the wolf along with divergent views on the management of local natural resources and the danger wolves pose to human safety.

Insofar as negative attitudes to the presence and protection of wolves in local nature were not mirrored in a negative image of the animal itself, we conclude that people's perceptions of wolves cannot alone explain the fierce conflicts over its presence and protection. Rather, the social representation of a specific phenomenon must be understood as an element of a broader network of ideas giving sense to that representation. Only when the informants' contrasting interpretations of local nature were taken into account did the shared idea of the wolves' wild character appear as socially meaningful.

This article illustrates how consensus, or core ideas, may frame what is and is not at issue in social conflicts: It was against the informants' implicit presumption of the wolves' wild character that the discussions of whether they belong to Norwegian nature or not took place. Ideas that are subject to dissent, on the other hand, can sometimes be *presented* as taken for granted. Among the informants with negative attitudes to wolf conservation, some presented the contested idea of wolves as a threat to human safety as self-evident and non-negotiable. Peripheral elements can thus come into play in social conflicts as rhetorical resources.

Article 3: The ambivalent nature of biodiversity: Scientists' perspectives on the Norwegian Nature Index

Figari H (2012) The ambivalent nature of biodiversity: Scientists' perspectives on the Norwegian Nature Index. *Norsk Geografisk Tidsskrift/Norwegian Journal of Geography* 66(5): 272–278.

This article is an attempt at applying social representations theory to the study of scientific knowledge construction. Enquiring into what scientific uncertainty is and how it can be approached, I ask how scientists understand and categorize biodiversity and how this is related to uncertainty. The case study is the scientific construction of a framework for assessing the state of biodiversity in Norway: the Norwegian Nature Index. The index was calculated for different types of nature, providing each type with a number between zero and one, with one representing the best possible state of biodiversity.

The concepts of anchoring and themata were used to analyze in-depth interviews with 10 involved scientists from different institutions working with different types of nature. From a science studies perspective, the construction of scientific facts, or *certainties*, involves uncertainty and negotiation throughout the process, from the definition of the object of study to the transformation of scientific knowledge into political action. The informants involved in the construction of the Nature Index expressed general concerns about the bias fallacies associated with the standardization of what they perceived as incommensurable biological data into a single number. Of particular interest to this dissertation, however, were the uncertainties they associated with the definition and operationalization of biodiversity.

To describe and anchor biodiversity, the informants intuitively used categories such as "alive," "old," "stable," "intact," "original," "native," and "untouched." In matters of nature and biodiversity, these categories seemed to represent the positive pole of a series of antinomies that were largely taken for granted. However, during the construction of the index, one of these antinomies, the "untouched/human-made" opposition, became a matter of negotiation between the involved scientists. Even if the informants seemed to agree that the representation of biodiversity as untouched nature is common sense, this became problematic in practice.

Commissioned by the Norwegian government, the measure of the state of nature was expected to also be applied to humanly managed landscapes, such as land for grazing and mowing. This

led to general confusion and disagreement between scientists with loyalties to different institutions and types of nature. Ultimately, groups of scientists operationalized biodiversity differently, allowing for more or less human interference in the definition of a "good" state of biodiversity. This article concludes that the untouched/human-made antinomy created a conceptual uncertainty underlying the construction of the Nature Index and that this form of scientific uncertainty can be described and analyzed as themata. Applied to the study of scientific knowledge, the concepts of anchoring and themata can thus provide new insights into the cultural and normative foundations of scientific knowledge.

Article 4: Applying social representations theory to the study of science contestation: Objectivations of "fake wolves"

Figari H (2021) Submitted to *Social Science Information*.

This article is devoted to the notion of objectivation in the social representation framework. The transformation of ideas into objects is one of the core processes involved in the formation of social representations. The objective of the paper is, first, to clarify the meaning of objectivation in the theory of social representations, and, second, to explore the role of objectivation in science contestation.

In the first part of this article, I discuss the sense Moscovici gives to objectivation and compare his use of the concept to that of Berger and Luckmann; I also compare Moscovici's use of the concept to how it has been employed in later empirical studies of social representations. Approached both as process and product, as a way of making sense of unfamiliar phenomena as well as objectivated *items*, the concept of objectivation has at least two different meanings in social representation research. Moreover, I problematize Moscovici's understanding of objectivation as a process unique to the construction of everyday knowledge as well as the sharp distinction he makes between common sense and science. Suggesting that the signification Moscovici attributes to objectivation resembles the one it carries in the philosophy of science, I argue that scientific knowledge construction also relies on objectivation – and therefore also on common sense.

In the second part of this article, the objectivation concept is used to analyze how Norwegian opponents of wolf conservation objectivate the nature and behavior of wolves. Leaning on examples from focus group discussions with people living within or close to wolf territory, I explore how wolf adversaries make use of objectivated items, such as traces in nature, to represent the idea of "fake" or unnatural wolves who do not belong to local nature. Rumors of wolf–dog hybrids in the wild and secret wolf introductions have long been part of anti-wolf discourses in Norway and elsewhere and are important mediums for the circulation of everyday knowledge and the local contestation of science.

The analysis also indicates that the non-expert contestation of large carnivore science no longer relies exclusively on everyday experiences and local knowledge. For the purpose of turning science's own knowledge constructions against science itself, the informants frequently used technologically sophisticated objectivations – most importantly DNA and radio telemetry information – to demonstrate the wolves' unnatural origin and behavior. The study illustrates that objectivation plays a prominent role in science contestation and the ongoing scientization of public debates on nature and the environment. Shedding light on precisely *how* common sense can become entangled with science, this article contributes to a better understanding of the mutual dependency of the two forms of knowledge.

6. Discussion and conclusion

The aim of the first two sections of this chapter is to discuss how the included articles contribute to a better understanding of the role social representations play in human–nature relations. Of particular relevance to the objective of this dissertation are the questions of how conservation conflicts are connected to perceptions of nature and how common sense relates to science. How can we distinguish between areas of conceptual consent and dissent, and how do groups reflect on and make use of opposing social representations in struggles over the right to define reality? Conflicts over the use or protection of wildlife or nature tend to revolve around specific nature management practices, which are currently leading to confrontations between science and common-sense knowledge. In developing an analytical framework for the study of how science is absorbed into common sense, Moscovici left little space for a consideration of how common sense influences science. How are the two forms of knowledge interconnected?

In the last two sections of this chapter, I address specific questions the concept of social representations raises in sociology. From the viewpoint of social psychology, Moscovici shares a common ground with, for example, narrative psychology, and cultural psychology in positing that it is culture, and not individual cognitive mechanisms, that motivates human behavior (Chaib, 2015; Lopes and Gaskell, 2015; Sugiman and Gergen, 2008; see also Article 1). To most sociologists of knowledge, by contrast, the idea of meaning as socially constituted is evident. To discuss the relevancy of Moscovici's framework to sociological studies of knowledge conflicts, there are, in return, other questions that needs to be asked: How are representations related to social structure and how susceptible are they to influence from nonhuman phenomena?

6.1 The impact of social representations on social conflicts

To explore the role of representation in social dynamics is equivalent to asking, in the words of Howarth (2006: 67), "what social representations actually do." Drawing on examples of research on social representations in areas such as health and illness, gender, and the construction of communities, Howarth shows that representations typically reinforce social distinctions and group identities. Her argument parallels the discussion in Chapter 2 about how shared ideas, in the broader symbolic structuralist tradition, have been approached as symbolic boundaries and

as means of exclusion and inclusion. The *creation or reinforcement of symbolic boundaries* between social groups is one of the roles shared knowledge can play in conflicts over nature.

The discussion in Article 2 about how wolf conservation interferes with local farmers' and hunters' identity as stewards of nature falls within this interpretation of social representations as symbolic boundaries (see also Lamont and Fournier, 1992). Skogen and Krange's (2003) analysis of the Norwegian rural anti-carnivore alliance as a symbolic construction of community points to the same mechanism. Despite obvious cleavages between landowners, sheep farmers, and hunters in terms of interests and social status, the authors show how they all adhere to the same "powerful rural discourse" that "seems to invoke an image of communities that are under dangerous pressure from hostile external forces" (Skogen and Krange, 2003: 310). In stating that the concept of community is inseparable from that of collective identity, Skogen and Krange attribute the same unifying role to the rural anti-carnivore discourse as the one Gervais (1997; see Article 1) gives to the Shetlanders' representation of nature. In both examples, shared meaning constitutes a symbolic shield against the threat of "outsiders."

Despite the many examples of how social representations include and exclude, allowing for some sort of agency in the theoretical framework, this does not explain how consensual ideas can change or how conceptual agreement relates to disagreement. In many ways, the core–periphery hypothesis answers the need for a further concretization of the relationship between shared and conflictual representations. Until recently, however, the structural approach to social representations has mostly been discussed in French publications (Lo Monaco et al., 2017). This is also true for the few empirical studies of social representations of nature in which the core–periphery hypothesis is a central concern, such as Guimelli's (1989) study of the transformation of the social representations of nature among hunters in southern France described in Chapter 3. Another example is Michel-Guillou's (2006) study of French farmers' representations of the natural environment, which demonstrates how changes in agricultural practices and legislation led to a change in the periphery of farmers' representations of the land and a possible change in the representational core in the long run.

While both of these studies illustrate the usefulness of the structural approach to the investigation of how representations change, Article 2 is an analysis of how representations of a given phenomenon, at a given point in time, can embody both unity and diversity in social thought.

Departing from the core–periphery hypothesis and the way it rationalizes the coexistence of (sometimes contradictory) ideas at different levels, Article 2 demonstrates that consensus and conflict necessarily go hand in hand. Delving into one of the most polarized political debates in Norway, in which the wolf has become the symbol of rural resistance to urban supremacy and "lay" opposition to scientific hegemony, the paper points to a simple yet often overlooked fact: Diverging attitudes or expressed opinions cannot alone account for how the public relates to a given topic.

In other words, resistance to wolf conservation is not necessarily a reflection of a culturally transmitted stereotypical image of the "Big Bad Wolf," an idea proposed, for example, by Jürgens and Hackett (2017). Based on examples of wolf portrayals in the media and references to myths and folk tales, the authors argue that negative attitudes to wolf conservation are rooted in the Jungian shadow archetype of evil. Without rejecting the existence of wolf stereotypes circulating in the media and elsewhere, I find it deeply problematic to equate expressed attitudes with basic beliefs without taking the representational context of wolf resistance into account, and without asking the wolf opponents themselves.

The coexistence of conflicting opinions on wolf conservation and the shared understanding of the animal's character, described in Article 2, is an important reminder of Moscovici's warning against confounding opinions with the more complex meanings underlying them (Moscovici, 1961: 7; 1963, 1993a). The research on public responses to wind farms mentioned in Article 1 illustrates the same point: What is commonly interpreted in terms of NIMBYism ("Not In My Back Yard") seems better explained as the result of a symbolic conflict between the representation of local nature as "scenic" and "restorative," on the one hand, and the representation of windmills as industrialized objects, on the other (Devine-Wright, 2005; Devine-Wright and Howes, 2010). NIMBYism refers in this context to an inconsistency between people's positive attitudes to renewable energy and their resistance to the construction of wind parks in their own living environments.

The distinction between the core and the periphery of a social representation offers a way of making sense of alleged inconsistencies or ambivalence in attitudes and opinions. In the example of public opposition to wind parks, the local inhabitants' resistance was not grounded in egotistic and irrational attitudes of wanting renewable energy installations to be located elsewhere; rather,

their opposition was fueled by the wind turbines' incompatibility with the locally shared perceptions of the natural environment. In the wolf case – as illustrated in Article 2 – it was not diverging interpretations of what kind of animal the wolf is that seemed to lie at heart of the controversy; rather, it was different representations of the local landscape (as managed land or wilderness) and of the local inhabitants' identities (as stewards of local nature or intruders into the wolves' wild territory).

As explained in Section 4.3, the role of the peripheral elements of the representation is to absorb any contradictions between the context and core beliefs (Moliner and Abric, 2015). Following this logic, the wolf opponents' and proponents' conflicting interpretations of local nature made the connection between their diverging attitudes and shared beliefs meaningful: Wild wolves are welcome in wilderness but not on humanized land. In this manner, the structural approach allows for an analytical disentangling of what is or is not taken for granted: While the wild wolves' compatibility with Norwegian nature was at the center of the discussions in the first wolf study, their wild character was never questioned. Hence, with respect to the role played by social representations in controversies over nature, they furthermore contribute to delimit, or *frame*, the controversies by defining what is or is not at issue (see also Buijs et al., 2011).

Why is it important to separate topics of disagreement from implicit presumptions in negotiations over natural resources? One tentative answer is that a misinterpretation of the framing of a conflict, of the exact matter of disagreement or opposition, might lead to unfortunate political measures to ease controversy or counter resistance. For example, to educate a supposedly misinformed public, whose negative attitudes to wolves are allegedly informed by culturally distorted images and myths, is a commonly proposed solution to cope with wolf resistance – one that is bound to fail (Heberlein and Ericsson, 2008; Oražem et al., 2019). Similarly, misconstruing public resistance to wind parks as an irrational psychological mechanism leads to ways of engaging with the public that might provoke further polarization and even stronger negative responses (Burningham et al., 2015).

If the peripheral elements of a social representation contribute to frame a conflict by determining the matters of negotiation or query, the core defines the undisputable foundation of the debate (Abric, 1993). As shown in Article 2, basic beliefs about the wolves' wildness are the normative foundation on which the arguments rest. It is *because* they are wild that they belong or do not

belong to local nature. It seems, then, that another important role representations play in conflicts is as *non-negotiable premises* (Moliner and Abric, 2015). In terms of real life consequences, the importance of the consensual core appears to be linked precisely to its implicit character: Because they are taken for granted, core ideas delimit the range of possible actions. For example, Article 2 illustrates how the acceptance of wolf–dog hybrids living in the wild was unthinkable to wolf enthusiast and adversaries alike. Classified as "impure" and "dirt" in the sense of Douglas (2002), the mere existence of such animals seemed to jeopardize the very structure of the social representation of wolves, which appeared in the interviews as profoundly anchored in the wild–domesticated dichotomy.

The social taboo of wolf–dog hybridization has been confirmed in research from other European countries (see Hovardas, 2018a) and is an important basis for the longstanding and widespread rumors of the proliferation of wolf–dog hybrids in the wild as described in Article 4. The power of these rumors relies, first, on the argument that any proof of dog ancestry must lead to the elimination of the "polluted" wolves, and, second, on the indisputable character of that argument. To the extent that the idea of the wolves' wildness is a non-negotiable premise of the wolf debate, it shapes the scope of political action and prescribes the means by which wolf adversaries can influence conservation policy.

As illustrated by Article 4, information from techno-scientific instruments such as DNA and radio telemetry seem to have become the only legitimate means for deciding whether the carnivores are "real" wild wolves, "impure" bastards, or secretly introduced "aliens." The paper describes how wolf adversaries have adapted to this. Besides contesting the content of the knowledge provided by large carnivore biologists, they have gradually come to challenge it by actively making use of the scientists' own objectivations of the wolves' nature and behavior.

This means that, although the hybrid taboo appears as a widely shared and thus powerful premise in the wolf debate, the public participants in the debate are not passive receivers of unquestionable truths, or "doxa," to borrow a term from Bourdieu (1977: 156). The wolf adversaries' capability of turning rumors about "fake wolves" into seemingly more objective questions of genetics and radio telemetry data points, on the contrary, to another role representations might play in conflicts over nature: namely, as a *tool of knowledge contestation*. In this sense, Moscovici's conception of groups as active agents with distinct interests and

objectives makes representation “a potential space for meanings to be contested, negated and transformed” (Howarth, 2006: 77). For what purpose, and in which situations representations become means of contestation, negation, and transformation, are important areas for future research.

6.2 Bridging the gap between common sense and science

The sharp line Moscovici draws between common sense and science in his original work, assigning the former to everyday life and the latter to the world of reification (1961, 1984; see also Article 4), has been subjected to criticism. From outside the field, Moscovici has been accused of inconsistency in presuming, on the one hand, that all knowledge is representation, and, on the other hand, that science is an unproblematic realm of “pure facts” (McKinley and Potter, 1987; Wells, 1987). He has also been accused of overlooking the interests of actors (Potter, 2019; Potter and Hepburn, 2005), their reflexive capacity (Potter and Edwards, 1999; Potter and Billig, 1992), and consequently of disarming research on representations of its critical potential (Parker, 1987; see also Voelklein and Howarth, 2005). In this area, however, the strongest criticisms have come from inside the field. As outlined in Article 4, the objections concern in particular how the distinction between the consensual and the reified universes leads to the conclusion that science is devoid of common sense and therefore cannot be studied as social representation (Howarth, 2006; Kronberger, 2015; Purkhardt, 1993; Voelklein and Howarth, 2005).

Article 1 highlights the particular importance of bridging the epistemological gap between studies of common sense and studies of science in the field of human–nature research. The cases and examples the article draws on – such as the establishment of nature reserves; the classification of species as invasive, endangered, and protected; ways of dealing with natural disasters; and the construction of renewable energy installations – are all managerial practices that are heavily dependent on expertise and science. This easily leads to situations in which conflicts over natural resources are turned into contestations of scientific knowledge (Verma et al., 2017).

In taking objectivation as a focal point for the study of science contestation, the aim of the research presented in Article 4 was to follow up on these observations. The article explores how

the social representation framework can be used to study the means by which different versions of reality compete for legitimacy and how hegemonic representations are challenged. Questioning the distinction between consensual and reified worlds, it hypothesizes that objectivation is not unique to everyday knowledge but inherent to knowledge construction *in general*.

Moscovici describes objectivation as a core mechanism involved in the formation of common sense. In the social construction of objects, some features of the world are highlighted at the expense of others. This "re-presentation" (Buhagiar and Sammut, 2020) is, according to Moscovici, normatively driven (Moscovici, 1961: 313–315). A key argument in Article 4 is that this is also the case in the production of scientific models and measures.

One of the examples used in Article 4 to illustrate how science is imbued with norms is the study presented in Article 3. Through the examination of how biologists make sense of biodiversity in the process of establishing a Nature Index for Norway, Article 3 attempts to demonstrate how common sense influences science. It does so by using the notions of anchoring and themata to shed light on scientific negotiations over the meaning of biodiversity and the "translation" of this meaning into measurable models and units. The article adds to the discussion of what scientific uncertainty is and how it can be studied, a recurrent topic of enquiry in science studies (e.g. Funtowicz and Ravetz, 1994; Haila et al., 2014). Anchoring and themata are proposed as analytical resources for the study of conceptual uncertainties underlying scientific knowledge.

Conceptual uncertainty has elsewhere been described as the symbolic and normative dimension of science contingency (Haila et al., 2014; Mackintosh and Armstrong, 2020). The advantage of applying a social representation framework to the study of scientific uncertainties is that it enables us to say something about not only the content but also the imaginary context of the conceptual uncertainty – of what it is about a specific situation that turns categories of anchoring into problematic themata. For example, in-depth interviews with scientists involved in the construction of the Nature Index showed that the biologists seemed to intuitively associate biodiversity with the antithesis of "human-made" and anchored it as "untouched" nature.

However, the decision to create the index was not simply borne out of scientific curiosity but arose from a political call for "objective" valuations of different types of biodiversity and landscapes as a support for future political prioritization and action. In terms of the broader social

context, it was above all the Norwegian government's explicit instruction to include extensively managed agricultural land among the biodiversity habitats that put the antinomy untouched–human-made under pressure – or, rather, *thematized* it. To risk oversimplifying a complex issue, the government had already decided that some human-made landscapes were so important that they were better framed as habitats for biodiversity than as threatening to nature. The biologists were compelled to adapt their understanding of biodiversity to this political framing.

Despite his early attempts at separating common sense from science, Moscovici later addressed both forms of knowledge as rooted in common sense (Moscovici, 1993b, 1993c). He saw themata as a particularly promising concept for the study of the social foundations of scientific representations (Moscovici and Vigneaux, 1994). The concept was borrowed from the physicist and philosopher of science Gerald Holton, who defined scientific themata as antithetical dyads (for example, complexity/simplicity, reductionism/holism, stability/change) that motivate and restrain scientific knowledge production (Holton, 1973, 1996).

Perhaps Moscovici was also inspired by Merton, who saw in Holton's concept an instrument for the sociological analysis of "tacit cognitive imageries" and "underlying elements in the concepts, methods, propositions, and hypotheses advanced in scientific work" (Merton, 1975: 335). Of importance here is the shared presumption that, even though themata can be discipline specific, they are imported from the broader social and cultural environment, from everyday knowledge (Holton, 1996; Moscovici, 1993b). By applying themata as a tool of analysis, Article 3 attempts to put this presumption into practice by bringing scientific knowledge to the field of social representations.

The argument that scientific knowledge is imbued with common sense is also crucial to the interpretation and use of objectivation in Article 4. The paper analytically approaches techno-scientific instruments and the information they give as objectivated items in the same sense as the concrete images ordinary people use to make meaning of the world. As pointed out by Jovchelovitch, the role of science in postmodern societies leaves little doubt that both everyday and expert knowledge "can be permeated by ideology and be used to dominate" (2007: 124). A social representation framework whose focus lies exclusively on how science is transformed into common sense (Kronberger, 2015) or on how groups of non-experts compete for legitimacy among themselves is thus a one-armed theory. If objectivations serve as some kind of "proof" in

the competition of what reality looks like (Howarth, 2006), then "experts," "managers," and "politicians" take as much part in the competition as "locals," "non-experts," and "ordinary people."

As to *why* it is important to bridge the gap between common sense and science in social representation research, it seems that social representations sometimes become the very topic of conflict in social struggles over the right to define reality. Together, Articles 3 and 4 demonstrate that science can both be an active part of and constitute a resource for knowledge contestation in such struggles. This observation is in compliance with Callaghan and Augoustinos's (2013) study of the relationship between science and common sense in conflicts over climate change in Australia.

