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Herding Knowledge

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Abstract: The siida is a Sámi local community that has existed from time immemorial. The reindeer herding siida has formed as an adaptation of ancient siida principles to large-scale nomadic reindeer herding. It is the prerequisite and basic organizational unit for carrying out large-scale herding. Still, the siida had not, until recently, been legally acknowledged by Norwegian national authorities. Instead, the authorities maintained their own construction of reindeer herding districts, and an outsider's representation of Sámi reindeer herding. The siida, and its use of traditional herding knowledge, has on the other hand been living its own life alongside, and often in conflict with, official accounts and decisions. Some aspects of traditional Sámi reindeer herding knowledge can be held to correspond with scientific knowledge; others differ from it or go beyond the subject area with which western scientific knowledge has been occupied. However, all these aspects concern the siida members' efforts to continuously form and realize an acting siida. In 2007 the Norwegian parliament passed the new Reindeer Herding Act acknowledging siida as the basic institution regarding land rights, organization, and daily herding management. The recently achieved legal acknowledgement of siida in Norway must result in recognition of its autonomous processes of knowledge as well as recognition of its land rights. This article discusses the question of what this acknowledgement of siida's autonomous processes of knowledge means.

Introduction

The Sámis have practised reindeer herding from time immemorial. In old times, semi-nomadic local communities had their own territory and governed the use and allocation of natural resources and central aspects of societal issues. These communities have been categorized as Sámi hunting siidas, although small-scale reindeer herding was a part of the resource base (Tanner 1929, Solem 1933, Tegengren 1952, Vorren and Manker 1976). The development of large-scale reindeer herding started more than 400 years

ago (Vorren and Manker 1976) and was a strategy to secure one of the main resources, the reindeer herds and pastures. (Numbers of privately owned reindeer were increased as declining wild reindeer herds made livelihood more insecure.) The formation of reindeer herding units, the reindeer herding *siidas*, was an adaptation of old *siida* principles to fully nomadic reindeer herding practices.

The Sámi are an Indigenous people of northern Europe. Over time, their land has been reduced by the colonization of settlers coming from south and east. Today Sápmi, the traditional land that Sámis still inhabit, encompasses northern parts of Scandinavia and the Kola peninsula of Russia. Sámi large-scale reindeer herding has developed and still exists in all parts of Sápmi; but it has long experienced and is today threatened by impacts from industry exploiting mineral and energy resources, and also by other types of human activities.

The part of Sámi reindeer herding society referred to in this study consists of *siida* units that have their winter pastures on the inland of Finnmark County, and that regularly come in contact with each other. These units have their summer pastures on the coastal areas of central and western part of Finnmark and the eastern part of Troms (see figure 1). In total, their reindeer pasture area is about 45,000 km². Most of the reindeer herding families are registered as inhabitants of the inland municipalities of Kárášjohka and Guovdageaidnu. According to official numbers, there were nearly 2000 reindeer owners in these two municipalities in 2006, having approximately 145,000 reindeer, not including newborn calves (Reindriftsforvaltningen 2007).



Figure 1. Northern Scandinavia and the Russian Kola Peninsula. The boundary shows the Guovdageaidnu and Karasjohka reindeer herding area.

Especially during the last twenty years, there has been much focus on the long-term balance between reindeer herds and pastures. “Too much reindeer in Finnmark,” has been the simple message conveyed by the Norwegian press. Satellite images used to monitor vegetation changes showed a considerable reduction of lichen covered areas (Johansen et al. 1995, 2000, 2005), which was taken as proof of overgrazing. Central authorities took action in order to start the regulation of herd sizes. Legal, administrative, and economic means and arrangements were discussed and partially implemented. One of the official proposals, and the herders’ reactions to it, illustrates the different positions. A committee appointed by the National Reindeer Herding Board proposed a revision of the existing division of reindeer herding districts in Finnmark in order to make the districts more effective in implementing the main goals of sustainable development (Reindriftsadministrasjonen 1994). The response from reindeer herders was disapproval. The local section of the Association of Norwegian Reindeer Herding Sámis stated that time had come to take siida rights and the siida system into consideration in all efforts to structure general conditions regarding Sámi reindeer herding communities in Finnmark.