Based on interviews and media analysis, Callaghan and Augoustinos concluded that "sceptical scientists" (2013: 20) who questioned the broader scientific consensus about human-induced climate change consistently used common-sense knowledge to undermine mainstream science. Common-sense knowledge, the researchers argued, is an essential part of the social representation of climate change as fictive or accidental. As compared to the wolf opponents' use of science in Article 4, the mechanism described in the Australian example is reversed, with scientists invoking common sense to gain legitimacy. Yet the point is the same: Approached as practices of knowing rather than isolated phenomena (Jovchelovitch, 2007: 124), common sense and science constitute rhetorical resources that can be reflexively and strategically deployed to negotiate the outcomes of policy relevant science (Callaghan and Augoustinos, 2013: 34)

The understanding of representations as rhetorical resources stems not primarily from theoretical reflection but from empirical observations, for example, in Callaghan and Augoustinos (2013) study and the included Article 4. Therefore, if we ask *how* the gap between common sense and science in social representation research can be overcome, the simple answer is to include both scientists and scientific knowledge in research on social representations. Already in the 1980s and early 1990s, critics pointed out that social representation researchers' engagement with analytical and theoretical advances in the sociology of scientific knowledge was long overdue (Ibañez, 1992; Jahoda, 1988; Potter and Billig, 1992). Despite general recognition among social representation scholars of the need to break with the (mis)understanding of science as devoid of

common sense, few attempts have so far been made at putting this acknowledgement into practice.

In his early work, Moscovici held that the autonomy of social representation, as a unique form of common sense knowledge, resides in the way it normatively guides ordinary people in their everyday lives as repertories for how to think and what to do (Moscovici, 1961). Science, on the other hand, is depicted by Moscovici as a different kind of representational system with strong commitments to truth discovery. While my impression is that this was more a description of how science is commonly perceived than what it is, this distinction has impeded the social representation field from engaging in important discussions about the cultural foundations of scientific knowledge. Overcoming the common sense–science divide in future research requires the consideration of not only everyday knowledge but also science as prescriptive of action. This implies a shift in attention from what science is to what it "wants" (Jovchelovitch, 2007: 124); it also calls for further empirical analyses of how scientific representations are framed by norms and set agendas for political action.

6.3 The need to take structure into account in future studies of social representations

One of Moscovici's most important contributions to the sociology of knowledge lies in the connection he made in *La psychanalyse* between subtle meaning constructs and the broader social organization of French society in the 1950s (see Section 3.4). The link between representation and social structure is also apparent in the way diverging wolf representations in Article 2 seemed to be entangled with different views and interests concerning the future of urban economies, the preservation of agricultural landscapes, and local communities' role as stewards of nature.

The description in Article 3 of how predefined political priorities drove the biologists to negotiate and redefine the concept of biodiversity also alludes to the impact of the institutional order on representation. Moreover, the article hypothesizes that the biologists' pragmatic inclusion of humanly managed land in the construction of the Norwegian Nature Index may influence or change common-sense understandings of biodiversity over time. However, just as Moscovici was cautious about drawing conclusions with regard to future social effects of the mental

constructions of psychoanalysis, the hypothesis about the impact of the scientific (re)construction of biodiversity remains inconclusive. As pointed out by Moscovici, empirical data collected at one point in time or over a short period do not allow for the study of such mechanisms (Moscovici, 1961: 348n2).

In Article 4, representation and politico–economic environments appear as intertwined in the analysis of science contestation among wolf adversaries. The article describes how rumors that have long circulated in the sphere of the everyday lives of non-experts have taken on a scientized form, one more tailored to the logics of political decision making processes. This observation accords with previous research findings that point towards an ongoing institutionalization of science contestation (Björnberg et al., 2017) and thus illustrates how representations may influence broader social structures. The scientization of the anti-wolf discourse can also be understood as an effect of science's current hegemonic status as the only legitimate knowledge source for so-called evidence based policy (Saltelli and Giampietro, 2017). In that sense, Article 4 echoes Moscovici's understanding of representations as historically conditioned (see Section 3.4).

Even though the empirical investigations shed light on how representations are shaped within a broader context, on how they are part of social conflicts, and on how implicit beliefs are entangled with interests and strategic points of view, they fall short of explaining in what way and by which means representations are linked to structure. Focusing on the content of common sense, or trying to deal with theoretical ambiguities in Moscovici's framework, the design and the data precluded any exploration of the *mechanisms* through which representations are bound to structure – be it by including statistics, as did Moscovici in *La psychanalyse*, or via extensive ethnographic material, as in Jodelet's (1989) research on the enactment of madness in Ainay-le-Château.

In the broader field of social representation research, the conception of social representation as a subject matter for the sociology of knowledge has been largely overlooked or underplayed in later research (Jodelet, 2011). Predominantly explored, developed, and debated within the realm of social psychology, there has been a shift in focus away from the relationship between representation and broader social contexts. Influenced by the linguistic–discursive atmosphere of the 1980s (Jodelet, 2011), social representation scholars have turned their attention to topics

such as inner dialogue, alter–ego–object relations (see Marková, 2017a), and the concept of cognitive polyphasia – the psychological facet of coexisting and competing knowledge systems (Provencher and Wagner, 2012; see also Article 1).

This "return to the subject" (Jodelet, 2008: 425) has left the current field of social representation research with an unresolved relationship to structure. To the extent that macro-social factors are addressed, they are typically associated with "belief systems, ideologies or shared values" that "determine the actor's outlook and choices" (Lopes and Gaskell, 2015: 31). Hence, representation has increasingly come to be confounded with the somewhat vaguer notion of "cultural context" (see Psaltis, 2012). This often leaves questions of causality aside, or amounts to identifying causation with socio-psychological function – that of creating a shared context for communication and for mastering the environment (Moscovici, 1973).

In the end, explaining ideas with other ideas turns representations into enclosed cultural systems (Calhoun, 1992; Jacobs and Spillman, 2005). Moreover, to uncouple representation from structure – identifying the former with culture and the latter with the economic and institutional order – entails the danger of deculturizing the social order and of treating the material world as an objective landscape "in which and for which symbolic warfare periodically rages" (Friedland, 2001: 132). As emphasized in Chapter 2, the approach to representation as symbolic structure makes no analytical distinction between culture and society, between the representational and the distributional order. This understanding is inherent to Moscovici's framework.

Separating representation from structure becomes all the more problematic in studies of social conflicts. As evident in the wolf example, social conflicts typically involve competing theoretical frameworks employed in struggles with real material interests at play. Expressed differently: What is the meaning of knowing that wolves are associated with wilderness if we do not ask for what reason or to what effect? Who do representations serve and what do they change or sustain? To make social representation research more relevant outside the sphere of social psychology, there is a need for taking into consideration material interests and the social order they reflect.

How, then, can structure be incorporated into current studies of social representation? It seems that the theoretical resources needed for this task are to be found, not in the field of social psychology, but within the tradition Moscovici most explicitly built on: the French school of sociology. Bourdieu, in particular, came a long way in theorizing and researching how

representation relates to social differentiation and institutional arrangements. His conception of constructionism as a twofold social genesis – "on the one hand of schemes of perception, thought and action […] and on the other hand of social structures" (1989: 14) – takes Moscovici's observations on the social determination of representations further, providing answers to some of the above-asked questions about their causes and effects.

As explained in Section 2.1, the stake in the game in the symbolic field, or the sphere of representation, is "the power to produce and impose the legitimate vision of the social world" (Bourdieu, 1989: 20). The winners of that game have the strongest influence on the course of history: that is, on the distribution of economic, cultural, and social capital among groups. Article 4 is a forceful illustration of Bourdieu's point: If what is at stake for opponents of wolf conservation is to uphold the rural economy and way of life, the hope for achieving their goals resides – at least from their perspective – in their ability to construe and impose a representation of Norwegian wolves as "fake."

There is no need for synthesizing theories or merging methods in order to take Bourdieu into account in studies of social representations. From the viewpoint of the sociology of knowledge, Moscovici made important progress in the Durkheimian line of research on representations in specifying how they arise and change – as did Bourdieu in clarifying the conditions under which such meaning-making processes take place. Furthermore, in identifying power with different forms of capital, and structure with their distributional order among social classes, Bourdieu gave content to the notion of structure in the context of postmodern societies.

In order to position itself within the sociology of knowledge, the field of social representations needs to pick up the threads of Moscovici's discussion in *La psychanalyse* on the link between representation and social structure. Indeed, it is in light of the broader approach to shared ideas as symbolic structures that the origin and explanatory power of social representations must be apprehended. Therein lies the specificity of Moscovici's framework as a theory of knowledge and an unexplored potential for increasing our knowledge of the role of representation in social conflicts (see also Jodelet, 2002). Restoring structure as a core component of social representations does not preclude the study of how agents form and change social thinking: Rather, it surpasses the interactionist idea that structures can be as ephemeral as the interactions themselves.

6.4 Representing nature

One of the aims of the discussion in Chapter 2 was to clarify how the "sociology of meanings and categories" differs from the newer and more object-oriented actor–network theory (ANT), whose popularity seems to grow exponentially as the material turn strengthens its foothold in the social sciences (Pellizzoni, 2016). In the discussion, I made use of one of Latour's own examples to illustrate the difference between interactionist and structuralist explanations of human–nature interactions: namely, whether the social difference in appreciation of a thread of silk versus nylon is best interpreted as the outcome of the specific encounter between people, fabric, and all of the entities involved in its fabrication, or as the result of social distinctions that existed prior to that encounter.

In Latourian interactionism, nonhuman entities are conceived of as active agents, or *mediators*, with the capacity of transforming the meaning people attribute to them (Latour, 2005). In the structuralist tradition, by contrast, they are approached as *intermediaries*: that is, as symbols of social relations "outside" the specific situation. When nature is defined as part of the situation, the issue of human behavior as explained from "inside" or "outside" the situation (see Section 2.3) thus becomes a question of the autonomy and explanatory power of nonhuman phenomena. Latour and his ANT-colleges have rigorously debated variants of this question within the field of science studies, building on insights from fieldwork in laboratories.[3]

Within the broader and more dispersed tradition of studying everyday knowledge, the question of the role and status of nonhuman entities is, by contrast, seldom explicitly raised. The social representation field is no exception. The previous discussions of the Durkheimian legacy of the theory of social representations leaves, however, little doubt that Moscovici's theory leans toward structuralism and tends to explain human thought and action as a result of social patterns "outside" the context of interaction. Without ignoring the impact of communicative exchanges in immediate situations on knowledge construction, the assumption of a priori social conditions lies at the heart of the social representation approach.

This does not mean that Moscovici, or symbolic structuralists more generally, do not account for nonhuman entities: Rather, they approach them as intermediaries. In particular, it is through the

[3] See in particular the debate between Callon and Latour (1992) and Collins and Yearley (1992) on the diverging meanings of symbols, representations, and "rules" in ethnometodology in opposition to the Edinburg School.

concept of objectivation that Moscovici's perspective on the status of nonhuman entities comes into view. The discussion on objectivation in Article 4 shows how meaning-making processes not only relate to but are also constitutive of objects in the theory of social representations: First, objectivation involves the human selection of some aspects of the nonhuman world at the expense of others; second, since this selection is not arbitrary but normatively contingent, a surplus of meaning is added to the object; third, this surplus of meaning is symbolic because it is reflective of intergroup relations or broader social structures.

The idea that people project the social order onto things for the purpose of transferring meaning from one situation to another is the very essence of the Durkheimian approach to asocial phenomena as cult objects; Schiermer (2011, 2016) uses the term "fetishism" to describe this analytical position. Drawing on the concept of fetishism and Durkheim's sociology of religion, Schiermer attempts to show that objects are necessarily bestowed with powers beyond their immediate physical impact. With reference to the same Latourian example of silk versus nylon, he asks how we can explain that people's feelings towards objects of fashion tend to change over time as they become outmoded (Schiermer, 2016). Since the items themselves remain the same in all important respects, this transformed relationship cannot be explained by means of Latour's radical "factishism"; on the contrary, it demonstrates "that there is more to the object than its instrumental function" (Schiermer, 2011: 84). In essence, Schiermer's distinction between fetishism and factishism is equivalent to the opposition between intermediaries and mediators outlined in Section 2.3 (see also Schiermer 2011: 98).

Transferred to the context of this dissertation, the question becomes whether there is more to flowers, rocks, waterfalls, trees, mountains, or wolves than the influence they exert on us by the sole virtue of their "inner constitution" (Hacking, 1983: 136). Given the perspectives and analyses presented in the previous chapters, it would be an aberration to suggest otherwise – to maintain that people's relationship with wolves results only from specific human–wolf interactions. On the contrary, the empirical analyses demonstrate that wolves are powerful symbols of wilderness and purity, untouched nature and animal supremacy, as well as of rural decline and social disempowerment.

Indeed, the reason that wolf conflicts in Scandinavia and elsewhere have garnered a considerable amount of attention from social scientists seems to be their obvious social character (Hovardas,

2018b; Skogen et al., 2017). These are not simply conflicts between animals and people but also, and perhaps primarily, between people belonging to different demographic segments and social classes. As such, the wolf is a paramount example of how some things and beings come to play the role of intermediaries, of symbols of something else: Additionally, part of what the wolf has come to symbolize *is* the broader context of structural changes and social antagonisms in the postmodern society it is entangled with. The point I wish to make is that it is inherent to the theory of social representations to consider nonhuman phenomena as symbols, or intermediaries. When accounting for macro-sociological contexts, it moreover constitutes the quintessence of a symbolic *structuralist* approach to nature.

Despite the strong testimony of the wolf example that nonhuman entities can be bestowed with symbolic power, Latour (1993) clearly has a point when he accuses social scientists, in particular sociologists, of turning a blind eye to the impact things, plants, and animals have on the lives of human beings. If we turn Schiermer's argument upside down and ask if there is nothing more to wolves than our iconic image of them, it seems obvious that nonhumans also possess powers of their own, and are capable both of adapting to and changing their environment. This is the point Lescureux and colleagues (2018) make in an article on the agency of wolves. Claiming that social explanations of wolf conservation conflicts are insufficient for understanding their underlying dynamics, the authors argue that successful carnivore management strategies require a consideration of the animals as active agents with a capacity to adapt to humans. Choosing the strict legal protection of wolves in France as one of their examples, they suggest, for example, that the wolves' lack of negative experiences with humans have made them "bolder" (Lescureux et al., 2018: 149).

In an essay more explicitly devoted to ANT, Arnold (2020) also takes the phenomenon of "bold" wolves as her point of departure. Through observations of her own and other's encounters with the wolf designated "MT6," she examines the wolf's history and fate. Approaching people and their settlements, MT6 regularly transgressed human expectations about the shyness of wolves. As a consequence, MT6 became the first legally culled wolf in Germany. He was subsequently stuffed and placed on display. In the same vein as Lescureux et al. (2018), Arnold is preoccupied by the human–wolf interplay that produced MT6's lack of shyness and by the animal's independent role as agent. In life, the wolf's capacity as agent was demonstrated by its

transgressing behavior. The continued influence it wields on people as a stuffed animal resides in the way its appearance "resists" people's expectations of wolves as unapproachable and threatening.

Arnold's account of MT6 provides a good example of the constraints animals and natural forces impose on humans, simply by following logics that are different from the ones people expect them to follow (Callon, 1984). At the same time, the article is illustrative of how difficult it is to explain our relationship to nature without resorting to the existence of representations or some other cognitive construct. As such, in order to account for the agency of *humans*, Arnold turns, in her article, to research on human perceptions of wolves. It was, after all, the assumption of the shy nature of wolves and of MT6's deviancy that led to the culling of the young wolf. The story of MT6 can therefore also be read as a demonstration of the power of representations over human actions. Put differently: If nature has the inner capacity to resist our expectations, what are these expectations if not representations anchored in something other than nature itself?

On this account, Latour's interactionism is founded on a dubious premise. In maintaining that all aspects of the human–nature relation can be explained as the outcome of specific interactions between humans and nonhuman entities (1996: see also Chapter 2), Latour leaves no place whatsoever for shared meaning. To quote Schiermer (2016: 67), Latour "is as keenly interested in factishes and mediators as he is dismissive of fetishes and 'social' explanations; he insists, furthermore, that these two perspectives are *mutually exclusive*." Certainly, social representation scholars, along with other social constructionists, need to find ways to research how our relationship to nature is influenced by nature itself. It does not follow from this, however, that the renunciation of the concept of representation is a necessary condition for including nature in studies of social life. On the contrary, and as previously argued, if we do not account for representations, we may overlook important hidden premises upon which conservation conflicts and politics are based.

As argued in Section 2.3, it is not only the conception of "things" but also the role assigned to the human mind that separates interactionism from symbolic structuralism. Latour's problem does not reside in what he is trying to leave behind – a society without things – but in what he replaces it with: an assembly of actors without minds. To the theory of social representations, the idea of cognitive constructs as carriers of meaning between contexts is fundamental for

explaining the patterns of social life. How could, for example, the informants in Article 2, who had never met a wolf, paint such a detailed portrait of the animal without resorting to shared images of its iconic character? Without doubt, they had all seen films and pictures of wolves, read and heard stories about them. Yet such conveyed images are necessarily socially filtered and therefore also representations. However liable they are to change, images and icons are, at the end of the day, the products of thought, just as projection and fetishism are activities of the mind. There can be little doubt that there *is* more to wolves than their mediatory capacity to "transform, translate, distort, and modify the meaning or the elements they are supposed to carry" (Latour, 2005: 39).

Moscovici's focus on the "thinking society" (1984: 14) has been criticized for not being sufficiently action-oriented (Billig, 1993; Potter, 2019). Yet, to conceive of action without psychological entities deprives us of the opportunity to study the relation between objects and their images. Ultimately, social explanations of human–nature relations rely on the idea that collective cognitive phenomena exist and matter. Besides, what is action in the domain of the environment? Environmental problems are often abstract and not directly observable. When it comes to climate change, loss of species, or the conditions of ecosystems, we rely to a large extent on produced accounts of these states of affairs: that is, on representations.

Moreover, choices to protect wildlife, build wind parks, or reduce emissions are for all practical purposes collective and political choices. Even individual environmental actions – such as recycling, reducing consumption, refraining from long distance travel, or eating less meat – are heavily influenced by political priorities and the production and circulation of knowledge. Opinions and beliefs have thus come to stand at the center of environmental policy and conflicts over natural resources. Expressing, debating, and contesting them are ways of influencing collective action – and therefore also ways of acting.

It seems, then, that the battles for the future of nature and the environment are located precisely in the realm of the thinking society. It is in this area of the sociology of knowledge, where the social meets the cognitive, that Moscovici's framework offers valuable insights. Proposing specific tools for the study of representation, it carries the potential for broadening and concretizing the neo-Durkheimian strand in the sociology of knowledge.

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Article 1

Understanding People's Ideas on Natural Resource Management: Research on Social Representations of Nature

Arjen Buijs , Tasos Hovardas , Helene Figari , Paula Castro , Patrick Devine-Wright , Anke Fischer , Carla Mouro and Sebastian Selge (2012) *Understanding People's Ideas on Natural Resource Management: Research on Social Representations of Nature*, Society & Natural Resources, 25:11, 1167-1181.

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Abstract

Ongoing fragmentation between social groups on the appropriate targets and relevant actors for nature conservation signals the need for further advancements in theorizing about the human–nature interaction. Through a focus on the complexity of social thought and confrontations between social groups, the theory of social representations may provide a useful addition to conventional approaches. However, environmental issues have so far not been among the primary topics studied by social representation scholars. This article sets out to fill this gap. After an introduction to the theory, we report on three case studies that illustrate the use of this theory in the context of natural resource management. These studies show how groups negotiate meanings, intentions, and action related to complex issues such as wolf management, invasive species, and conflicts over protected forests, landscapes, and national parks. We discuss strengths and weaknesses of the approach and suggest future challenges and opportunities.

Keywords

citizens, conservation, environment, forest, landscape, national parks, social processes, social representations, wolves

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Introduction

Environmental debates no longer center only on the importance of nature conservation as such, but also on the question of what kind of natural areas need to be protected, how, and by whom (Buijs 2009). This has resulted in mounting discussions among environmental actors, presenting new scientific challenges to understand the growing complexity of views among different social groups (Hovardas et al. 2009).

In this article, we present the theory of social representations as a framework for analysing this diversity of views and grasping the complexity of social meaning with regard to human–nature relations. Until recently, environmental issues have not been among the primary topics studied by social representation scholars (with some notable exceptions, such as Halfacree [1993] and Gervais [1997]). However, in recent years a number of studies have been published that illustrate how the theory of social representations can be used to deepen our understanding of disputes over land management and of how people conceptualize nature and natural resources.

The objective of this article is to introduce and illustrate important aspects of social representation (SR) theory, to demonstrate the value of the concept of SRs to understand important aspects of human–nature interactions, and to critically review some of the recently published SR studies. In our view, an SR approach should not replace but rather complement conventionally used frameworks in this field.

After a short description of SR theory, we introduce specific elements relevant for research on natural resource management, and illustrate a selection of these by means of three recently published studies based on SR theory. The discussion section critically reviews some of the strengths and weaknesses of the SR approach to natural resource management issues.

The Theory of Social Representations

SRs are often described as socially elaborated (thus culturally and historically contingent) systems of values, ideas, and practices that are used by social groups to understand a phenomenon (Moscovici 2000). The theory of SRs conceptualizes the content, production, and circulation of commonsense knowledge (i.e., ‘‘practical knowledge’’ or ‘‘folk knowledge’’) (Moscovici 1984).

In his seminal work on SRs of psychoanalysis (translated into English in 2008), Moscovici was largely inspired by Durkheim's sociology of knowledge and his notion of collective representations (Durkheim 1912/1995). In line with Durkheim – but in contrast to classic psychological interpretations of representations as internal mental processes – Moscovici (2000) emphasizes intersubjectivity as the source and defining characteristic of representations, which are embedded and constructed within their social environment. However, while Durkheim focuses on single, rather static representations constructed by a society as a whole, Moscovici argues that in (late) modern contexts one should consider the plurality of social representations in a given society: Representations are shared by and can be specific to groups of people. As in most current approaches to knowledge and meaning, SRs are considered as dynamic entities, developed and altered within the frame of social and natural processes to which social groups relate (Moscovici 2000).

Several of the theoretical aspects of the theory of SRs seem to be particularly useful for the study of human–nature relations and natural resource management. These include (1) the interactional epistemology of SRs, (2) the dynamics of SRs, (3) the assimilation of new knowledge through anchoring and objectifying, (4) the importance of social groups, (5) the complex structure of SRs, and (6) the phenomenon of cognitive polyphasia.

Between the Social and the Cognitive: The Interactional Epistemology of Social Representations

In compliance with the constructivist tone of the concept, Sugiman et al. (2008) present SR theory as one of four major perspectives in the so-called ''social turn'' in social psychology, along with social construction, narrative psychology, and cultural psychology. These perspectives share an emphasis on the social origin of meaning, with an emphasis on processes of communication and interaction.

Yet, in our view, the theory of SRs sets itself apart from the other three perspectives in that it carries within it a simultaneous focus on social construction and cognition that might prove useful to elucidate the complex and ambivalent nature of people's views on their natural environment.[1] The concept of SRs can thus bridge the gap between a sociological approach that focuses on social patterns and processes, and a cognitivist approach that allows the structured investigation of mental constructs, drawing on well-established concepts such as values and

attitudes. The theory of SRs presents a marked affinity to Mead's (1934) conceptualizations of the origin of mind in social interaction (Howarth 2006). Both emphasize the symbolic aspect of representations as well as the primacy of social processes in which these symbolic representations are produced. SRs thus emerge not only from a subject–object relation but also from social structures and intergroup relationships. Consequently, SRs are distinct not only from radical constructivist approaches that deny the ontological or epistemological relevance of individual cognitions, but also from mere cognitive approaches that tend to neglect the social processes in which cognitions are developed (e.g., Sugiman et al. 2008). In this regard, the theory of SRs differs from well-known cognitive approaches used for understanding human–nature relationships, such as mental models (Bang et al. 2007), or theories that aim at explaining behavior, such as the value–belief–norm theory (Stern 2000) (for a more explicit reflection on the relationships between SRs and other social psychological theories including some of the main criticisms, see Gervais 1997; Markova 2008; Raudsepp 2005; Voelklein and Howarth 2005).

The Dynamics of Social Representations

The dynamics of SRs are directly related to the importance of group processes. When social groups have to come to terms with novel, unknown, or potentially threatening phenomena, SRs are (re)produced in a social process of collective coping (Bauer and Gaskell 1999); the members of the social group try to reduce the ''threat'' imposed by the new phenomenon by embedding its meaning in existing ideas and practices. This collective symbolic coping may result in a new SR based on a new set of thoughts and practices that help to render unfamiliar phenomena more familiar (Moscovici 2000). For example, in a pioneering work on SRs of nature, Gervais (1997) showed how local residents symbolically coped with the Brear oil spill in Shetland. While ecologists understood this disaster in global terms of endangered precious ecosystems, many Shetlanders resorted to an alternative representation of nature as being organic and resilient, strong enough to overcome the oil spill by natural processes (Gervais 1997).

It is important to mention that the dynamics of SRs and the processes of symbolic coping are closely related to questions of power.[2] Social life is not a level playing field between groups; instead, more powerful groups tend to be more successful in influencing the development of new SRs (Howarth 2006; Castro and Batel 2008). This ability to accommodate issues of power is another distinctive feature of the SR approach over more cognitive approaches. For example,

difference in status between social groups will have significant impacts on the development of SRs and through this may promote or discourage specific actions (Elcheroth et al. 2011). Such power does not need to be formal; access to and support from local media are examples of other important resources for successfully influencing SRs (Castro et al. in press).

Assimilating New Knowledge: Anchoring and Objectifying

Another distinctive characteristic of the theory of SRs is its focus on the mechanisms through which new knowledge and unfamiliar situations are integrated into existing ideas. Through anchoring, emerging ideas are associated with existing concepts, ascribing meaning to new phenomena that have, for instance, emerged from scientific developments such as biotechnology (Wagner 2007). As no suitable SR is yet available for the new phenomenon, group members link it to the representations of objects they are already familiar with. In this process, elements from existing SRs come to the fore and are used to conventionalize the new object or situation. Unfamiliar objects are thus embedded into existing systems of classification.

Objectification allows an abstract thing to become concrete through projecting abstract constructs as concrete images, which then come to stand for the new phenomenon. Unfamiliar objects lose their abstract character and are perceived as if they were real entities. The description of unfamiliar objects as if they were tangible entities leads to the formation of a figurative nucleus consisting of a complex of images that captures the essence of the concept or idea (Moscovici 1984).

The use of metaphors is one of the mechanisms through which concepts are anchored and objectified (Wagner et al. 1995; see also Lakoff and Johnson 1980). For example, labeling invasive nonnative species with a long lag between introduction and appearance of harmful impacts as ‘‘sleeper species’’ (Ferris and Bainbridge 2005, 12) illustrates how a complex ecological matter is translated into an image, that is, objectified.

Social Representations and Social Groups

The reference to social groups is a distinctive feature of the theory of SRs, especially compared to more cognitive approaches. While cognitive approaches center on the differences in meanings between individuals, SR theory also focuses on relations and differences in meanings between

groups. For instance, it has been shown that in the framing of forest conflicts different social groups refer to different SRs of nature and forests, in accordance with their practices and historical relationship with forests (Buijs et al. 2011). Furthermore, as a consequence of the interactional epistemology of SRs, the development of a joint representation presupposes shared actions by members of social groups through which, for example, symbolic boundaries are delineated. Development and use of SR are always accompanied by a process of identity formation where identities are internalized and social actors emerge (Duveen 2001). In the study on the Brear oil spill, Gervais (1997) illustrated the close relationship between SRs and group identity. Local residents conceptualized the oil spill as an attack on the community and as ‘‘an instance of foreign incursion into local affairs’’ (Gervais 1997). Through explicitly opposing SRs of nature endorsed by inlanders versus those endorsed by outsiders, such as ecologists and Greenpeace activists, the identity of the locals was reinforced and outsiders delegitimized. In this respect, the SR approach is quite compatible with studies on boundary work (Gieryn 1983), that describe how social groups demarcate out-groups through the promotion of in-group definitions and out-group stereotypes (Bauer and Gaskell 2008).

The Structure of Social Representations

Far from being rigid, one-dimensional constructs, SRs are understood to comprise values, beliefs, emotions, attitudes, and practices (Abric 1996). However, the importance of these elements differs significantly. Some are central to an SR and are shared by all in a social group, while others are of a more secondary nature and thus less important to capture the essence of a SR. The so-called ‘‘structural approach’’ therefore distinguishes analytically between consensual and stable central elements that provide the overall meaning of the SR (the stable core), and more dynamic and flexible peripheral elements that allow for adapting the whole structure to other representations and social groups (Abric 1996). While the central core of the representation is marked by the collective memory of a group and the system of norms to which the group refers, the peripheral elements provide a certain degree of flexibility for the SR to be adjusted to different contexts and to the heterogeneity of the group. Thus, it is helpful to think of SRs as being organized hierarchically – from the most implicit and underlying ideas and interpretations of a phenomenon, a core of common understanding, shared by many and taken

for granted, to contested points of view with regard to the specific context of the situation at hand (Abric 1996).

Inconsistencies and Contradictions: The Phenomenon of Cognitive Polyphasia

The coexistence of inconsistent or even contradictory representational elements has been characterized in SR theory as ‘‘cognitive polyphasia’’ (Moscovici 1984). Cognitive polyphasia thus refers to a state in which ‘‘different kinds of knowledge, possessing different rationalities, live side by side in the same individual or collective’’ (Jovchelovitch 2006, 60). The presence of heterogeneous and at times conflicting practices and modalities of reasoning results in hybrid representational fields that can accommodate old and new ideas (Castro and Batel 2008). Inconsistencies or contradictions remain largely unacknowledged, and thus enable flexibility in the negotiation social objects.

A manifestation of cognitive polyphasia might, for example, involve hybrid forms of knowledge drawing both on scientific accounts and on public understandings (Bauer and Gaskell 1999; 2008). In a study on SRs of biodiversity, Buijs et al. (2008) found that SRs of biodiversity were based both on embodied experiences of nature and on interpretations of scientific knowledge of ecological processes. For example, the scientific concept of balance was one of the core elements of the representations, while this concept has become somewhat outdated in ecological science (Callicott 2002). Wagner (2007) has termed this hybrid form of understanding situated somewhere between everyday thinking and scientific literacy ‘‘vernacular science knowledge.’’ The example also illustrates how reproductions of scientific concepts into common understanding usually include some adaptation of the original scientific concept to the values and experiences of the general public (Moscovici 2000).

Illustration through Three Case Studies

We showcase applications of the theory of SRs in three case studies recently published by the authors. These examples illustrate important aspects of the theory, such as the comprehensive but complex structure of SRs, the relationship between SRs and social conflicts, the process through which a new scientific concept is anchored in existing representations, and the

phenomenon of cognitive polyphasia. These examples are then used for a critical reflection on the strengths and weaknesses of the theory for understanding natural resource management.

Case I: The Structural Approach: Social Representations of Wolves in Rural Norway

The relevance of an SR approach to the field of natural resources relates, among other things, to the question of what role representations might play in social conflicts over natural resources. The relationship between representation and conflict was the central concern in a study of wolf representations in contemporary Norway (Figari and Skogen 2011). Due to strict protection, the expansion of a new wolf population has taken place on the Scandinavian Peninsula since the late 1980s, leading to severe controversies between social groups – between nature managers and sheep farmers, between conservationists and local residents, and between biologists and hunters, to mention but a few. Distinguishing analytically between a stable core and a dynamic, context-dependent periphery of SRs enabled the researchers to disentangle the complex relationship between consensus and diverging opinions, and between cultural meaning and controversy, that appears to lie at the heart of such issues. While a good deal is known about how wolves have been pictured in literature, art, and the media (see, e.g., Rothfels 2002), and how conflicts over large predators are embedded in socioeconomic structures (e.g., Kaltenborn and Bjerke 2002; Skogen et al. 2008), little is known about local conceptions and understandings of the phenomenon ‘‘wolf’’ itself. The study thus took an SR perspective and focused on both representation and conflicting opinions.

Core and Peripheral Elements of Wolf Representations.

Even though there have been strong antagonisms between Norwegian wolf supporters and wolf adversaries, the 80 informants who took part in the study shared an understanding of what kind of an animal the wolf was. The wolf was noted for its sociability, and expressions such as unspoilt, genuine, smart, strategic, dominating, and beautiful were frequently used. Even those who classified themselves as ‘‘wolf enemies’’ were impressed by the large carnivore. Most importantly, informants described the wolf as an incarnation of the wild – not humanized in any way. It represented to them what was natural, pure, original, and authentic: The essence of the wolf was its wild nature. Thus, the SR of the wolf was inextricably tied to the idea of wilderness. Whenever wolves crossed farmyards or approached schools or kindergartens, this was

interpreted as a transgression of the symbolic boundary between two important categories: the wild and the humanly cultivated.

Following the analytical distinction between the core and peripheral elements of SRs, the portrayal of an intelligent, social, and wild animal seemed to reflect the core of the SR of the wolf. However, even though adversaries and opponents shared an admiration for wolves, this does not imply that there was no conflict. While informants with a pro-wolf stance talked of wolves as endangered animals, wolf adversaries presented the same animal as a menace to rural life. Importantly, such peripheral elements seemed to result from a confrontation between the consensual core of the wolf representation (i.e., the notion of wolves as essentially wild) and the informants' representations of local nature (Buijs 2009): Individuals who disagreed on the wolf issue articulated diametrically opposed representations of local nature. While farmers and hunters saw the natural environment as a landscape for sustainable use (i.e., cultivated, productive areas for logging, grazing, hunting, and berry picking), wolf supporters saw this same environment as wilderness. Hence, for the first group wolves passed a symbolic boundary when visiting rural landscapes, while for the others, wolves explicitly belonged in such landscapes. It was on the basis of these peripheral elements that divergent attitudes on wolf management could be understood.

This study on wolf conflicts illustrated how conflicts are necessarily framed by consensual cultural beliefs. It is against the undisputed background of the wolves' wild character that negotiations over their belonging to Norwegian nature make sense. The wolf's particular role as a symbol of the wild and the antithesis of the humanized demonstrated in this study contributes furthermore to explaining why conflicts over large carnivores tend to concentrate on wolves, whereas, for instance, wolverines and lynx, which often cause much more damage in terms of livestock depredation, receive relatively little attention from the general public.

Case II: Anchoring Processes and Understandings of Biological Invasions

The second case study presented here focused on the dynamics of SRs through the process of anchoring, here related to biological invasions (Selge and Fischer 2011). The topic of biological invasion has recently entered the public discourse in Western societies, thereby offering a

valuable opportunity to study how scientific notions are translated into common sense through processes of anchoring.

Social Representations of Biological Invasions Focus-group discussions with Scottish participants (n = 67) showed that SRs of biological invasions were linked to ideas about human-induced detrimental changes to nature in general, as well as to attributes of specific species in particular, such as their perceived detrimental impact on nature and the economy, their controllability, and their attractiveness. Interestingly, people's attitudes toward invasive species were closely related to their views on the role of humans in the introduction of the species: Human-induced invasions were considered more problematic than species that extended their range naturally.

Throughout the course of the discussions on biological invasions, anchoring was frequently used to explore and develop the ideas surrounding ''biological invasions.'' Anchoring generally involved an application of a familiar concept to an unfamiliar phenomenon: A familiar source domain was used to make sense of an unfamiliar target domain, and both were connected through an attribute that made them comparable (see also Wagner et al. 1995). We called this attribute, shared by the two domains and making them comparable, *tertium comparationis* (Connor 2004).

Three Types of Anchoring

Three types of anchoring emerged from our analysis. Type I anchoring consisted of a comparison between a source and a target from distinct domains. For example, to elaborate on his/her representation of rhododendron (a plant seen by biologists to be invasive and nonnative to Scotland), one respondent compared its spreading pattern to that of a fungus. In this example, the source domain (fungus) was closely related to the target domain (rhododendron). The *tertium comparationis* that made them comparable was a prolific spreading pattern that both life forms were perceived to share.

Like type I, type II anchoring consisted in a comparison. However, here the source domain was constituted by cases within the target domain, with the aim to explore aspects of the target domain in more detail. This type of anchoring generally drew on an individual's knowledge about nonnative species to infer ideas for biological invasions in general. For example, the ruddy duck was compared to the Canada goose to substantiate the conclusion that the detrimental impact of nonnative species is a crucial aspect for the evaluation of species. As the

ruddy duck was considered much more detrimental than the Canada goose, its culling was perceived as more acceptable. Through type III anchoring, respondents embedded biological invasions in the context of their worldviews and value systems: Overarching ideas of morality were applied to the issue of biological invasions to make the unfamiliar phenomenon more familiar. For instance, participants repeatedly pointed out the importance of human responsibility for a species introduction. Some also wondered whether an introduction was *intentional*.

Consequences of Anchoring

The choice of a source domain in an anchoring process can influence the social representations themselves. For example, newspapers have frequently used terms such as ‘‘alien,’’ ‘‘invader,’’ and ‘‘foreign’’ to describe species found outside their original range. Such labels – as well as the term ‘‘invasion’’ itself, which was deliberately avoided by the researchers in the group discussions so as to not influence the conversation – might have conceptual priming effects, provoking anchoring in primer-related source domains (Fauconnier and Turner 2002). These effects were indeed found in group discussions, where the spread from invasive species from England to Scotland was interpreted in the context of the political relationships between the two countries. Negative connotations related to the term foreign were transferred on an incoming species, and participants explicitly referred to emotions such as national pride when discussing invasive species such as rhododendron.

Case III: Dynamics and Cognitive Polyphasia in Local Social Representations of the Dadia Forest Reserve

The Dadia Forest Reserve (northeastern Greece), established in 1980 and upgraded as a national park in 2006, hosts a remarkably diverse avifauna including vulture species. Upon establishment, the prohibition of primary sector activities challenged local residents. Ecotourism development followed to compensate loss in local income. After fierce park–people conflicts, residents’ positions shifted within two decades toward an endorsement of the protected area (Hovardas and Korfiatis 2008).

The Figurative Nucleus of ‘‘Pure’’ Nature

In a series of 23 interviews (Hovardas and Stamou 2006), residents pictured nature as a type of Arcadia, where visual aspects were compatible with a rural idyll. These images of nature were

devoid of any human aspect. The natural landscape was presented as scenery and not as a life world for loggers, stock breeders, or farmers. ‘‘Self-regulating’’ nature was objectified as ‘‘untouched’’ scenery in the core zones of the reserve (strictly protected zones). This resulted in a figurative nucleus of residents’ SR of nature, focusing on ‘‘pure’’ nature in the core zones of the park.

This focus seemed to have sealed off nature itself from any production process in the protected area, including the processes that had produced the scenery that, eventually, was the basis for the current ecotourism product. For instance, ecotourism in Dadia is largely based on wildlife viewing. Visitors are led to a bird observatory post where they can watch vultures feed on carcasses brought by park guards to a vulture feeding table. This feeding table has been landscaped into the core of the protected area to provide a diet supplement to vultures. Referring to what visitors can watch from the bird observatory post as ‘‘pure’’ nature obviously masks the multifarious interchanges between people and nature in Dadia.

Quite paradoxically, the figurative nucleus of ‘‘pure’’ nature legitimizes ecotourism as the predominant developmental strategy in Dadia: If nature is to be left alone to self-regulate, the only allowed interactions between humans and ‘‘pure’’ nature have to be ‘‘green’’ experiences (e.g., ecotourist activities), where nature serves as an exhibit to be visually enjoyed by locals and ecotourists.

Social Processes and Dynamics

Three processes contributed to the apparent changes in SRs, resulting in its depiction as pure nature, to be primarily consumed through ecotourism. First, environmental measures in Dadia have been implemented by a number of local people working as park guards, guides, and serving visitors at the Ecotourism Center of Dadia. Although these people comprised a minority in the local community, their embeddedness helped the newly developed SRs of pure nature to gradually diffuse among local residents. Second, the knowledge, reasoning, and motivation of these members overlapped substantially with those of scientists and volunteers. Interestingly, being employed at the Ecotourism Center was not necessarily accompanied by a radical change in thought and action; old habits, such as hunting, could remain alongside working in a local ecotourism enterprise. However, through their in-group status, the employment of local residents prevented an escalation of park–people conflicts. Finally, the growing numbers of visitors and

their economic importance supported the new SRs as advocated by both scientists and the local employees.

Vulture Feeding Sources as a Manifestation of Cognitive Polyphasia

Despite the unanimous representation of ‘‘pure’’ nature, there were aspects where local positions diverged substantially. Beliefs about vulture feeding were a source of disagreement within the local community. According to scientific knowledge, vultures are scavengers and can only feed on carcasses. However, respondents referred to a number of locals who claimed that vultures are capable of consuming big, living animals such as livestock. This position can be conceptualized as an attempt to question the image of the flagship species of the protected area, and these respondents retain a critical stance reminiscent of the past park–people conflict in Dadia.

Against the position that blamed vultures of feeding on big, living animals, interviewees defended a version of vulture feeding sources that did not coincide with the scientific one either. They maintained that when vultures feed on living prey, they consume nuisance species, such as snakes. By doing so, interviewees tried both to establish the vultures’ perceived role as nature-cleaners and to discharge them from being a threat to the local community. This version of vulture feeding sources is exemplary of the phenomenon of cognitive polyphasia. Interviewees expressed seemingly contradictory beliefs about vultures: Different modes of reasoning could coexist but inconsistencies or contradictions were not problematized. On the contrary, the coexistence of different and, at times, contradictory modalities of thinking and behaving allowed for an adaptation to different social contexts. This produced a hybrid form of reasoning that drew partly on science and partly on the local context.

Discussion

Based on the case studies just presented, we now discuss strengths and weaknesses of the SR approach and suggest future challenges and opportunities in the field of natural resource management.

A first important characteristic of the SR approach is its emphasis on the comprehensive nature of social thought. Although this may not be very innovative compared to discursive approaches that also revolve around interrelated sets of ideas, the focus on SRs as comprehensive constructs, consisting of elements that are interrelated in a complex way, may certainly have merits over

conventional cognitive approaches that tend to focus on specific cognitions, such as beliefs or values, isolated from their wider context (e.g., Schultz 2001; Schwartz 1977; Thompson and Barton 1994), or treat values as separate concepts from, for example, beliefs (e.g., Stern 2000; Vaske et al. 2001). A conceptualization of SRs as based on cognitive, normative, and expressive elements (Buijs et al. 2011) related to and (re)produced in social practices (Moscovici 2000) gives insight into the complexity of social thought. As concluded by Wynne (1996), ecological ideas are rarely to be found in their pure form, but more often in hybrid forms, flexibly adjusted to social and material contexts. In our view, this acknowledgment of complexity is one of the main assets of the approach. For example, Castro and Lima (2001) have shown the usefulness of the SR approach to understand how people try to reconcile seemingly contradictory ideas about anthropocentric versus ecocentric values concerning environmental behavior. In our view, the comprehensiveness of the notion of SRs, the distinction between core and periphery, and the idea of cognitive polyphasia are useful to disentangle such complexity.

The distinction between core and peripheral elements in the structure of SRs of wolves provides a good example: Although previous research investigating positive or negative attitudes toward wolves primarily focused on diverging values (e.g., Kaltenborn and Bjerke 2002), broader ideas about wolves have been overlooked. It was precisely the simultaneous focus on the consensual core and the more contextual periphery of wolf representations that, in case study I, bestowed meaning to the apparent contradictions in previous research on attitudes toward wolves: Although both enthusiasts and adversaries of the reappearance of wolves in the local community shared an admiration for wolves, a closer look at the more peripheral elements of SRs of wolves revealed clear divergences with regard to how enthusiasts and adversaries represented the relationship between wolves and local nature. Analyses of the complex and layered structure of SRs enabled the researchers to capture both the unifying and the divisive dimensions of social thought.

Similarly, in drawing attention to the multifaceted nature of people's understanding of the natural world, the concept of cognitive polyphasia shed light on the seemingly contradictory beliefs about vulture feeding within the Dadia community. Despite acknowledgment of the scientific claim of vultures being scavengers, different and sometimes conflicting modes of reasoning were adopted, dependent on people's activities and positions.

Second, SRs deal with the group level of social thought, situated in between the micro level of social-psychological approaches and the macro level of sociology. Consequently, SR research produces a different kind of knowledge. Other approaches may teach us more about individual systems of meaning, or about societal developments at the macro level. As such, the concept of SR might improve our understanding of how groups differ with regard to sense-making and how these differences relate to conflicts and are negotiated in specific contexts; how consensual SRs can stimulate group identity, position the group vis-a`-vis other groups; and how intra- and inter-group dynamics influence SRs. For example, the third case illustrated the importance of the distinction between in-group and out-group memberships, revealing the importance of an in-between group of locals being employed by the national park for the dispersion of new representations of nature and ecotourism in the park.

A third feature is the attention paid to the spread of scientific knowledge into lay understanding (Wagner 2007). The second case study on biological invasions was one of the first examples of this in the field of natural resource management. This study illustrated the usefulness of the concept of anchoring to understand how the general public makes sense of scientific constructs entering the public arena. Although anchoring is related to theories about metaphors, the SR approach may have additional value in linking this process to the structure and internal complexity of representations.

Fourth, like discursive psychology, the SR approach draws attention to the link between general, culturally shared systems of meaning and the application of such systems to local conditions. In contrast with discursive psychology, however, SRs are also seen as ‘‘cultural resources,’’ for example, in framing processes (Buijs et al. 2011). Local communities use these resources not only to make sense of the natural environment, but also for discursive as well as nondiscursive actions toward that environment (Halfacree 1993). In this process, culturally shared and thus consensual ideas about nature are adapted to local circumstances. This was illustrated by a study on the acceptance of wind energy in which Devine-Wright (2005) disentangles the seeming contradiction between positive attitudes toward renewable energy and negative attitudes toward the local implementation of such projects. A shift in analytic gaze from the attitudes held by individuals toward the representations they adopted enabled the researchers to rethink the common explanation of local resistance as NIMBY-ism (NIMBY = ‘‘not in my back yard’’).

This showed how the contradiction between global and local actions was not crucial in the conflict, but instead the experienced conflict between the Arcadian representation of nature and the representation of windmills as industrialized objects.

A fifth useful feature of the SR approach could be its explicit focus on the socio-genesis of SR, related to internal group dynamics, external conflicts, and a changing material or social context. The study of Gervais (1997) illustrated that an emphasis on the socio-genesis of SRs of nature can be very useful to understand the processes underlying the dynamics of SRs of nature. In our view, current studies into SRs of nature have so far insufficiently benefited from this aspect of the theory. Case study III, for instance, describes the content of a newly developed representation of the Dadia National Park as an ecotourism resort based on a figurative nucleus of ‘‘pure’’ nature, and how the hiring of members of the local community by the park management encouraged the adoption of this representation by the local community. However, the exact nature of this process and how previous representations were transformed or substituted have not been investigated.

Other features of SR theory may also be beneficial to research on natural resource management, but their usefulness has yet to be seen. First, the time–space dependency of SRs is one aspect that needs further investigation. SR theory, in contrast to discursive psychology, explicitly acknowledges the epistemological importance of the natural world (the ‘‘brute facts’’; Wagner 1998) for understanding socially developed representations about the natural world. This indicates the need for more longitudinal studies, to better understand the time-specific developments of SRs of nature.

Second, conflict and argumentation are still undertheorized within SRs theory in general (Voelklein and Howarth 2005). Conflicting SRs are important occasions that stimulate people to reflect on their own views and what differentiates them from other SRs. Studying conflicts and how social groups refer to conflicting SRs to frame these conflicts can not only illuminate the processes of construction, but also address the question of the stability or volatility of SRs. For example, in a study on a conflict over a woodland, Buijs et al. (2011) found that SRs of nature to which the contesting parties referred were much more stable than expected. While interpersonal contacts between these groups helped to limit mutual stereotypes, no effect on the conflicting SRs of nature could be discerned during the study period.

Finally, the often antagonistic relationship between science and common sense is a recurrent one in the field of natural resource management (e.g., Gobster et al. 2007; Wynne 1996). With SRs, Moscovici developed a framework that permits us to study what common sense is, how it develops, and how it relates to scientific knowledge. The investigation of anchoring of biological invasions elucidated some of the influence of science on common sense. However, a critique has been raised with regard to Moscovici's original reluctance to address the mutual entanglement and reciprocal influence of science and common sense (Voelklein and Howarth 2005). The fruitfulness of the theory of SRs for research on natural resource management will depend, among other things, on its capacity to incorporate such questions. Although there have been a few noteworthy attempts to bridge the gap between science and common sense from an SR perspective (Bauer and Gaskell 2002; Jovchelovitch 2008), important issues remain on the relationship between different types of knowledge unexplored. If science can be regarded and studied as SRs, what would be the epistemological and ontological consequences? How should we place Moscovici within the theoretical landscape of science studies, and what would an SR program of science studies look like? These are questions that hopefully can be addressed in future studies on SRs of nature

Notes

1. This positioning in between has raised significant criticism though, for example, from discursive psychology (Potter and Edwards 1999).

2. This importance of power relations is not evident in all social representation studies, including some studies of rural representations, as is rightfully claimed by Pratt (1996).

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Article 2

Social representations of the wolf

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Abstract

Restoring species to their former range has become a major goal in official environmental policy. Due to strict protection, the expansion of a new wolf population has taken place on the Scandinavian Peninsula since the late 1980s, leading to severe controversies in rural areas. Most research on conflicts over wolves has taken antagonistic attitudes as a point of departure. In this article we question this approach. Taking social representations as our framework for analysis, our aim has been to find out how wolves are perceived, and if an analysis of such cultural meanings can contribute to a better understanding of the severe conflicts accompanying wolf recovery. Focus group interviews in two areas in Eastern Norway suggest that it is not antagonistic interpretations of the carnivores' nature that fuel the conflicts over wolves, but different views as to whether they belong in the areas where they are now found. Yet, at the same time, it is against the undisputed background of the wolf's perceived character that the negotiations over their belonging to Norwegian nature make sense. We so argue that the theory of social representations provides a comprehensive framework for studying the complex relationship between consensus and diverging opinions, and between culturally embedded representations and conflict, that appears to lie at the heart of such issues.

Keywords

social representations, wolves, large carnivores, lay knowledge, common sense, conflict, nature, environment, focus groups, Moscovici.

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Introduction

After a century marked by the almost complete absence of wolves on the Scandinavian Peninsula the expansion of a new wolf population has taken place since the late 1980s. Although the present population is rather small, it has been the subject of heated debate and controversy both in Norway and Sweden.[1] Wherever wolves have appeared, their presence has resulted in deep conflicts between wolf supporters and wolf adversaries: between nature managers and sheep farmers, between conservationists and local residents, and between biologists and hunters, to mention but a few. Similar scenarios have unfolded elsewhere in the world, in other areas of wolf recovery, such as in North America and the French Alps.

The issue we address in this paper is to what extent disputes over wolf protection are related to representations of the animal. Is for instance resistance to wolf recovery rooted in a negative image of the predators? Employing the concept of *social representations*, as developed by Serge Moscovici, we wish to elucidate an aspect of the human–carnivore relationship that departs from the attitudinal and socio-economic explanations that have so far dominated the field, at least within the Scandinavian and North-American context. At a more theoretical level, we aim to explore the virtues of a representational approach in sociology through an empirical example, asking what role representations might play in social conflicts, for instance over specific species.

Ultimately, this leads to asking whether social meaning has any explanatory power or, in the words of Alexander (2003), 'cultural autonomy', justifying the *analytical* uncoupling of culture from social structure. While we are not in a position to address the latter issue in all its complexity, we do agree with Franklin (1999) that 'animals are good to think with', in our pursuit of a better understanding of how culturally elaborated meaning intersects with other social forces such as power or class structure (see Alexander, 2003: 14).

Wolves, representations and conflicts

During the last two decades, a number of studies have firmly placed human–wolf conflicts within the social realm, describing them as deeply embedded in broader patterns of cultural and economic divergence. The material impact of the reappearance of wolves (such as the killing of domestic animals and competition with hunters for game) has of course played a significant role

in the heated debate; but research has demonstrated that the controversy extend beyond antagonisms related to physical impacts. Factors such as rural decline and urban prosperity, socio-cultural tensions related to class, and struggles over the hegemony of scientific knowledge have been the focus of much of this work (e.g. Dalla Bernardina, 2002; Krange and Skogen, 2007; Mauz, 2005; Skogen et al., 2008).

These efforts to understand wolf controversies in a broader societal context, we believe, have been important in breaking new ground in terms of deepening the understanding of social conflicts related to large carnivores. Yet one might ask if previous research on human–carnivore relations not a little too easily has taken antagonistic attitudes towards wolves for granted. Based on a conflict perspective, various contributors have sought to expose underlying socio-cultural causes of the controversies accompanying the presence of wolves (e.g. Kaltenborn and Bjerke, 2002; Skogen and Thrane, 2008; Wilson, 1997). However much this has contributed to a better understanding of conflicts over conservation generally, the wolves themselves have almost been driven from the scene in the sense that the debate on their recovery appear as somewhat disconnected from the social meanings attributed to the animal species. Despite a general agreement that the wolf has a particular iconic power in the social imagery (e.g. Kellert et al., 1996; Lopez and Lopez 2004; Lynn, 2010) there have been few attempts at looking deeper into the locally constructed content of such representations and their possible impact on current conflicts over carnivore conservation.

This is not to say that wolf representations have not been an issue as such. Interpretations of wolves across time and space occupy a prominent place in literature on large carnivores, not least in North-America. A comprehensive overview of these interpretations has never been assembled (Lynn, 2010: 82), but attention has typically been drawn to how the wolf has been represented as a varmint and a pest (e.g. Kleese, 2002); 'an animal out of place' (e.g. Brownlow, 2000); a master of the hunt (e.g. Lynn, 2010); or a potent symbol of the wild (Emel, 1998). The lion's share of this work relates to the fast growing study area of animal geographies, and important findings concern how human understanding of a species is bound in time and space (see Rothfels, 2002), and how cultures conceptually assign different types of animals to different worldly environments (e.g. Philo and Wilbert, 2000). Particular attention has been paid to the change in the cultural imagination of large predators that has taken place over the past few

decades, transforming wolves 'from varmint to useful members of the biological community' (Kleese, 2002: 316).

While it seems obvious that such a change in hegemonic representations has taken place, the above mentioned findings do not constitute a sufficient basis for an enquiry into the relationship between perceptions and wolf conflicts. In the first place, research on representations has a logical focus on *shared* meaning, and when meanings becomes largely shared in time and space their connection with social conflicts is not self-evident. A second challenge relates to the fact that research on carnivore representations has tended to focus precisely on hegemonic and, to a large extent, scientifically informed understandings, paying less attention to 'lay' interpretations. At the risk of oversimplifying, this is probably related to the fact that scholars within the field of animal representations commonly construct these representations by means of analysing cultural expressions such as art and literature (see e.g. Baker, 2001; Rothfels, 2002).

The content of scientific and hegemonic understandings of wolves have also been the subject of anthropological and ethnological enquiries in Europe (e.g. Dalla Bernardina, 2002), and although this has not been an issue per se in Norway, such understandings play a prominent role in the public discourse. As for the local, non-scientific perceptions both policymakers and scientists have more than once made the error of deducing from 'pro' or 'anti' wolf *attitudes* to positive or negative *understandings* of the animal (see Figari and Skogen, 2008). Thus a shift in focus from more or less consensual, cultural representations to local conflicts and diverging viewpoints seems to coincide with a shift in focus from wolf representations to quantitatively measurable attitudes to carnivores, allowing for research into the socio-economic tensions fuelling the collision of such attitudes.

The point we wish to make here is that a good deal is known about how wolves has been pictured in literature, art and the media, and how conflicts over large predators are embedded in socio-economic structures. Yet little is known about local conceptions and understandings of the phenomenon 'wolf' itself. Hence our focus of interest here is *both* representation and conflicting opinions. But rather than to presuppose conflicting attitudes, we start with asking which associations, ideas and images wolves evoke. Conducted within the framework of a larger project entitled 'Large carnivores and human communities II: Conserving interacting species in the trans-boundary south-central Scandinavian ecosystem', the study is driven by two principal

questions. Firstly, how is the wolf perceived by rural residents? Secondly, do people who express conflicting attitudes regarding the presence of wolves also have different representations of the animal?

Social representations

Investigating people's understanding of wolves, rather than just the opinions they express, requires suitable tools. To this end, our study utilises the framework of *social representations* as developed by the French social psychologist, Serge Moscovici. First introduced in his thesis on the social representation of psychoanalysis in 1961 (1976), this 'theory of social representations' has had a considerable impact on research in Europe, Canada and Latin-America. Inspired by Moscovici, social scientists from diverse fields have studied, for example, social representations of illness (Herzlich, 1973), the human body (Jodelet, 1984b), cities (Milgram, 1984), biotechnology (Gaskell and Bauer, 1998), and the environment (Félonneau, 2003).

The concept of social representations is currently presented as an alternative and a complement to the concept of 'attitudes'. Even though attitudes tell us something about people's views about specific matters, they remain mere fragments within a larger context of meaning and interpretation of the world (Wagner and Hayes, 2005: 116). In line with this argument, Moscovici (1973: xiii) describes social representations as complex 'cognitive systems with a proper logic and language of their own'.

By applying the concept of social representation one seeks to take this context of meaning and interpretation into account by focusing on shared, collective ideas and assumptions about the social and physical environment. At a basic level, all communication and coexistence presupposes a common understanding of the world. These shared implicit meanings constitute the foundation upon which our representations and our knowledge rest (Moscovici, 1984; Wagner and Hayes, 2005). Hence, knowledge cannot be separated from representations. Moscovici and his associates therefore also frequently refer to social representations as *common sense* (Moscovici, 1973; 1993) or *lay knowledge* (Herzlich, 1973; Jodelet, 1984a).

Another way to put it is that the concept of social representations addresses *social thought* (Jodelet, 1984a). In this the Moscovici school relies, in turn, on Durkheim's sociology of

knowledge and notion of *collective representations* (Durkheim, 1898; 1912). The emphasis on intersubjectivity as the source and defining characteristic of representations sharply distinguishes it from the classic psychological interpretation of representations as internal mental processes, understood as being more or less isolated from the wider social environment. Like Durkheim, Moscovici believes that the content and categories of human thought remain rooted in historical and cultural structures.

However, Moscovici's approach represents a break from Durkheim's understanding of representations as being pre-established and static – almost a-historical. When transferred from the context of traditional societies to modern ones, Moscovici (1993) contends, representations can no longer be viewed as *collective* in the Durkheimian sense, but should instead be seen as *social*. Indeed, representations are necessarily shared to an extent that will allow objects and phenomena to achieve a basic meaning within the broader frame of social structures. Importantly however, not all conceptions of the world are shared by all people; representations are social because they are common to a *group* of people. But social groups can vary in size. Thus, by employing the term 'social' rather than 'collective', Moscovici attempts to adapt Durkheim's early sociology of knowledge, predominantly based on studies of 'collective consciousness' among aboriginals (Durkheim, 1912; Durkheim and Mauss, 1903), to contemporary social science and the postmodern focus on fragmented, diverse, rapidly changing societies (Farr and Marková, 1995).

Inasmuch as the boundaries between social groups remain flexible, and since one person is usually a part of many groups – smaller groups, larger groups, societies – the degree of consensus about the interpretations of the world must also be flexible and varying. Hence Moscovici (1988: 219) emphasises that it would be an aberration 'to consider representations as homogeneous and shared as such by a whole society. What we wished to emphasise by giving up the world "collective" was this plurality of representations and their diversity within a group'.

The description of representations as socially shared on the one hand, and as multiple and diverse on the other might lead to confusion. But this apparent contradictory coexistence of representational homogeneity and diversity, of consensus and inter-individual differences, has been explained in terms of the structure and dynamics of social representations. Far from being

rigid, one-dimensional constructs, social representations are understood to comprise the totality of information, beliefs, attitudes and opinions (Abric, 1984:180).

These elements of social thought are of unequal significance, yet inter-dependent. Some are fundamental and appears to be at the centre of the representation. Others play a more secondary role. Abric (1993) thus proposes an analytical distinction between the *central core* and the *peripheral elements* of a social representation. Whilst the central core of the representation is stable and consensual – marked by the collective memory of a group and the system of norms to which the group refers – the peripheral elements are flexible and sensitive to changing and immediate contexts, supporting the heterogeneity of the group. Thus new ideas may vanish just as soon as they turn up, or they may eventually become part of the representational core. The two components are mutually dependent insofar as the peripheral elements connect the *non-negotiable* ideas of the central core to the immediate situation in a dynamic response. As we will see, attitudes to wolf recovery can be understood as *one* such response, connecting core ideas about the nature of the animals to other aspects of the social and physical environments in which large carnivore conflicts takes place.

To summarise, it is helpful to think of social representations as being organised hierarchically – from the most implicit and underlying ideas and interpretations of a phenomenon, a core of common understanding, shared by many, completely taken for granted – to, on the other extreme, totally antagonistic points of view, dividing social groups or individuals.

A representational approach to wolves

In our study, we conducted a series of twenty focus group sessions. During the winter of 2007 and the spring of 2008, group sessions were arranged with farmers, sheep breeders, landowners, hunters, conservationists, hikers, dog sledders, local tourist operators, teachers, architects, nurses, saw-mill workers, and neighbourhood groups.

Nine focus group interviews (45 informants) were selected for a qualitative content analysis of wolf representations. Two of these groups were with hunters, two with farmers, one with conservationists, one with dog sledders, one with hikers, and two with members of local neighbourhood groups. Some of these groups were clearly biased towards one side of the conflict

(e.g. hunters and farmers were predominantly sceptical of wolf presence and conservationists the opposite). Others, such as the neighbourhood groups and those composed of hikers and dog sledders, were more mixed in terms of expressed attitudes to the presence of large carnivores. The informants were aged from 18 to 79, and 15 of them were woman. Each focus group consisted of two interviewers and between three and nine informants. The interview sessions lasted between one and three hours, with most lasting around two hours.

Social representations may emerge as lay theories, causal explanations, specific vocabularies, cognitive frames or prototypical examples (Moscovici, 1984). In other words, we are dealing with qualitative entities; generated, expressed and negotiated through everyday conversations. Lunt and Livingstone (1996) argue that the focus group method, seen as a simulation of the everyday production and communication of social representations, is well adapted to researching such issues.

Morgan (1997) observes that focus group sessions differ from individual interviews in that within groups, the data are to a large extent the result of *interaction* between informants. The focus group method, therefore, provides not only accounts *of* action, but also accounts *in* action (Halkier, 2002: 11). For the purpose of identifying and interpreting social representations, group discussions may give direct access to shared understanding as well as different interpretations of particular issues (Morgan, 1997: 10). By watching and listening to interactions between group members we were able to distinguish areas of consensus or, in other words, to identify common assumptions about wolves that transcended particular topics of disagreement, both within groups as well as between the different groups of informants.

Given that representations of phenomena consist of iconic or descriptive elements of social thought (Moscovici, 1993), our key objective was to draw out, in particular, *descriptions* of wolves: we wanted to know how the informants interpreted the animal, how they described its nature and its behaviour. Encouraging them to recount stories about their observations of wolves in the study areas turned out to be an especially productive way to bring about these kinds of descriptions.

Quite a few of the informants had seen wolves, some several times. Others gave second-hand accounts about encounters with wolves. Some of the informants drew upon their observation of

tracks in the snow when describing the nature and behaviour of the animals. In addition, comparisons that were made between wolves and other animals, such as other large carnivores, dogs or wolf hybrids (i.e. the offspring of a wolf and a domestic dog, born in the wild) was an important source of information about the informants' representations of the wolf. In most of the group discussions we also addressed the issue of wolf representations directly by asking the informants at the end of the sessions to tell us what they spontaneously associated with the animal.

The informants selected were from two municipalities, Trysil and Halden, both in South-Eastern Norway. These two communities differ in a number of ways. Trysil is a typical Norwegian rural district, with vast forests and mountains and is a popular destination for skiers and nature tourists. Despite its size (3014 km^2), the population is modest (6,741 in 2008) and has declined in recent decades. In addition to a sizeable tourist industry, centred on a ski resort, Trysil's economy also contains traditional sectors, predominantly forestry and wood processing, but also some livestock farming.

In contrast, Halden is smaller in size (642 km^2), but has a population more than four times greater than Trysil (28,092 in 2008). Due, among other things, to a long industrial history (lately dominated by wood processing) 85 percent of the population lives in urban or semi-urban areas. Halden is thus largely characterised by an urban mode of life. There are, nevertheless, a number of smaller communities in Halden that are distinctly rural, and which have retained close ties to traditional land use, e.g. forestry.

Despite their notable differences, both municipalities are affected by the presence of large carnivores; bears, lynx, wolverines and wolves in Trysil, and wolves and lynx in Halden. Both are economically diverse, which means that the conflicts over large carnivores are not driven primarily by loss of livestock. Sheep farming plays a very modest role in Trysil and is practically absent in Halden. Although there has been very little loss of livestock due to wolves in both areas (bears and lynx have caused some losses in Trysil), the presence of wolves seems to be the main issue in local debates on large carnivores. Without doubting the actual threat presented by the presence of wolves, including the potential loss of livestock and dogs, one might ask what it is about this particular animal that attracts so much attention. The question requires an enquiry into the field of representations.

Shared representations of the wolf

Even though there have been strong antagonisms between Norwegian wolf supporters and wolf adversaries, our interview data shows that people with opposing views on carnivore protection also seem to share a basic understanding of wolves as superior, social, wild and pure. There was a strong consensus about these ideas, accentuated by their very tacit and implicit nature. They featured commonly as presumptions or underlying arguments. According to social representation theory, such common and implicit ideas – also described as non-negotiable elements of social thought – are part of the central core of a representation. Following Abric's (1993) line of thought, these ideas constituted the core of consensus in the groups' social representation of the wolf.

The informants portrayed a species that is superior in several ways. They frequently used words and expressions such as, 'genuine', 'pure', 'unpolluted', 'smart', 'socially intelligent', 'strategic', 'dominating' and 'beautiful' to describe the wolves and their behaviour, and this was done independently of their position in the debate. Even those who classified themselves as 'anti-wolf' were openly impressed by the large carnivore. One hunter, talking about why he would like to hunt the predators, said: 'You'd have to search a long time to find a more fascinating animal!'

The informants described the wolf as highly-ranked among animals – at the top of the animal hierarchy, at least within the Nordic fauna. Generally regarded as strong, powerful, graceful, and dignified, the local resident's interpretations echoed popular scientific depictions of an 'aristocratic' animal, as described so vividly by Dalla Bernardina (2002). Our informants' construction of the 'noble wolf' was deeply embedded in ideas about the predator's intelligence and strategic capacity, making it an excellent and unrivalled hunter. Many of them told stories about how the predators strategically use human-made structures in the landscape, such as dog-sled tracks and the wooden boards placed in bogs to aid hikers. They were even more impressed by the wolves' habit of following each other's tracks perfectly in the snow, as a way of saving energy:

> Indeed, we've seen how fine hunters they are... and how rational they are, actually. We don't often have deep snow here, but it sure happens. And then we can see that four of them have been following each other, or five... but it's totally impossible to decide how

> many there are, because they're treading exactly... [in each other's footprints], saving their strength, you know. It's just incredible! (Farmers)

As mentioned earlier, a number of the informants had seen wolves in their immediate surroundings. These first-hand experiences, as well as stories told by their friends, colleagues, neighbours or family members, constituted the basis of the ideas about the nature and behaviour of the species. Furthermore, observations of tracks represented an important source of knowledge, and led to the construction of scenarios that highlighted the wolves intelligence, their hunting talent and physical strength:

> Once, we were tracking two wolves (…). And then, apparently, one of them had stopped, standing still on his post. We could see that he had been standing there for quite some time, waiting, while the other one kept on, and then chased a roe deer right up to where the first one was waiting. Then [the first wolf] brought down the roe deer, and they ate every little bit, except the antlers and the skull. That's all that was left. (…) I was so impressed when I saw how they had been working. This was really someone who knew how things should be done! (Neighbour group)

These ideas of the wolf's intelligence, strength and hunting talent were closely connected to another image: that of an animal with a strong instinct for self-preservation. As a species it was described as extremely powerful and robust, and possessing a strong instinct for survival. The picture of superiority and strategic capacity seemed to be informed by the notion of the wolf as a social animal – by the idea of the *wolf pack*:

> **Interviewer 1**: If you were to describe the wolf, how would you characterise that animal?
>
> **A**: Social
>
> **B**: Intelligent
>
> **Interviewer 2**: How… can you expand on that?
>
> **B**: Intelligent? Well, at least it has a social intelligence. It's a very social animal, and it's capable of making... well, strategies while hunting. (Conservationists)

While other large carnivore species were described as loners, the wolves were noted for their sociability. It is by virtue of belonging to a larger group and possessing the ability to cooperate

with other individuals that the wolves appear as superior, strong, and intelligent. Indeed, this group attachment seems to make them stand out as unique animals:

> **Interviewer**: You said something about the wolf being a special animal, or quite unique. Do you remember – a little while ago?
>
> **A**: Yes, it is special – the way it behaves. It's a very social animal, you know. The lynx, for instance, is more of a loner... or a part of a family, as long as there *is* a family. Then they separate gradually, I guess. The bear too, is mostly living by itself. (Farmers)

Above all, the wolf appeared to the informants as a *wild* animal: natural, authentic and not humanised in any way. The essence of the wolf was seen to be its wild nature. It was supposed to inhabit wild areas and perceived as extremely shy. Even though the majority of the informants in this study lived within or close to wolf territory, and several had had encounters with wolves, such encounters were generally presented as extraordinary events or as rare, fleeting glimpses; extraordinary because wolves, as incarnations of the wild, become strangers when in socialised human territory:

> I have seen [wolves] three times. The first time, a wolf crossed the field, and then it ran up the slope. (....) I went after it, and when I reached the slope, it was just gone... completely disappeared. The second time I was on my way out the front door. At that time we had a lodger who had a cat, and the cat was out in the yard. Then I saw the wolf, standing there, in the gate. (....) But when it discovered me in the doorway, it was just gone... vanished! When I went to take a look at the tracks, it was obvious that it had just rushed off. I saw one another time. I was out walking, and then it was just as if it evaporated from the road in front of me. So, when you ask what I associate with the wolf, I think about being shy, *incredibly* shy! [Affirmative exclamations from the other group members] (Neighbour group)

Thus, the social representation of the wolf is inextricably tied to the idea of wilderness. Whenever wolves approached human communities, this seemed to be interpreted as a transgression of the symbolic boundary between the wild and the socialised. The distinction between the two categories is so powerful that the informants persistently expected wolves to shun all human contact, regardless of the predators' conspicuous presence in the neighbourhood.

According to Mary Douglas (2002), all human societies have an inclination to organise their social and physical environments into clear-cut categories or dichotomies. Things that clearly belong to a specific category are perceived as pure. In contrast, whatever falls in-between is typically classified as cultural dirt or symbolic pollution, and is commonly understood as dangerous. In terms of the contrast between the wild and the socialised, the wolves were seen by the informants as pure in their wildness. They were classified as wild by everybody: by those who were pro-wolf and those who did not want large predators in Norway.

This became even clearer when discussing the topic of wolf hybrids.[2] There was a complete consensus among the informants that the offspring of wild wolves and domestic dogs are unwanted, dangerous, and should be eliminated. They were classified neither as wild nor tame. Consequently, they were seen as not belonging anywhere. As one hunter said:

> That's the most dangerous wolf of all, if there's a dog mixed in it! It will have both the properties of a wild animal, plus it lacks its natural fear of people. That's definitely the most dangerous sort. (Hunters)

The question whether wolf hybrids ought to be tolerated or considered as part of nature was raised to provoke reflections and discussions concerning the character of wolves. The response was unanimous, with all the respondents disliking wolf hybrids, irrespective of their position in debates on large carnivores. Inevitably, terms like 'bastard', 'pollution', 'impure' and 'dangerous' were provided each time the subject came up, and left no doubt that wolf hybrids, in contrast to the genuinely wild and 'pure' wolves, are regarded as what Douglas terms 'cultural dirt':

> **Interviewer**: What do you think of that [culling of wolf hybrids]?
>
> **A**: As I see it, that's no problem.
>
> **Interviewer**: Why is that so?
>
> **A**: Well, to keep it [the wolf] pure.
>
> **B**: It must be pure bred.
>
> **C**: The gene material should be proper, you know. (Conservationists)

Despite the genetic connection between wolves and dogs, which was well known among the informants, they were commonly seen as two distinct breeds. Clearly, the distinction between 'wild' and 'domesticated' represents a basic criterion in the human classification of animals. Besides challenging the boundaries between the wild and the humanised – between wildlife and domestic animals – it is likely that the mere existence of wolf hybrids creates confusion, reminding us of the socially constructed nature of the concept of 'species'.

Representations in conflict

So far we have concentrated on some fundamental assumptions about wolves. These in turn form the basis for other ideas. It is these 'other' ideas that we now turn our attention to: the *peripheral elements* of a social representation. In terms of the structure of a social representation, such secondary ideas are hooked to the basic assumptions. At the level of communication, they appear as thoughts that are subjected to negotiation between individuals or groups (Abric, 1993).

There were indeed questions to which the informants from Trysil and Halden responded differently. Issues such as to what extent the wolves naturally belong in the forests of Eastern Norway, whether they are threatened or represent a threat to rural life, and if they are dangerous to people, were all matters of negotiation – dividing groups with divergent opinions about the presence of the predators. Yet the very same questions were also negotiated *within* these factions. This suggests that what is most frequently presented as radically polarized attitudes towards wolves are rather nuanced viewpoints and ambivalent feelings towards their reappearance. One significant example is that both wolf supporters and wolf adversaries spent much more time discussing *how many* individuals they could tolerate than whether or not they wanted wolves in Norway at all.

But let us turn to the elements of wolf perceptions we have classified as peripheral. Among the wolf adversaries, dominated by hunters and farmers, the large predators were understood to be a *threat* to livestock, to huntable game, to hunting dogs, and consequently to the rural way of life.

Even if there are not many sheep farmers in the study areas, the leasing of hunting rights is a form of supplementary income for many landowners. Seeing wolves as the most efficient of

Nordic predators – as brilliant hunters, significant consumers of moose and roe deer, and a threat to free-ranging dogs – hunters typically shun the affected areas, and land owners therefore can potentially lose income. Interestingly though, at the level of conception the sense of threat was obviously also connected to the basic notion of the social wolf, to the idea of the *wolf pack*:

> [Farmers in this area] live from their grass and from letting the animals graze in the forest. Without that, no money in the purse! We can tolerate a bear passing through from time to time, killing a moose or two. That doesn't take the livelihood away from anybody. That's ok. But a *wolf pack* that regularly passes through… causing damage… (Farmers)

Even if wolf adversaries frequently spoke of the large carnivores as a serious menace to traditional livestock husbandry, the image of the wolf as the rival of the hunter was even stronger. Both hunter and wolf are predators, hunting the same prey. As a matter of fact, this conflict was the most frequently discussed argument against wolves in *all* of the focus groups. Even those who were strongly supportive of their presence expressed some sympathy, or at least understanding, for the hunters' loss of game and hunting dogs to the predators.

> **A**: I know for sure that many hunters believe the [wolf] has nothing to do here.
>
> **B**: It's a rival!
>
> **A**: Yes, it's a rival.
>
> **B**: As simple as that. (Conservationists)

But, as many wolf adversaries emphasised, it is not only the hunters' dogs and the prey which are threatened, but an entire lifestyle. One of the hunters expressed his frustration in this way: 'My opinion is that forcing predators upon people, that's wrong, no matter what! (….) Not allowing people to pursue their [dearest leisure activities], can you imagine such a thing?'

Even if hunting was indeed seen as a leisure activity without any important outcome in terms of subsistence, it seems as if it, more than any other activity, has become the symbol of rural identity and the rural way of living in Eastern Norway. In communities where resource extraction and agriculture is in decline, the practice of hunting represents an important link to the toil of earlier generations. Besides representing a threat to huntable game, dogs, livestock and the grazed open land, large carnivores are perceived as a symbolic threat to the farmer's and the hunter's image

of themselves as 'stewards of nature' (see also Boglioli, 2009: 40). As local people with practical knowledge derived from using the forest actively, they see themselves as crucial players in the game of 'natural balance'. For example, several hunters used the term 'predator control' in order to describe how they care for the local fauna:

> We don't hunt only for food, we practice predator control. It has always been very important for hunters to kill predators, just as much as the game that gives us meat. (…) I actually see it as a duty to kill some of the large carnivores in order to maintain the balance of nature. It wouldn't be right to hunt only the animals we can eat. (Hunters)

Another important question that was systematically brought up in all the focus group discussion is whether wolves are dangerous to people or not. The predominant view among wolf adversaries and supporters alike was that the local wolves did not represent any physical menace to humans. Except for one person, all of the informants denied that they feared the large predators. The idea of danger was most actively rejected by informants who lived *within* a wolf territory; the very same informants who reported frequent encounters with wolves:

> **Interviewer 1**: But don't people fear for their children, or… have you heard anything about that?
>
> **A**: I can't say I've heard anything about that.
>
> **B**: Around here, the kids are waiting along the road for the bus.
>
> **C**: …waiting for the school bus. Nobody has ever been afraid of wolves.
>
> **B**: No, they really haven't.
>
> **A**: I've had wolves on my farm road, you know, and [my children] go there to take the bus.
>
> (…)
>
> **Interviewer 2**: Do you really never hear about people who are afraid of wolves?
>
> **A**: Yes [Affirmative exclamations from the other group members].
>
> **B:** But then that's the media's fault. Whenever there has been an episode… somebody has seen a wolf in a built-up area (…) it attracts a lot of publicity in the newspapers. And

> then people who don't have any relation to wolves (…) and who aren't very interested; they only read the headlines and conclude that wolves are dangerous. (Neighbour group)

Those who declared themselves as wolf adversaries also acknowledged that the probability of being attacked by a wolf remains minuscule. But they were all the more preoccupied by the supposedly negative impact of fear on *other people's* quality of life. Some claimed that older people did not dare to pick berries anymore. Children had allegedly been seriously affected too, by being robbed of a safe playground and safe walking routes to school. Regardless of their own lack of fear, they maintained that fear should be taken seriously as an argument against the protection of predators.

The informants' ideas about fright and danger seem, above all, to be claims and arguments in an ongoing struggle over the right to define reality. Farmer A in the following quotation was settled in the same area as the informants in the neighbour groups, yet described a quite different situation from the one depicted above:

> **Interviewer**: Do you think a [harmonious] coexistence with the wolves is possible?
>
> **A**: Well, it's something you just have to cope with. As long as they're out there, you just have to…
>
> **B**: You can get used to anything.
>
> **A**: Yes, but I know that there are many people who… maybe don't go out in the forest. You know, I'm lucky not to have that fear in me, but there is a group of cabins where I live and [the cabin owners] (…) just don't go into the forest, because there are wolves there. And then of course you have to drive the kids to the bus. You get used to that too [said with an air of resignation]. (Farmers)

If wolf adversaries mainly considered the carnivores a menace, informants with a pro-wolf stance most commonly talked of them as *endangered animals* – endangered by people in general, and by the human urge to dominate and socialise both wildlife and wilderness. For them it was humans rather than wolves who were the intruders, penetrating into the domain of wildlife:

> I claim that it's all the development and construction (…) that have made the conflict so… [intense]. When we start to take away their territories… well it's obvious that we're building on their domain. (Conservationists)

The quotation brings us to another important matter of negotiation in the large carnivore debate: Whose territory are we dealing with? What kind of nature are we talking about, and is that nature in harmony with the wildness of the wolf? During the focus group sessions, it became clear that the groups that disagreed on these issues had diametrically opposed representations of their own natural environment, accompanied by conflicting views as to whether wolves belong there or not. While farmers and hunters saw the natural physical environment as a landscape for sustainable *use,* as productive areas for logging, grazing, hunting and berry picking, the informants who expressed positive views on the presence of wolves saw this same environment as untouched nature, or *wilderness*. To them, the forests of Trysil and Halden evoked associations of something authentic and original – something that was there before them, and something that provided a reason for human existence as well as a sense of continuity. Wilderness was thus represented both as an actual place and as essence. It stood in sharp contrast to the modern, overcrowded and noisy civilisation in which human bonds with nature are lost, and became the scene of potential reunion between human beings and their origins:

> To experience something so authentic, in this [modern] society of ours – to me, that's incredible… but also a vital necessity! Everything is becoming so artificial. Things keep disappearing and disappearing. So, to be able to (…) be in touch with something so… it must have been like that for an eternity! (Neighbour group)

Embodying the essence of the wild, what areas would be better suited to wolves than the wilderness described by these informants? The mere presence of the animals contributes to the experience of authentic, true nature. The wolf becomes a living evidence of the existence of places that have escaped the insatiable human desire to socialise the wild and transform nature into something artificial – the symbol of the survival of nature against all odds.

The wolf supporters' interpretations of the surrounding landscape as wilderness were distinctly different from the wolf adversaries' representations of the same physical environment as productive land. According to the latter, the nature in these areas is a place for human activities, and ought to be maintained as such. This can only be ensured through responsible resource

utilization. Otherwise, rural communities will be left with impenetrable forests and a landscape stripped of cultural meaning:

> What scares me about the large carnivores is that the land will not be used. Then it will just become overgrown, and we will have the forest right up to [our doorstep]. That's exactly what we don't want! We want it to be an open landscape, (…) that is used. (Farmers)

In the same way as the image of wilderness is closely tied to the idea of what once used to be, the notion of productive nature is associated with continuity and the heritage of earlier generations. The traces of ancestors' hard work and efforts to tame the wilderness bestow meaning upon the physical environment, and must therefore be preserved through continuation of traditional practices. The cultural landscape must be saved from reforestation; and domestic animals, as well as moose and other huntable game, must be protected against predators.

Here the shared understanding of the wolf comes into conflict with the meanings associated with productive land, and the presence of wolves comes to represent a form of 'cultural dirt' (Douglas, 2002). There is a symbolic mismatch between (the wild) predators and the (humanized) local landscape. Consequently, the animals living in the forests of eastern Norway must be something other than *real* wolves. Some of the informants were even convinced they were hybrids, or 'bastards' as most of them said. The wolf as such may stand out as fascinating, intelligent and dignified. Yet, these ideas are tied to assumptions about the animal's natural environment – the wilderness. Local wolves, when observed in the neighbourhood approaching buildings and people, come far too close and are far from shy enough to be real wolves. Instead, they are perceived as unnatural animals with unnatural behaviour, showing all the signs of being polluted by humans.

Discussion

It seems, then, that the overt conflicts concerning wolves cannot be explained as the product of antagonistic conceptions of the animal. While the presence of wolves in Norwegian forests is constantly negotiated and contested, the basic character of the animal is taken for granted.

Some of our findings mirror results from research in other places and other contexts. The entangling of animal representations in negotiations over wilderness and the classification of animals crossing the 'wilderness border' as transgressive is one example (see Philo and Wolch, 1998); the political nature of attitudes to danger is another (see Douglas, 1992: 44-48).

Yet the question we posed initially concerns whether an analysis of such representations can contribute to a better understanding of the severe conflicts accompanying wolf recovery in Norway and elsewhere. In this study we have used the concept of social representations as an analytical approach, with an emphasis on the distinction between core and peripheral elements of a representation. In doing so, our aim has been to capture both the unifying and the divisive dimensions of social thought.

One way to interpret the results would be to conclude that what is here analytically treated as peripheral – and thus conflictual – elements, concerns in reality representations of *other things* (landscape, threat, danger); and that the social representation of the wolf plays no part in the current conflict. Indeed, the interviews with affected residents in Trysil and Halden suggest that the dispute should be understood not as the result of a clash between negative and positive images of the wolf, but as the result of a conflict between the social representations of the wolf and representations of other phenomena.

This could in turn be held as a critique of Moscovici-inspired scholars' tendency to treat social representations as isolated units, and to confuse analytical models with social reality. In a sociological perspective representations are necessarily bound not only to socio-economic contexts, but also to the representational context in which the boundaries between culturally constructed objects are sometimes blurred.

On the other hand, the core-periphery aspect of the theory of social representations appears to be precisely an attempt at linking *one* analytically abstracted social representation of a given phenomenon to representation*s* in plural, by linking broad, consensual beliefs to socially negotiable arguments. Metaphorically the peripheral elements should then be understood as the overlapping zone between representations.

The distinction and reciprocity between core and periphery, beliefs and arguments, bring to mind Alexander and Smelser's (1999: 11) claim that 'much social conflict (...) is characterized by reference to the *same* set of values', and that '[i]n many cases it is norms, not values that are addressed'. Their point is that a full apprehension of contemporary conflicts must include both. In our view, the theory of social representations offers some interesting analytical approaches to the relationship between the two levels of social meaning.

Transferred to the wolf case the analysis of peripheral elements, in addition to the consensual core, serves two main purposes: It points to adjacent representations that come into play in debates over carnivores, that may or may not clash with basic ideas about wolves; and it permits us to distinguish between cultural beliefs and rhetoric. As for the latter, our informants' discussions of danger provide a good example. On the one hand, it is rather obvious that fear might serve as an *argument* in local debates over carnivores, and that if the idea of dangerous wolves is omnipresent; this is not the same as to say that people necessarily *believe* in them. On the other hand, despite the self-declared lack of fear among the informants it was obvious that the basic idea of wolves operating in *packs* caused some unease and even anxiety.

Which brings us to the point to be made here: Representations matter because conflicts are necessarily framed by consensual cultural beliefs. Just as the topic of fear is easier to grasp in light of what appears to be basic beliefs or not, the entire wolf debate rests on a common understanding of the wolf as a fundamentally wild animal. It is against the undisputed background of the wolves' wild character that negotiations over their belonging to Norwegian nature make sense. The wolf's particular role as a symbol of the wild and the antithesis of the humanised, demonstrated in this study and elsewhere (e.g. Emel, 1998), contributes furthermore to explain why conflicts over large carnivores tend to concentrate on wolves, whereas for instance wolverines and lynx, who are much worse villains in terms of livestock depredation, receive relatively little attention from the general public.[3]

Finally, on a slightly more speculative note, it could be argued that wolf representations matter because they point to a possible discrepancy between the carnivore's expected and actual behaviour which would be worthwhile exploring in future research. It seems, for instance, that *shyness* is a recurrent theme in the social imagination of the wolf (see also Mauz, 2005; Kleese 2002), even when experience proves otherwise, as was the case for several of our informants. In

terms of human–animal relations, further enquiries into this domain would imply to consider not only people, but also wolves as actors, as has been suggested in recent publications in the field (e.g. Lescureux and Linnell, 2010; Lynn, 2010). But that's another debate.

Notes

[1.] During the winter of 2008/2009 biologists estimated the number of animals to be between 213 and 252 (Wabakken et al., 2010). Of these, approximately 35 were registered on the Norwegian side of the border.

[2.] In 2000 the Norwegian Directorate for Nature Management carried out the governmental decision to isolate and kill a litter of four hybrid cubs that had been discovered in the Moss area, close to Halden. One of the cubs managed to escape. The wolf-mother was spared.

[3.] See http://www.rovviltportalen.no/content/500041279/Jerv-og-gaupe-tar-mest-sau

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Article 3

The ambivalent nature of biodiversity: Scientists' perspectives on the Norwegian Nature Index

Helene Figari (2012) The ambivalent nature of biodiversity: Scientists' perspectives on the Norwegian Nature Index. *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography* 66(5): 272-278.

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Abstract

The Norwegian Nature Index is intended to provide an overview of the state of biodiversity in Norway. From the perspective of the sociology of knowledge, the author explores how biologists make sense of biodiversity and how they identify scientific uncertainty in the context of the Nature Index. *Anchoring* and *themata* are employed as tools for analysis in the investigation of scientists' representation of the Nature Index and its subject matter, namely biodiversity. In-depth interviews indicated that most of the scientists perceived the results as intuitively sound, but they also revealed an outspoken ambivalence about compressing complex ecological relationships into standardized numbers. In covering both natural and cultural landscapes as habitats for biodiversity, there seems to be a symbolic mismatch between the operationalization of biodiversity in the index and the intuitive anchoring of biodiversity as 'untouched' nature. Hence, the thematizing of the divide between the untouched and what is human may be seen as a form of conceptual uncertainty underlying the Nature Index.

Keywords

biodiversity, nature index, social representations, themata, uncertainty

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Introduction

In 2005, the Norwegian Government declared that Norway should be the first country in the world to establish a nature index. Until the first nationwide results were launched in September 2010, a total of 125 scientists from a range of research institutions were involved in a process of merging data on a large number of indicators, representing species and other elements of nature, into a single model. The purpose of the extensive exercise was to come up with a measure of the state of nature, given as a number between zero and one, where one – the reference value – represented the best possible state of biodiversity, and zero represented the most critical state. The reference value was defined as follows:

> A value that minimizes the probability of extinction of this indicator (or of the species/community to which it is related), maximizes the biodiversity of the natural habitat to which it is related, or at least does not threaten biodiversity in this or any other habitat. (Certain & Skarpaas 2010, 13)

The Nature Index was calculated for nine major ecosystems, such as coastal waters, forest, mountains, and extensively managed agricultural land, which the scientists labelled 'Open Lowland'.

The Nature Index (NI) is thus a measure of the state of biodiversity in Norway. Yet, along with other key concepts in the societal communication about the environment and natural resource management, such as 'climate' and 'ecosystem services', 'biodiversity' is more than a theoretical term. Although it may originate from specific and detailed scientific definitions, it is within the larger social and political environment that such terms are assigned meaning and come into being as part of the public sphere. Hence, from a sociological point of view, biodiversity is a concept *in the making*. Far from having a single connotation, the concept appears in various forms, such as a fundamental aspect of Darwin's theory of evolution (Cuddington & Ruse 2004), a number or a measure (e.g. Nybø et al. 2008), an argument or a tool for policy (e.g. Jørstad & Skogen 2010), or a substitute for 'nature' (Micoud 2005).

Within the above-described landscape of multiple meanings, researchers are increasingly expected to produce not only empirically sound, but also transparent knowledge that favours public communication and negotiation, and that are directly applicable to nature managers

(Gibbons 1999). The conditions for conducting scientific research have thus changed. Demands for relevance, legitimacy, and applicability have laid the ground for the development of scientific models and strategies for dealing with uncertainty in, for example, a precautionary perspective (Shackley & Wynne 1996). The process through which the NI has been established presents a valuable source of insight into how such changing conditions of science are apprehended by the researchers themselves.

In this article, I give a brief presentation of an exploratory study in which insights from the sociology of knowledge are integrated into the field of scientific uncertainty. The problem to be addressed is twofold: How do researchers make sense of the NI and its subject matter, i.e. biodiversity, and how do they identify uncertainty in the context of the NI? From the perspective of the sociology of knowledge, such questions deal less with what uncertainty *is*, or what biodiversity *is*, than with how uncertainty and biodiversity are conceptualized and put into practice by the scientists.

Thus, my approach is qualitative. The following reflections result above all from a close analysis of in-depth interviews held with 10 biologists from different scientific institutes involved in the elaboration of the NI. The informants possessed different types of expertise and had played different roles in the process around the elaboration of the NI. As a social scientist working within one of the institutes, I have had the opportunity to follow parts of this process from the inside. Hence, to complete the picture, I have drawn on valuable informal discussions with biologists, on information gathered during meetings, seminars, and conferences on the NI, and a more general analysis of scientific reports on the index.

Perspectives on uncertainty

Within the social science literature on uncertainty, there is a range of different approaches to what uncertainty is and how it should be studied. A common way to deal with the concept is through classification (van Asselt & Rotmans 2002, 78). Depending on the subject area, authors have in various ways attempted to classify uncertainties according to, for example, their source and type (e.g. Funtowicz & Ravetz 1990, 7–12). In Funtowicz and Ravetz's much-cited typology, uncertainty is above all considered from the perspective of coping with insufficient or inadequate knowledge in policy-related research. Accordingly, the authors identify three sorts of

uncertainty: inexactness, unreliability, and border with ignorance (Funtowicz & Ravetz 1990, 23).

Within the more specific field of science studies, certainty or scientific facts are commonly considered as the result of scientific activities. Since the late 1970s, a number of authors have investigated how scientific language, concepts, and tools – and ultimately scientific knowledge – come into being in the laboratory or the field (for an overview, see Pickering 1992). One of the hallmarks of the work has been to show that objects or truths are not just 'out there', waiting to be collected. Exactly what aspects of the world are brought to our attention, and how they appear, is rather seen as the outcome of a process in which scientists, tools, events, and instruments actively participate.

Annemarie Mol (2002) provides an apt illustration of this idea in her analysis of how an ordinary disease (*atherosclerosis*) takes on different meanings within a hospital practice, depending on, for example, whether it is observed under a microscope in the pathology department or discussed, told, and touched in the hospital's outpatient clinic. In such kinds of constructive accounts of scientific knowledge, uncertainty is not so much understood as content than as a process in which the undertaken choices and decisions that have an influence on the scientific outcome are locally achieved closures of indeterminacy (Knorr-Cetina 2005, 198). Several observers of science have, for example, noted how local negotiations and bargains lead to the de-emphasizing or 'deletion of modalities' in publications of reports and papers (Latour & Woolgar 1979, 79; see also Latour 1987). Hence, uncertainty drives scientific enterprises, and certainty is seen as an achievement, a successful alliance between scientists, events, and instruments.

While the contributions from the above-described 'laboratory school' have provided valuable insights into the micro-sociological aspects of the production of certainties and uncertainties, others have concentrated on the representations of uncertainty in the interface between science and policy. For example, MacKenzie's (1990) 'Certainty Trough' describes how perceptions of uncertainty are related to the perceivers' distance to the production of knowledge. Typically, the users of knowledge, such as policymakers, tend to perceive knowledge as more certain than those who are involved in its production. Collins (1974) and Funtowicz & Ravetz (1990) have made similar observations. If transferred to the case of the NI, this suggests, for example, that nature

managers may attribute less uncertainty to the outcome of the work than the experts that have contributed to its elaboration.

The discrepancy between scientific and policy-related understandings and practices with regard to uncertainty has been studied and described as a matter of negotiation and demarcation in a process that has usefully been termed 'boundary work' (Gieryn 1995). Hence, when it comes to decision-making processes, policymakers and other stakeholders may turn from confidence to distrust, challenging the authority of science in policymaking or questioning the bases of knowledge perceived as threatening to stakeholders' interest (Jasanoff 1987; Shackley & Wynne 1996).

An outspoken ambivalence

This article is also about understandings of uncertainty, but while, for example, MacKenzie (1990) was interested in how groups identify scientific knowledge as more or less uncertain, the emphasis here is on what uncertainty means to the researchers in the specific context of the NI. Such an approach to uncertainty needs to include a consideration of the involved actors' own framings and understandings, in order to apprehend the challenges posed by the societal environment in the particular case of knowledge production. In other words, to grasp the underlying uncertainties in the NI, there is a need to depart from scientists' accounts of their participation in the elaboration of the index, their perceived challenges with regard to the whole process, and their identification of the matter under scrutiny, namely biodiversity.

The analysis of the interview data revealed a common, outspoken ambivalence among the informants with regard to their involvement in the establishment of a nature index for Norway. On the one hand, they commonly questioned the purpose and accuracy of compressing complex ecological entities and relationships into one standardized number. The reservations expressed by the scientists were partly related both to the extensive use of expert opinions required in order to provide a comprehensive estimate of the general state of Norwegian nature, and to what some termed the 'oversimplification' and 'merging' of basically incommensurable dimensions of biodiversity. One of the biologists (in Interview A6) described the index as:

> a tremendous simplification of nature ... the least common multiple for combining measures of [eco-] systems which are so different on the same scale, in order to aggregate it all. But then there are so many things, so much complexity in nature we have to sacrifice.[1]

The task of creating a biodiversity index was described as an immense process of standardization, which at each step entailed doubt, negotiation, and difficult choices, such as the selection of indicators, habitats, and units of measure; the identification of common reference values for estimating the selected indicators; the input of a huge variety of data into a uniform questionnaire; and the assembling, interpretation, and presentation of the gathered material. As such, the production of the Nature Index was depicted as a challenging procedure characterized by a certain degree of resistance, internal tensions, and negotiation – a 'painful process of digestion', in the words of one informant.

However, most of the researchers agreed on the need to bring different types of knowledge together in order to achieve a more comprehensive understanding of ecosystems and how ecosystems interact. Moreover, many of them expressed that the aggregated results – the output of the Nature Index process – seemed surprisingly accurate. Further, despite the many sources of uncertainty identified, the scientists perceived the results as intuitively sound. This was supported by the fact that Nature Index as a *product* seems to have provoked little discussion and criticism among the scientists involved. The contrast between the biologists' problematizing of the process and apparent approval of its outcome is well illustrated by the following extract from one of the interviews (Interview C1):

> *Interviewer:* Can you say something about what you think has been the most important issues of debate among the involved researchers?
>
> *Informant:* I think that many have doubted the whole idea of putting a number on nature. They did not believe that you can actually make such an index, that the construction of the index would be reliable, or that it would reflect the real situation. [Initially,] I thought 'This is complete madness! This is not possible.' And I think a lot of people thought like me. And there were lots of questions. Here, you have a bunch of scientists, educated to measure and weigh everything. If you take a lot of short cuts and make a lot of approximations, then we say that 'No, this is not right!' I think the discussions afterwards…
>
> *Interviewer:* After [the index] was launched?

> *Informant:* No, since then, there has hardly been any discussion at all. But during the process, when people were to come up with data … the input [of data into the questionnaire] has been seen by many as a hopeless process. … It is not that it was difficult … I think people … well, they were extremely sceptical – as simple as that! So it was like … that kind of job you just do not want to do. It was postponed and postponed and postponed, and [when it is finally done] you have to add some [estimate of] uncertainty … I guess many felt that the numbers they came up with were [already] uncertain. How are you supposed to add uncertainty to something that is already uncertain?

Anchoring and themata

One way to interpret the ambivalence expressed by the scientists is as the result of a general uncertainty concerning the meaning of the NI. The identification of what the NI was supposed to express was clearly crucial for the realization of such an index. From a sociology of science perspective, the objects of scientific activities are not given but grow from a process in which involved experts discuss, test, and adjust the definition of the study object. Norman Fairclough (2005, 928) emphasizes that constructionist approaches to scientific methods see methodology as:

> [T]he process through which one constructs objects of research … from research topics. One should not assume that the research topic is transparent in yielding up coherent objects of research. The process of constructing them involves selecting theoretical frameworks, perspectives and categories to bring to bear on the research topic.

According to the 'theory of social representations', the classification and interpretation of objects within existing frames of interpretation is characteristic of the process of constructing new knowledge. Moscovici, a social psychologist and the originator of this perspective, has devoted his whole lifespan to finding out how social groups integrate new knowledge into existing knowledge, i.e. how we go about transforming something unfamiliar – a phenomenon, object, idea, or concept – into something familiar (e.g. Moscovici 1984; Moscovici & Markova 1998; Wagner & Hayes 2005; Jovchelovitch 2007).

Moscovici's hypothesis is that new knowledge is constructed through a process that he calls *anchoring*. When confronted with something new, we apply existing categories of thinking to make sense of it (Moscovici 1984, 29). Anchoring is a crucial aspect of knowledge construction

in as far as the assimilation of emerging concepts with existing labels contributes to make the concepts meaningful for a given community, and enables the community to turn ideas into practice. If applied to the specific context of interest in the present study, it means that both the NI and the concept of biodiversity have no sense, as such. The concepts must be labelled and classified in order to have a *common* meaning for the scientific community. Otherwise, they cannot be operationalized. The crucial point is that the more consensual an anchoring process is within a community, the more certain is the new knowledge conceived by that community.

A second important point to be made is that whatever is successfully anchored becomes certain in the sense of being implicit or self-evident. However, the elaboration of new knowledge is rarely a smooth process. There is often uncertainty and negotiation within a community – and between communities – about how the new issue should be labelled, or situated within existing pairs or triads of categories. Sets of categories that are put under pressure during the process of anchoring have been termed *themata* (Holton 1975; Moscovici 1993; Marková 2003b).

Marková (2003b) identifies themata with antinomies of thinking that are at the basis of all human mental activity. Importantly, such dichotomies are adopted implicitly as part of the socialization of a child, or an adult, into a given culture or social group, such as a scientific community. This brings me to a third important point: If new or upcoming concepts need to be understood in the light of existing dichotomies in order to make sense, the main dichotomies that are actualized in such situations derive most commonly from a stock of basic cultural ways of perceiving the world (Holton 1975; Moscovici & Vigneaux 1994; Marková 2003a). Expressed differently, scientific knowledge is always constructed within the frame of what is perceivable in the larger society.

Examples of themata are nature/culture, public/private, risky/safe, health/disease, as shown by a study of the thematization and anchoring of genetically modified organisms in the Portuguese Press (Castro & Gomes 2005). However, according to Marková, not all antinomies of thinking should be considered as themata; many are latent or dormant: ‘Antinomies become themata if, in the course of certain social and historical events, e.g. political, economic, religious and so on, they turn into problems and become the focus of social attention and a source of tension and conflict’ (Marková 2003b, 184). Transferred to the case of the NI, this means that attention

should be paid to dichotomies that seem to play a particular role in the scientists' identification of problem areas with regard to their own participation in the construction of the index.

Negotiating biodiversity

With respect to the question of what the discussions with biologists informed about anchoring and themata in the NI, it seems that there was an ongoing negotiation concerning what the NI was supposed to represent and how should be put into practice. In other words, the meaning of biodiversity was *not* implicit or common sense to the scientists in the context of constructing the NI; rather, the implementation of biodiversity required an anchoring of the concept. In this case, the involved scientists had to try to find a common way of defining biodiversity, and adapt the concept to the particular commission.

The analysis of the data revealed how some categories were brought forth in discussions about indicators, habitats and units of measure, values of reference, input of data, assembling and presentation of the results; about the troubles, pleasures, negotiation, and collaboration; and about the NI and biodiversity in general. During the interviews, the informants were also directly asked to associate freely what ideas, thoughts, or words came to mind when they thought about biodiversity, and to compare biodiversity with the concept of nature. The answers to the latter question showed, for example, how biological diversity was generally classified as 'life' or 'alive', in contrast to what is dead (Interview C3):

> *Interviewer:* Do you have any thoughts on how one can distinguish nature from biodiversity?
>
> *Informant:* Yes, well … biological diversity, that is life. But nature is … then you include landscapes and dead things as well, which also are of value, of course. But it is more like … another feeling, I do not know ... In any case, nature is the landscape and the life within that landscape.

Several of the experts also emphasized variation as one of the characteristics of biodiversity. This seemed to go hand in hand with the idea of a living nature. Shifting and heterogeneous ecosystems with a rich animal and plant life were held up for comparison against lifeless and homogenous landscapes (Interview A6) :

Interviewer: What do you associate with biological diversity?

Informant: What easily comes to mind is the definition that is frequently used by the nature management authorities: 'the variation of …', well, I cannot remember the word by word [definition], but it is about the variation of life at all levels, from genes to ecosystems.

Another association that frequently came up during the interviews was the idea of biodiversity as something old, in contrast to what is new or changing. According to some of the informants, the conception of biodiversity as something historical and enduring that has survived human exploitation of the natural resources is typical of lay understandings of biodiversity. Nevertheless, the link between biodiversity and the past was also implicit in many of the experts' owns thoughts and arguments. For example, one of the informants stated: 'Biological diversity, that's life itself. What we see today is in many ways the best of what existed in previous times, things that have developed for a long time. So it's very unethical to destroy that' (Interview C3). The association between biodiversity and previous times thus seemed to be closely connected to the ideal of protecting stable and intact ecosystems from deterioration (Interview C2):

Informant: When I think about biological diversity, I picture an ideally functioning ecosystem.

Interviewer: What is an ideally functioning ecosystem?

Informant: I mean, a kind of balanced [ecosystem], in equilibrium.

The notion of intact ecosystems carries within it the idea of an ideal or optimal state of biodiversity. However, the informants emphasized that such an optimal condition cannot be realized through the mere maximization of species. Several pointed out that a human-made landscape may encompass a larger number of species than an unsullied ecosystem. In the eyes of the experts, 'original' seemed to be a better description of what an intact ecosystem in good condition is in terms of biodiversity (Interview D1):

[T]hat brings us to the discussion of what biodiversity is, and what kind of biological diversity we want. What do we mean by biological diversity? Is it the largest number of species? No, that is not what we want. What we *do* want is ecosystems … that are so intact that they contain the original species. And what is original, then? Well, that is also a [subject for] discussion.

The informants alternated between labelling what is currently termed 'native species' or 'species within their natural range' (e.g. Selge & Fisher 2010) as 'original', 'Norwegian', or 'local'. These concepts were associated analytically by the way in which they were systematically opposed to elements of nature classified as 'alien' or 'not belonging' to Norwegian nature. The above extract shows, however, that this distinction caused some uncertainty in the process of anchoring biodiversity within the context of the NI: What is to be considered as naturally occurring species? When and on what premises is natural turned into unnatural? One of the informants expressed his thoughts on these questions as follows (Interview D3):

> That is kind of a philosophical question, because you do have a natural spread [of species] –natural emigration, natural immigration, natural extinction – in a system like that, independently of what we have done or not done. Still, concerning the spread of species into Norway – you might very well call them alien, because they *are*, in principal, if they are new to Norwegian nature – well, it is not always easy to know what has been introduced by humans and what is the result of natural processes.

Besides illustrating the complexity of the question concerning what is natural or original in contrast to what is unnatural or alien, the above quote points to another significant dichotomy in the classification of biological diversity, in as far as naturally occurring species were recurrently contrasted with humanly introduced species. Thus, what is perceived as natural seems to turn into something unnatural as soon as it is touched by humans. The distinction between 'untouched' and 'human-made' was the most recurrent dichotomy in the informants' classification of biological diversity, and the question of whether biodiversity is to be categorized as the one or the other seemed to cause confusion during the process of constructing the NI (Interview B2):

> *Informant:* [B]ecause, what *does* that index express after all? Is it an expression of how the landscape has changed compared to its natural condition, or is it the content [of that landscape], in terms of biodiversity, we have looked at? I just do not know!
>
> *Interviewer:* Several [informants] have pointed out that this ought to be a fundamental discussion.
>
> *Informant:* Yes, I believe so. Because ... it is quite all right to talk about biodiversity, but then we should concentrate on biodiversity within the different [ecosystems] and not talk

about an aggregate NI. When you put it all together; what you obtain is an odds and ends sort of mixture. … And how is that supposed to be useful?

In sum, the study suggests that in the context of the realization of a NI the scientists explicitly and implicitly represented biodiversity as something that is, or is supposed to be 'alive', 'varied', 'old', 'stable', 'intact', 'original', 'native', and 'untouched'. The signification of each of these categories became apparent in relation to their conceptual opposites: the category 'living' was contrasted with 'dead', 'varied' with 'homogeneous', 'old' with 'new', 'stable' with 'changing', 'original' with 'alien', 'native' with 'invasive', and 'untouched' with 'human-made'.

In addition to the above categories, the analysis revealed several other labels that appeared to be of some importance for the informants' conceptualization of the NI and biodiversity, such as a goal, a norm, or a measure. However, the above-mentioned categories seemed to form a coherent thought system of particular relevance for the process of anchoring; they went together, and consequently they might have represented a 'social representation'. If one of the categories were to be jeopardized, the others would have been jeopardized too.

It is important, however, to note that the internal relationship between the two categories of such antinomies is highly context dependent. While it seems that the informants' intuitive understanding of biodiversity mainly departed from an association with untouched, authentic nature, it is possible to imagine situations in which human-generated elements of nature have a more obvious place in the representation of biodiversity (Koricheva & Siipi 2004). However, in terms of operationalization, the profound conceptual divide between untouched nature and human-made landscapes posed an important challenge for the anchoring of biodiversity in the context of the NI. If we follow the terminology of the theory of social representations, this appears to be the fundamental *theme* of the NI – it is a themata. The distinction between the untouched and whatever is influenced by humans has a profound cultural basis that reaches far beyond the scientific community. It is not as easily altered and redefined, and it seems to have major relevance for our understanding of the term biodiversity (Koricheva & Siipi 2004).

Thus, at the conceptual level, the informants' ambivalence with regard to process and outcome was mirrored in a reflexive approach to the idea of biodiversity. While most informants both explicitly and implicitly associated the term with non-human nature, they acknowledged that this might stand in contrast with the meaning of diversity of species, in which humans are both a

species among others and a simultaneous creator and destructor of biodiversity. This perceived ambivalent role of humans as both part of and external to biodiversity was, as several of the informants pointed out, also incorporated in the Nature Index, thereby causing confusion and negotiations among involved scientists regarding the conceptual basis of such a scientific endeavour. This raises the question: If the index was supposed to say something about how good the current state of nature is, then what is 'good' supposed to mean?

In the process of establishing the NI, this confusion became a major issue that culminated in the negotiation concerning the reference value. How were the scientists supposed to fill the number one (1), the best possible state of nature, with a common content? What was 'one' supposed mean: Was it a nature without any trace of human influence – a virgin territory? Alternatively, was it perhaps better to use sustainably managed (thus humanized) nature as a reference? Yet again, would that not turn the number one into more of a norm than a descriptive reference value? Moreover, how were the biologists supposed to operationalize biodiversity in this context? Should the number and variety of species count alone, no matter how humanized the landscape, or should the biologists try to stick to the original idea of the NI as an indicator of how much humans have transformed nature?

Themata as uncertainty

The issues raised above were not resolved during the process. Researchers working with different ecosystems defined the reference value differently, and this subsequently formed the basis of severe critique from the outside. Furthermore, the discussions have not reached any closure, in the sense that Knorr-Cetina (2005) attributes to the term. In as far as consensus in anchoring and closure of internal debates are crucial steps in the process of establishing certainty, the presence of a themata – the lack of a common understanding of what is the ideal state of biodiversity – represented a major source of uncertainty in the eyes of the informants.

The reference value has thus become a major concern for the scientific community in their continued work with the NI, and the outcome of future internal discussions will be decisive for how biodiversity will be operationalized and put into practice in the forthcoming indexes. Ultimately, this may in turn influence the meanings attributed to biodiversity by societal groups

other than the scientific community, since if science is rooted in common sense, it is also the source of new practices and ideas, just as for any other social group.

In as far as scientific practices and understandings are embedded in a larger cultural context, the NI was not constructed in a political and social vacuum. Biodiversity is a word with strong positive connotations, and everyone wants their piece of the 'biodiversity cake'. When the Norwegian Government first formulated its aims to introduce a nature index for Norway,[2] *including the extensively managed agricultural land*, the scene was already set, and hence confusion was inevitable (Interview A6):

> *Informant:* There have indeed been some challenges. Take the nature-culture debate, for example. [The government] specifically expressed that we should have a nature index that includes the extensively managed agricultural land, without any debate about nature and culture.
>
> *Interviewer:* Should it be a debate?
>
> *Informant:* In my view it should be debated, but perhaps not as a part of the job of producing the nature index the authorities asked for.
>
> *Interviewer:* How should it be done then?
>
> *Informant:* You can raise the question in advance, but [the debate] cannot be part of the scientific process. When [the authorities] have stated that 'this is the mission', we cannot just change the objective, or deliver something that does not answer to the call. … But that does not mean the discussion is not important. It came up already when the pilot study was published. It was [even] commented in the media … [by] an academic who remarked that fundamental concepts such as 'nature' and 'culture' should have been discussed first, before just rushing ahead. And we did not do that, because the stated objective was to include the extensively managed agricultural land.

Any discussion of uncertainty will attempt to say something about what uncertainty is or how it is understood. The thematizing of the divide between what is untouched and what is human might be seen as a form of conceptual uncertainty underlying the NI. Even though the term uncertainty is characterized by some negative connotations, at least from a positivist viewpoint, this article is not a critique of the NI. Rather, it is an attempt to describe the nature of scientific work in practice. Some of the questions I have touched upon – the premises on which the establishment of the NI rests, the tension around the reference value, and the presence of a

themata – have potential for opening up the debate around the NI and including other groups in the discussion.

In accordance with Wynne, who maintains that scientific theory and method give prominence to tractable uncertainties, 'leaving invisible a range of other uncertainties' (Wynne 1992, 115), I believe there is a need to recognize the social commitments and value choices that, instead of existing side by side with other types of uncertainty, underlie the construction of uncertainty itself. For the purpose of identifying implicit antinomies that are actualized and come under pressure in the scientific assessment and political management of important societal issues, the analyses of anchoring and themata may represent a valuable analytical tool. I do not believe such a focus would jeopardize the social, political, and scientific value of the Norwegian nature Index, but would prevent it from becoming yet another forgotten index.

Notes

1 In order to preserve the informants' anonymity, all extracts from the interviews have been presented together with a code consisting of a letter and a number. The only purpose of the coding was to enable the author to retrace the parts of the data from which the citations are extracted.

2 Mentioned in the Norwegian Government's 'Political platform for a majority government' negotiated at Soria Moria 26 September – 13 October 2005 (Statsministerens kontor 2012, 330).

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Appendix Ia: First wolf study – the project group's interview guide

Hovedtema	Dimensjoner	Stikkord/spørsmål
Bakgrunn	Biografiske opplysninger	➢ Hva deltakerne driver med ➢ Tilknytning til bygda/området ➢ Tilhørighet til foreninger, andre fritidssysler
Lokale forhold	• Lokalsamfunnet (sosiale forhold) • Før og nå • Naturbruk	➢ Fortell litt om hvordan det er å bo i Trysil (særlig fokus på forholdet mellom folk som bor der) ➢ Si noe om forskjeller mellom før og nå ➢ Forhold til naturen og bruk av denne
Rovdyr	• Rovdyrsituasjonen i kommunen • Ulvens plass • Ulvens vesen og adferd • Forholdet mellom ulv og andre dyr • Forholdet mellom mennesker og ulv	➢ Beskrive hvordan rovdyrsituasjonen i kommunen er nå ➢ Hvor hører ulven hjemme (Norge, Trysil, eller hvor?) ➢ Det har vært mye snakk om "normal og "unormal" ulveadferd (f. eks. i forbindelse med hybrider). Hva forbinder dere med "normal" ulveadferd? ➢ Generelle inntrykk av ulvens "natur", f.eks. beskrivelser av eventuelle møter med ulv ➢ Hva bør man gjøre hvis man møter en ulv ansikt til ansikt? ➢ Hvordan er ulven, sammenlignet med andre dyr? (Hva er det med ulven...) ➢ Kan dere tenke grunner til at folk liker eller ikke liker ulv (målet er kvalitative beskrivelser) ➢ Hvorfor frykter mange ulven?
Forvaltning	• Nye ordninger • Jakt på rovdyr • Forhold til lokale og sentrale forvaltningsenheter	Erfaringer med: - Rovviltregioner- og nemnda - Tilskudd til tiltak mot rovdyrskader (sanking, gjerding, hjemmebeite) - Erstatning for rovviltskader (erstatningsoppgjør) - Forvaltningsplaner for rovvilt/store rovdyr - Ulvesonen: eget forvaltningsområde for ynglende ulv (hele Østfold, og Oslo, deler av Akershus og Hedmark) - Nasjonale mål for rovviltbestandene (formulert som antall ynglinger) - Grenseflokker Jakt på rovdyr: - kvote - lisens - forskjell på "jakt" og "felling" Forhold til - Miljøverndepartementet - Direktoratet for naturforvaltning - Statens naturoppsyn - Rovviltkontaktene - Kommunens rolle i rovviltforvaltninga
Turisme (Trysil)	• Nye former for friluftsliv (skisport, villmarksturisme...) • Rovdyras innvirkning på reiselivet • Rovviltsenteret	➢ Turismens betydning og utvikling ➢ Hvilken betydning har rovvilt for turismenæringen? ➢ Hva gjør turisme med naturen? ➢ Syn på etableringen av rovviltsenteret i Trysil

Appendix Ib: First wolf study – my interview guide

Hovedtema	Mulige teoretiske aspekter	Spørsmål
Ulvens plass og funksjon (Symbolsk trussel)	- Natur vs. kultur – representasjon av "det ville"? - Ulvens status (trussel vs. lovlig...) - Symbolsk orden vs. symbolsk trussel (matter out of place?) (hvor hører den hjemme?) - Endogen vs. eksogen → pådyttet vs. naturlig og harmonisk	- Synes dere ulven hører hjemme noe sted, og i tilfelle hvor? - Tenker dere at ulven kan ha noen form for funksjon – at det er grunner for at det bør finnes ulv?
Beskrivelser/definisjoner av ulv: vesen og adferd (Mytisk ulv)	- Forbindelser til selvet – menneskelige egenskaper - Oppfattes/omtales som enkeltstående individer eller flokkdyr?	- Hvordan beskriver folk her omkring ulven? Jeg tenker da på ulvens vesen – hvordan den er, og hvordan den oppfører seg.
Forholdet mellom ulven og andre dyr (Symbolsk orden)	- Avvikende/sammenfallende adferd og egenskaper – i forhold til hva? → symbolsk trussel vs. orden - Symbolsk orden	- Hvis vi skal sammenligne ulven med andre dyr, hva slags tanker har dere om det?
Forholdet mellom mennesker og ulv (Det dyriske selvet)	- Forbindelser til selvet - Frykt/risiko - Kontroll – redefinering av tradisjonelle representasjoner av "det ville"	- Ut fra deres erfaring; kan dere tenke dere grunner til at folk i området her liker, eller ikke liker ulv? - En del folk har uttrykt at de er redde for ulven. Hva tror dere er de viktigste grunnene til denne frykten? - Hvis man møter en ulv ansikt til ansikt, hva mener dere man bør gjøre? - Hvis man først skal leve med ulv ganske tett innpå seg, hvordan burde man da som mennesker forholde oss til dem?
Konfronterende spørsmål: Kunne vi greid oss uten ulv i verden?		

Appendix II: Nature Index study – interview guide

TEMA	EKSEMPLER PÅ SPØRSMÅL
Introduksjon	Om prosjektet og prosjektdeltakerne - Formål, finansiering, - Motivasjon: Litt om hva vitenskapssosiologi kan handle om og hvorfor det er relevant – gi konkret eksempel, for eksempel sikkerhetstrakten. - Litt om den "naive" måten å stille spørsmål på – og om at noen spørsmål umiddelbart kanskje kan virke irrelevante. - Folk har hatt forskjellige roller i arbeidet med naturindeksen. Noen spørsmål er mer relevante for noen enn for andre. Si fra hvis et spørsmål oppleves som irrelevant. - Diskutere anonymitet og hvordan denne best kan ivaretas. Kan du fortelle litt om den faglige bakgrunnen din og det du driver med her på… [instituttet]? **[Hvis mulig:** Hvis du skulle intervjue noen om deres deltakelse i utviklingen av naturindeksen, hvilke temaer ville du lagt vekt på da? Bruk gjerne litt tid til å tenke deg om.]
Naturindeksen og prosessen rundt etableringen av den	Hvordan ble du involvert i arbeidet med naturindeksen? Hvilke faser av arbeidet har du deltatt i? Hva vet du om prosessen rundt etableringen av indeksen? Hvilke aktører har spilt hvilken rolle – både på overordnet nivå og her på instituttet? [Probe etter informantens normative vurderinger: "Hva synes du om det"?] Kan du si noe om utfallet for de indikatorene (evt. den naturtypen) du har jobbet med i naturindeksen. Hvilke temaer (tror du) har vært gjenstand for størst diskusjon blant de involverte forskerne? Hvis noen hadde spurt deg hva det utfallet/tallet betyr i klartekst, hva ville du sagt da? Eller om noen hadde spurt hva naturindeksen egentlig måler? Hvis du skulle forklare hva naturindeksen er, til en som ikke har hørt om den før, hvordan ville du gjort det? [Spørre etter viktige teoretiske og konseptuelle prinsipper som er bakt inn i naturindeksen/ informantens ansvarsområde – f.eks: Hvordan er indeksen bygget opp? Eller: Hva er de viktigste kategoriene? Hva slags teoretisk modell ligger i bunnen] **Hvis lagt inn data**: Hvordan synes du det var å svare på spørsmålene i naturindeksundersøkelsen (evt. bidra på andre måter til undersøkelsen)? Var det noe du opplevde som spesielt utfordrende? Hva – hvorfor? Hva kunne vært gjort annerledes?

	Hvis bidratt på andre måter: Hvordan opplevde du arbeidet med naturindeksen? Var det noe du opplevde som spesielt utfordrende? Hva – hvorfor? Hva kunne vært gjort annerledes? Hvilke kriterier opplever du har fått størst betydning for utvalget av indikatorer – generelt, og for din naturtype? Hva synes du generelt om at vi skal ha en naturindeks for Norge? Hva kan den brukes til – ikke brukes til? Av hvem [forvaltning, politikere, interesseorganisasjoner, "vanlige folk"]
Forsknings-fellesskapet	Hvordan ble naturindeksen mottatt blant dine kolleger? Har den vært gjenstand for diskusjon? Kan du fortelle litt om instituttet/faggruppen din? Hva er typisk for (f. eks. NINA)? Stikkord: forskningskultur. Hva slags grupperinger finnes? Hva er det som skiller dem – hva er de viktigste kontrastene? Få informanten til å sammenligne eget institutt med andre institutter som har bidratt i naturindeksen. Kan du si noe om hva som kjennetegner forskningskulturen på instituttet, eller i din faggruppe hvis det er den du føler størst tilhørighet til?
Forståelse og håndtering av empirisk usikkerhet	Hvordan ble referansetilstanden for indikator(ene) du har vært involvert i arbeidet med fastsatt? Kan du fortelle litt om prosessen rundt dette? Hvis du ikke selv har vært med på prosessen, hva vet du om den? Hva tenker du om resultatet? I hvilken grad mener du dataene utgjør et tilstrekkelig grunnlag for å vurdere tilstanden for den eller de indikator(ene) du har hatt befatning med? Før?, Nå?, I framtiden? Tror du slike vurderinger gir nyttig kunnskap? Hvilken rolle mener du ekspertvurderinger bør få spille i bevaringen av biologisk mangfold generelt – og i indeksen spesielt? Hvorfor? Hvorfor tror du en del forskere er tilbakeholdne med å bruke kvalifisert skjønn/ekspertvurderinger på dette området? Ser du noen problemer med å ta utgangspunkt i en referansetilstand, slik det gjøres i naturindeksen? Er det andre temaer vi burde snakket om når det gjelder (håndtering av) empirisk usikkerhet.

Fortolkninger og beskrivelser av biologisk mangfold	Hva tror du folk flest assosierer med begrepet ”biologisk mangfold”? Hvordan vil du forklare hva biologisk mangfold er? Hva anser du for å være de viktigste årsakene til reduksjon av biologisk mangfold? Hva skiller begrepet fra det kanskje mer generelle begrepet ”natur”?
Forståelse av egen rolle/forskeres rolle - forskerens forhold til samfunnet - forskerens forhold til naturen	Vi skal gå over til å snakke litt om hvilken rolle forskningen bør ha i forvaltningen av naturressursene. ➢ Egen rolle. Hvis du tar utgangspunkt i ditt eget arbeid, hva brukes den type forskning til og hva bør den brukes til? ➢ Relasjon til forvaltning og politiske organer? Opplever du at forvaltningen eller nærinteresser påvirker forskningen din – eller forutsetningene dine for å drive forskning? Er det riktig å bruke fagkunnskapen sin til å prøve å påvirke (f.eks politiske beslutninger)? ➢ Medienes rolle? Hvem er best skikket til å ta vare på naturen? Hva synes du om forskere som bruker mye tid og krefter på å være aktive samfunnsdebattanter?
Menneskets plass i naturen og rolle i forhold til det biologiske mangfoldet.	Er mennesker å betrakte som en del av det biologiske mangfoldet? Vern versus bruk er et politisk omstridt tema som også berører utarbeidelsen og anvendelsen av naturindeksen. Jeg vil gjerne gå inn på et par eksempler som har med dette å gjøre: **A:** Hvis vi bruker skogen som eksempel, hvilke tanker og argumenter tror du ville vært de viktigste dersom en gruppe biologer ble satt til å diskutere forholdet mellom bruk og vern/næringsinteresser og biologisk mangfold? [Hvis informanten skildrer nyanser, konflikter og miljøforskjeller, forsøk å få vedkommende til å si noe om hvem som kan tenkes å mene hva] ➢ Hva tenker du selv? ➢ Regjeringen ønsker å legge til rette for utnytting av skogen for å produsere bioenergi. [Vis evt. utdrag fra Landbruks- og matdepartementets hjemmeside]. Har du noen synspunkter på dette? **B:** Et annet vanskelig spørsmål knytter seg til hvor aktive vi som mennesker skal være i reguleringen av arter: ➢ Bør man gripe inn ovenfor ”fremmede” eller ”invaderende” arter – som for eksempel mårhunden? Hva med Moskusoksen, som jo også er en innvandrer, men som er totalfredet? [Vis evt. avisartikkel som tar opp dette] ➢ I 2000 avlivet DN et kull med ”ville” ulvehybrider. Tilsvarende tiltak har blitt iverksatt overfor ”urene” fjellrever. Har du noen synspunkter på dette?

	Hvis du tenker på begge de to eksemplene [regulering av skog og arter] hvilken rolle tror du forskningen spiller i dag? Og hvilken rolle bør den spille? Er noen arter og naturtyper biologisk sett viktigere enn andre – eller er alle like betydningsfulle? Politisk vedtatte prioriteringer på miljøfeltet gjenspeiler verdivurderinger der noen arter og naturtyper fremstår som mer verdifulle enn andre (for eksempel rovdyr og kulturlandskap). Er du enig i at det er slik? Har du noen kommentarer til at det er sånn? Er det også slik blant forskere på miljøfeltet – for eksempel biologer? Knytter det seg prestisje til fagspesialiteter? Hva med her på instituttet?
Bakgrunn **Avrunding av intervjuet**	Alder Bosted – før og nå Familie Foreldre Interesser/engasjement/politisk orientering Er det noe du ønsker å legge til? Savner du noen temaer?

Appendix III: Second wolf study – interview guide

Sosial og geografisk kontekst

- Beskrivelser av området, naturen og eget forhold til naturen
- Beskrivelser av lokalsamfunnet
- Bekrivelser av lokalsamfunnet i en større geografisk og samfunnsmessig kontekst
- Beskrivelser av ulvens innvirkning på lokalsamfunnet

Egne og andres erfaringer med ulv/fortellinger om møter med ulv (NB! VIKTIG PUNKT SOM BØR TA MYE PLASS)

- Hva slags erfaringer (observasjoner, spor, lyder, fortellinger, angrep på husdyr …)
- Bekrivelser av erfaringene

Oppfatninger om ulv

- Oppfatninger i lokalsamfunnet generelt (grupperinger, motsetninger, viktige lokale temaer, aktiviteter som binder grupper sammen, hvem flytter ut og hvem blir igjen)
- Oppfatninger av ulv som går nær folk og bosetninger
- Oppfatninger av hva positive og negative syn på ulven tilstedeværelse bunner i

Hund og ulv

- Har du/dere hund?
- Hva betyr hunden for deg/dere?
- Syn på forholdet mellom hund og ulv (kan man ha ulv der det er hund og motsatt)
- Syn på forholdet mellom hund og ulv (Er det alltid konflikt? Hva er forskjellen på hund og ulv?
- Hvem har ansvaret når det går galt?
- Eventuelle tilpasninger (jaktform, beskyttelsesvest/el-vest, bytte rase, bjelle …)

Følelser, frykt og risiko

- Oppfatninger om risiko for ulveangrep og annen farlig atferd
- Frykt: Hvem er redde, for hva, i hvilke sammenhenger?
- Hvordan påvirker eventuell frykt din og andres hverdag og atferd? Er det aktiviteter du unngår på grunn av ulvens nærvær (tur, bærplukking, ski, ta med barn i naturen …)
- Eventuelle mestringsstrategier (hvordan håndteres eventuell uro eller frykt).
- Entusiasme. Er det grunner til å like ulv? Hva er evt. fint med ulv, og det å ha ulv i naturen? Hvem liker ulv og finnes det noen som ikke liker ulv? Henger det bare sammen med holdninger?

Andre kilder til informasjon om ulv og «social trust»

- Syn på forskning generelt, og i rovdyrpolitikken spesielt
- Tillit til media, skole, politikk, forskning …
- Prøve å finne ut hva slags informasjon som tillegges vekt – hvilke kilder?
- Hvordan møtes informasjonen fra ulike hold, legitimitet, troverdighet, påvirkning, spredning

Appendix IV: Letters of information to informants

Rovvilt og samfunn 2: Erfaringer med rovviltforvaltning i Sør-Skandinavia

Informasjon til intervjudeltakere og andre nøkkelpersoner i Halden og Trysil

Norsk institutt for naturforskning (NINA) er i gang med et stort tverrfaglig forskningsprosjekt om konsekvensene av rovviltforvaltningen i Norge og Sverige. Prosjektet omfatter både biologisk forskning og samfunnsforskning. Dette er informasjon om den samfunnsvitenskapelige delen, som skal kartlegge befolkningens oppfatning av dagens rovviltforvaltning i noen berørte områder. Den norske delen av prosjektet er finansiert av Norges forskningsråd og Direktoratet for naturforvaltning.

I løpet av de siste 30 årene har *vern* erstattet *utryddelse* som mål for rovviltforvaltningen. Med sterke restriksjoner på jakt har bestandene av de fire store rovdyra ulv, bjørn, gaupe og jerv begynt å vokse. I denne perioden har det også foregått omfattende forskning på rovdyr og deres byttedyr (særlig elg, rådyr og rein). Hundrevis av dyr er radiomerket og gode overvåkningsdata er tilgjengelige for alle artene. Kunnskapene om bestandenes størrelser og dyras atferd er etter hvert godt utviklet. Det samme er metodene for overvåkning.

Rovdyra og rovdyrforvaltningen er omgitt av konflikter. Dette er konflikter ikke bare mellom folk og dyr, men mellom mennesker med forskjellige meninger og ofte med forskjellige posisjoner i samfunnet. Derfor har rovdyrproblemene blitt tema også for samfunnsforskningen, og i Norge har vi alt gjort en god del. En hovedkonklusjon så langt er at disse konfliktene ikke bare handler om problemene rovdyra kan forårsake. Selvfølgelig er det ille for noen at sauer og hunder blir drept, og det er ikke bra at folk er urolige for å ha store rovdyr i nærheten. Men mange ser på rovdyrforvaltningen som ledd i en mer omfattende politikk som går på bekostning av distriktene, og som også fører til avfolking, sentralisering, gjengroing og mange andre problemer. Rovdyra kan bli ”dråpen som får begeret til å flyte over”. Andre kan betrakte motstand mot rovdyr som bakstreversk og gammeldags, i utakt med moderne miljøpolitikk. Vi kan også se en gryende motsetning mellom tradisjonell utmarksbruk og nye næringsveier, ikke minst innen reiseliv. Det er i alle fall ingen tvil om at rovdyrkonfliktene påvirkes av generelle maktforhold i samfunnet og veves inn i politiske kamper som strekker seg mye lenger enn selve rovviltforvaltningen.

Både den naturvitenskapelige og den samfunnsvitenskapelige forskningen har vært premissleverandører for politikk og forvaltning, for eksempel i forbindelse med den siste rovviltmeldingen (St. meld. Nr. 15 (2003 – 2004) ”Rovvilt i norsk natur”). Men vi vet fremdeles for lite om hvordan folk reagerer på ulike konkrete forvaltningstiltak, for eksempel den nye regionale forvaltningsmodellen i Norge, rovviltjakt, erstatningsordninger, soner, osv. Innenfor dette prosjektet er målsetningen å bringe forskningen nærmere folks konkrete opplevelse av dagens rovviltforvaltning, og å formidle denne kunnskapen til forvaltningsorganer, politikere og organisasjoner.

Norge og Sverige har felles rovdyrbestander, og forvaltningen i de to landene må ses i sammenheng. Det er også vanlig å sammenligne rovdyrsituasjonen i Norge og Sverige for å underbygge forskjellige standpunkter i debatten. Men det har vært forsket mindre på rovviltkonfliktene i Sverige enn i Norge, og vi vet alt for lite om forholdene der. Situasjonen i Sverige er ganske forskjellig fra den norske. Den svenske landsbygda er enda tynnere befolket og utmarksbeite er lite utbredt. Dermed er de to landene forkjellige med hensyn til det sosiale grunnlaget for en av de viktigste konfliktdimensjonene – konflikten mellom rovdyrvern og beitebruk. Men beitebrukerne er i mindretall også i norske kommuner. Tidligere forskning har vist at tyngdepunktet rovdyrmotstanden finnes blant folk i yrker utenfor landbruket, som bruker naturen til jakt og andre former for rekreasjon. Dette finnes i Sverige også, og mye tyder på at konfliktnivået i Sverige øker raskt. Selv om Norge har opprettholdt en helt annen bosettingsstruktur enn Sverige, kan det være grunn til å anta at de to landene ligner hverandre mye når det gjelder de konfliktdimensjonene som ikke handler om dyr på utmarksbeite. Men til nå er det ingen som har foretatt en systematisk sammenligning. Derfor er også det en viktig oppgave for prosjektet.

Studieområde
Vi skal konsentrere oss om grensetraktene i Sør-Norge og de midtre delene av Sverige. Det vil si Hedmark, Akershus, Østfold, Värmland, Dalarna, Örebro län og Västmanland. Biologene kaller av og til dette området for det "Sørlige sentrale skandinaviske økosystemet" (SSSØ). Det bor om lag to millioner mennesker innenfor området som dekker et areal på 95 000 kvadratkilometer. Økosystemet inneholder samtlige skandinaviske ulveflokker, et stort antall gauper, og det sørligste reproduksjonsområdet for brunbjørn. Jerven koloniserer også SSSØ fra nord i disse dager. Regionen inneholder to av de norske forvaltningsområdene for rovdyr, hele den norske "ulvesonen" og fire län som er sentrale i den svenske rovviltforvaltningen.

På norsk side kommer vi til å drive samfunnsforskningen i Halden og Trysil. I begge kommunene er mange berørt av rovdyra på en eller annen måte. Samtidig er kommunene ganske forskjellige når det gjelder befolkningens størrelse og sammensetning. De har imidlertid det til felles at de ikke er ensidige primærnæringskommuner, og vi tror derfor at vi kan få et innblikk i andre sider ved rovdyrproblematikken enn vi ville fått der husdyrtap er et dominerende konflikttema.

Hvordan gjør vi det?
Vi står overfor et tema som i første omgang krever en åpen utforskning av folks oppfatninger av dagens forvaltning, av konfliktene og av rovdyrpolitikken generelt. Metoden må være i stand til å fange opp den variasjonen som finnes mellom ulike befolkningsgrupper når det gjelder synet forvaltning av rovdyrstammene.

Vi kommer for det meste til å bruke gruppeintervjuer, som ofte kalles *fokusgrupper.* En fokusgruppe er som oftest mellom fire og sju personer som skal kommentere og diskutere et bestemt tema. Det er en bra metode når forskerne ikke skal inn på veldig personlige ting, men er interessert i å få i gang en diskusjon. Vi ønsker likevel å trenge litt dypere ned i sakene slik at vi kan forstå godt hvorfor folk mener det de mener. Derfor ønsker vi grupper der folk har noe til felles og gjerne kjenner hverandre, slik at samtalene kan flyte fritt. Det kan være grupper bestående av jegere, grunneiere, naturvernere, osv. Til sammen bør fokusgruppene nærme seg et tverrsnitt av kommunens befolkning.

Det er avgjørende at vi ikke bare får kontakt med folk som har bestemte og sterke meninger. Vi har tidligere sett at ganske mange, selv i rovdyrkommuner, ikke er særlig engasjert i rovdyrspørsmålet. De har ikke alltid noen klare oppfatninger av rovdyrpolitikken, og noen er rett og slett lei hele greia. Dette er grupper som har kommet i bakgrunnen, også i vår tidligere forskning. Men deres syn på rovvilt og naturforvaltning er viktig om vi skal danne oss et best mulig bilde av mangfoldet de berørte områdene. Derfor ønsker vi noen fokusgrupper på arbeidsplasser og andre steder der folk er samlet av andre grunner enn sin tilknytning til utmark og natur.

En totrinns strategi skal sørge for at vi oppnår den nødvendige informasjonen. Ved å snakke med et utvalg nøkkelpersoner håper vi å få oversikt over relevante grupperinger i lokalsamfunnet. Basert på denne informasjonen setter vi sammen fokusgruppene, med mest mulig lokal hjelp. Kan deltakerne rekrutteres av folk som kjenner dem, og ikke av oss, er det det aller beste.

Personvern og lagring av data
Intervjuene vil normalt bli tatt opp elektronisk, men vi registrerer ikke deltakernes navn. Personopplysninger blir registrert bare i den grad de er relevante (yrke, utdanning og lignende). I forbindelse med all rapportering fra prosjektet vil alle opplysninger anonymiseres slik at ingen enkeltpersoner kan kjennes igjen. Intervjuopptak og eventuelle utskrifter av intervjuer vil bli oppbevart elektronisk i kryptert form hos NINA, og vil ikke stilles til rådighet for forskere utenfor teamet som deltar i ROSA II.

Formidling og rapportering
Vi skal rapportere fra prosjektet på vanlige måter, i rapporter og vitenskapelige artikler. Men vi legger også stor vekt på å skrive om det vi finner ut i tidsskrifter som Jakt & Fiske, Miljøjournalen, lokalaviser, osv. Vi vil også – som i tidligere prosjekter – satse mye på å formidle resultater tilbake til alle som har hjulpet oss i berørte lokalsamfunn og til andre som måtte være interessert. Det kan skje på mange måter: Kortrapporter eller "fakta-ark", foredrag, osv.

Vi håper dette har gitt et inntrykk av hva vi skal gjøre og av hva vi ønsker å oppnå.
På forhånd takk for hjelpen.

Med hilsen

Ketil Skogen Olve Krange

Forespørsel om deltakelse i forskningsprosjektet ” Forskeres håndtering av usikkerhet i Naturindeks for Norge”

Norsk institutt for naturforskning (NINA) har satt i gang et samfunnsvitenskapelig forskningsprosjekt som retter søkelyset mot forskeres rolle i vurderinger av naturtilstanden. For å få kunnskap om forskernes egne erfaringer og synspunkter på dette, ønsker vi å intervjue personer som har vært involvert i arbeidet med naturindeksen for Norge. Prosjektet finansieres av Direktoratet for naturforvaltning.

Regjeringen Stoltenbergs initiativ til etableringen av en naturindeks for Norge er et av flere eksempler på hvordan vitenskap får rollen som politiske styringsverktøy. I stadig større grad forventes forskere å produsere kunnskap som både er samfunnsnyttig og direkte anvendbar i forvaltningen av naturressursene. Samtidig har spørsmål som før ble sett på som rent vitenskapelige, blitt offentlige anliggender. Et eksempel er diskusjonen om empirisk usikkerhet på feltet for klimaforskning, der forskernes datagrunnlag utfordres av alternative fortolkninger, og der vitenskap blir gjort til gjenstand for forhandlinger mellom næring, politikk og andre interesser.

Betingelsene for å drive vitenskapelig arbeid har endret seg i takt med kravene om samfunnsrelevans, anvendbarhet og legitimitet. I overgangen fra premissleverandør til samfunnsaktør, vil forskere oppleve en stadig større etterspørsel etter naturvitenskapelig kunnskap som svarer til offentlighetens skiftende oppfatning av hva som er legitim viten. Som en konsekvens av dette vil vitenskapelig ansatte måtte forholde seg til krav og forventninger om å bidra med ekspertvurderinger som ikke bare hviler på sikre data, men som i tillegg fordrer håndtering av usikkerhet og bruk av kvalifisert skjønn.

Prosessen rundt etableringen av en naturindeks for Norge representerer en verdifull kilde til kunnskap om hvordan denne utviklingen i forholdet mellom vitenskapen og ulike samfunnsaktører påvirker forskernes arbeidssituasjon. I denne undersøkelsen ønsker vi å se nærmere på hvordan forskere selv opplever denne situasjonen, eksemplifisert gjennom deres deltakelse i arbeidet med naturindeksen. Relevante tema vil blant annet være:

1) Hvilken rolle kan og bør forskning spille i håndteringen av det biologiske mangfoldet og hvordan forstår forskerne selv sin rolle? Hvordan veies ønsket om faglig solide og omfattende data om de enkelte arter eller naturtyper opp mot behovet for helhetlig kunnskap om tilstanden i naturen? I hvilken grad kan og bør forskere opptre som samfunnsaktører, det vil si som bidragsytere i den bredere samfunnsdebatten om tap av biologisk mangfold og i utformingen av politiske miljøtiltak?

2) Hvordan skal usikkerhet i vurderinger av naturtilstanden, som for eksempel naturindeksen, håndteres og kommuniseres? Hva er egentlig empirisk usikkerhet? Hvordan skal man som forsker forholde seg til de økende forventningene om å komme med ekspertvurderinger på bakgrunn av mer eller mindre usikre data?

3) Hvordan skal vi forstå begrepet ”biologisk mangfold”? Tidligere studier har vist at forskjellige aktører, som lokale innbyggere, nasjonale og internasjonale organisasjoner og

ulike forskerfellesskap, tilskriver biologisk mangfold ulikt innhold og verdi[4]. Innsikt i slike spørsmål vil blant kunne bidra til å forutsi fremtidige verdi- og fortolkningskonflikter på naturfeltet, for eksempel mellom forskere, forvaltere og lekfolk.

4) Temaene som tas opp i intervjuet vil gjennomgående koples til konkrete erfaringer med å delta i arbeidet med naturindeksen.

For å få kunnskap om disse spørsmålene ønsker vi å intervjue forskere som på ulikt vis har deltatt i arbeidet med naturindeksen, enten de selv har bidratt med data, eller har vært involvert i andre faser av arbeidet. Metoden vi vil bruke er kvalitative dybdeintervjuer med enkeltinformanter. I slike intervjuer er det et mål at den som intervjues snakker fritt og selv er med på å definere rammene for hva det er viktig å snakke om. Det pleier i praksis å fortone seg som en nokså uformell samtale. Det er vanlig at dybdeintervjuer varer i rundt en time, noen ganger lenger. Intervjuene vil gjennomføres av en av NINAs samfunnsforskere som har erfaring med metoden.

For å sikre datakvaliteten vil intervjuene tas opp elektronisk, men vi registrerer ikke deltakernes navn. Personopplysinger blir registrert bare i den grad de er relevante (faglig bakgrunn, stilling, sosialt eller politisk engasjement o.s.v.). I tråd med norsk personvernlovgivning og alminnelig etiske retningslinjer i samfunnsforskning vil alle utsagn som refereres i skriftlige publikasjoner bli anonymisert slik at enkeltpersoner ikke vil kunne kjennes igjen. Konkret innebærer dette at ønsket om å rapportere interessante funn vil måtte vike for kravet om anonymitet, der det er konflikt mellom de to hensynene. For eksempel vil informantenes institusjonstilhørighet, faglige spesialisering o. l. utelates eller tilsløres. Likeledes vil sitater og illustrerende eksempler omskrives på en slik måte at det ikke skal være mulig å identifisere enkeltpersoner. Vi vil også legge vekt på at den helhetlige konteksten funnene presenteres innenfor ikke vil kunne føre til gjenkjennelse. Eventuelle avvik fra slike hensyn (for eksempel i tilfeller der informanten selv eksplisitt godtar at bestemte ytringer koples til gitte situasjoner eller fagområder) vil drøftes direkte med den enkelte deltaker.

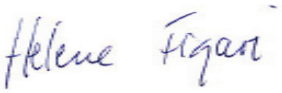
Undersøkelsen er meldt til Norsk samfunnsvitenskapelig datatjeneste. Intervjuopptak og eventuelle utskrifter av intervjuer vil bli oppbevart elektronisk i kryptert form hos NINA, og vil ikke stilles til rådighet for andre enn forskere som er involvert i prosjektet. Deltakelse er selvsagt frivillig, og deltakerne har rett til å trekke seg fra prosjektet på et hvilket som helst tidspunkt, også etter at intervjuene er gjennomført. Prosjektet avsluttes 31.12.2011. Lydopptak der informanten kan identifiseres vil da bli redigert med sikte på full anonymisering eller slettet.

Resultatene vil bli publisert i en egen NINA-rapport. Funn fra forskningsprosjektet vil også kunne anvendes i en eller flere vitenskapelige artikler, og eventuelt koples til funn fra andre forskningsprosjekter der spørsmål som kommunikasjon om empirisk usikkerhet eller forståelse av biologisk mangfold står sentralt. Vi er opptatt av å gi god tilbakemelding om forskningsresultater til alle som deltar i våre prosjekter, enten de blir intervjuet eller hjelper oss på annen måte.

Vi håper dette har gitt et inntrykk av hva som formålet med prosjektet, og at du er villig til å avse litt tid til å hjelpe oss med datainnsamlingen.

[4] Se f. eks Caillon, S. og Degorges, P. (2007) "Biodiversity: negotiating the border between nature and culture", Biodiversity Conservation 16: 2919 -2931.

På forhånd takk for hjelpen.
Med hilsen



Ketil Skogen
Seniorforsker

Helene Figari
Forsker

INFORMASJON TIL DELTAKERE I FORSKNINGSPROSJEKT OM OPPLEVELSE AV ULV

Som en del av oppfølgingen av Stortingets vedtak om norsk ulveforvaltning i juni 2016 har Miljødirektoratet bestilt flere forskningsprosjekter. Et av disse handler om menneskers opplevelse av ulv i de norske ulveområdene – konkrete erfaringer med ulv, følelsesmessige reaksjoner, samt opplevelse av påvirkning på livskvalitet. Miljødirektoratet skrev i utlysingen av oppdraget blant annet dette: «Direktoratet ønsker forbedret kunnskap for å redusere konfliktnivået knyttet til ulveforvaltningen. Økt kunnskap er en sentral del av forvaltningens konfliktdempende arbeid innenfor rovviltforvaltningen, og prosjektet skal bidra til å tette kunnskapshull der konfliktene oppleves som særlig høye.»

Norsk institutt for naturforskning (NINA) har fått dette oppdraget, og en viktig del av undersøkelsen vil være intervjuer med folk som bor i områder der det finnes ulv. Vi vil gjerne snakke med folk som har møtt ulven i skogen, sett den fra bil, eller hatt besøk av den nær bolig, arbeidsplass, osv. Men vi er også interessert i å snakke med folk som ikke selv har slike opplevelser, men som på ulike måter er tett på noen som har opplevd ulvemøter. Det kan være naboer, familiemedlemmer, jaktkamerater, osv. Vi er interessert i å høre om erfaringer som oppleves som både negative, nøytrale og positive.

Vi har valgt ut to områder for intervjuer, nemlig Slettås og grendene rundt Osensjøen i Åmot og Trysil, samt områdene rundt Østmarka i kommunene Enebakk, Rælingen, Ski, Lørenskog og Oslo.

Vi er interessert i å høre om dine synspunkter og eventuelle erfaringer med ulv, og håper at du er villig til å snakke med oss. Noen av intervjuene vil foregå i grupper, mens andre vil foregå som samtaler mellom enkeltpersoner og en forsker.

For å sikre datakvaliteten ønsker vi å ta opp intervjuene elektronisk. I tråd med norsk personvernlovgivning og alminnelig etiske retningslinjer i forskning vil alle utsagn som gjengis i rapportering fra prosjektet bli anonymisert. Det skal ikke være mulig for andre enn forskerne å identifisere noen deltaker i prosjektet. Unntak kan gjøres hvis informanten tydelig opptrer i rollen som representant for en institusjon eller organisasjon, og selv godtar at sitater knyttes til navngitt person. Vedkommende vil da få forhåndsgodkjenne eventuelle sitater.

Alle har rett til å trekke seg fra prosjektet på et hvilket som helst tidspunkt, også etter at intervjuene er gjennomført. Opptak av intervjuer vil da bli slettet.

Med hilsen

http://www.nina.no/ - et institutt i Miljøalliansen as

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Appendix V: Invitation posted on Facebook

14 February 2018

https://www.facebook.com/groups/54740245885/permalink/10155343151815886

BIDRA MED DINE ULVE-ERFARINGER!
Norsk institutt for naturforskning (NINA) gjennomfører på oppdrag for Miljødirektoratet en undersøkelse av hvordan folk i ulveområder forholder seg til ulv – hvordan de reagerer på møter med ulv, opplever ulvespor i nærheten av der de bor og ferdes, og hvordan de forholder seg til andres erfaringer med ulv i nærmiljøet/turområdene, osv.. Dette er altså ikke en vanlig holdningsundersøkelse, men går mer direkte på erfaringer (egne og andres) og hvordan disse kan utløse så vel positive som negative følelser. En viktig del av denne studien er intervjuer med folk som bor og ferdes i to utvalgte områder: Rundt Osensjøen i Hedmark og Østmarka. Vi vil gjerne snakke med folk som har sett ulv, vet at det har vært ulv nær der de bor, som har hunder man vet eller tror har vært i kontakt med ulv, osv., osv. Hvis du kunne tenke deg å snakke litt med oss om dine erfaringer, så ta kontakt med Ketil Skogen på Messenger eller epost ketil.skogen@nina.no. Alle samtaler er konfidensielle, og ingen personer vil kunne identifiseres i rapporter fra undersøkelsen."

Appendix VI: Permission to copyright

De : Helene Figari <Helene.Figari@nina.no>
Envoyé : samedi 24 avril 2021 17:00
À : Sandrine PACCHER <sandrine.paccher@humensis.com>
Objet : Request for copyright permission for the submittance of a thesis at the University of Oslo

Dear Mme Paccher,

I am completing a PhD thesis at the University of Oslo on the role of social representations of nature in environmental conflicts. In the thesis I draw extensively on the work of Serge Moscovici.

I would like the permission from Presses universitaires de France to include in my dissertation an adapted figure from the following book:

Moscovici Serge (1961) *La psychanalyse, son image et son publique* 1st ed. Paris: Presses Universitaires de France.

The figure to be redrawn and reused in a translated version is the one on page 296 of Moscovici's book. Attached to this email is copy of the adapted figure I would like to include in my thesis, as well as an extract from the surrounding text to illustrate the context in which it will be used.

The requested permission extends to any future revisions and editions of my thesis, including the electronic publication of my thesis by the University of Oslo. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your response will also confirm that the Presses Universitaires de France owns the copyright to the above-described material.

If these arrangements meet with your approval, I would be grateful if you could return this e-mail with affirmation. Thank you very much.

Your sincerely,

Helene Figari

From: Alexandra PERNIN <alexandra.pernin@humensis.com>
Sent: mandag 17. mai 2021 11:08
To: Helene Figari
Subject: TR: Request for copyright permission for the submittance of a thesis at the University of Oslo
Attachments: Figurative scheme of psychoanalysis.docx

Dear Helene Figari,

I am getting back to you regarding your permission request.

We grant you the non exclusive rights for free to include this figure in your work.

Please do not forget to insert the copyright.

With my best regards,

Alexandra Pernin

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