The political discussions have mainly focused on land rights and the long-term balance between reindeer and pastures. There are, however, many other aspects of the traditional institution of siida and the siida system. While these elements are connected to the main issues of land rights and resource management, they have not been explicitly brought forth and discussed. One of these aspects is the type of knowledge embedded in siida practices and the siida’s everyday dealings with the local environment. The use, and therefore the protection, of traditional Sámi reindeer herding practices and knowledge are closely related with the viability of the siida system. Then how can this knowledge be described, and should legal acknowledgement of the siida also imply acknowledgement of all the different aspects of traditional Sámi reindeer herding knowledge?

The Reindeer Herding District

In Norway, the construction of reindeer herding districts has been the organizational instrument by which the national authorities have administered the Sámi reindeer herding industry. The official administrative organization of reindeer herding has formed gradually through legislation, of which the Finnmark Reindeer Herding Act of 1854 was the starting point. The reindeer pasture land in Finnmark was then divided into three regions, and the regions were further divided into separate winter, autumn/spring, and summer pasture districts for the purpose of protecting the defined winter

pastures against spring and autumn usage. Conflicts at a high political level between Norway and Russia had resulted in the national border between Norway and Finland (as part of Russia) closing in 1852. This meant that the reindeer herding Sámis, who were registered as inhabitants of Finnmark County, lost their traditional winter pastures on the Finnish side of the border. The new regulations drawn up by the Norwegian authorities were an attempt to solve the serious problems following from the loss of vast winter pastures (Aarseth 1989, Strøm Bull, Oskal, and Sara 2001, Sara 2006).

The system of relatively small reindeer herding districts on summer pastures was established by the legal authority of the Reindeer Acts of 1883 and 1933. Originally the main purpose of forming summer pasture districts was to protect the interests of Norwegian agricultural colonization of the North. The purpose of the Act was to establish systems and a means to make reindeer herders pay compensation for claimed damages on farmland (Whitaker 1955, Berg 1994, Strøm Bull, Oskal, and Sara 2001). The problem had been that farmers were not capable of reading the earmarks and thereby of identifying the owners of the reindeer that came down and grazed on the farmland. The solution, given legal authority in the new Act, was the division of summer pastures into relatively small reindeer herding districts. The reindeer herding families were under an obligation to inform the authorities in which district they planned to have their reindeer herd during the summer period. All the families in a reindeer herding district were made collectively responsible for claimed damages done by the reindeer in that specific district. No division of autumn/spring and winter pasture areas was made; these continued to exist as wide districts. In the inland region there were no conflicts between farming and reindeer herding and therefore no need to divide pastures into small districts.

The Reindeer Herding Act of 1978 confirmed the district system and developed it further by establishing district boards, regional boards, and a National Reindeer Herding Board. This Act also introduced the administrative reindeer herding licence (*driftsenhet*) as a means to control access to reindeer herding management. The boards were given responsibility and authority to regulate both access to reindeer herding management and the long-term balance between numbers of reindeer and available pasture land in the districts.

Political-administrative representations of reindeer husbandry and herding have until now been based mainly on maps showing the herding districts and statistical data grouped into these districts. Yearly reports and evaluations are mainly about numbers of reindeer and licence units, meat production, and economic outcome of the meat production. This represents

an outsider's and distant perspective on Sámi reindeer husbandry and herding.

The Siida

Siida principles are ancient in origin. The main elements of the siida are the individuals (in Sámi *siidda olbmot*); the husbandry units (*báikedoalut*); the collective and the herding unit (*siidadoallu*); the siida territory, resources, and infrastructure (*orohagat/siidavuodđu*); and the semi-nomadic or nomadic lifestyle in accordance with the flow of the seasons (*johtáladdan*). In a nomadic reindeer herding siida the connections between individuals, husbandry units, and the whole collective of the siida are as follows (author's translation):

The household is a group of unified individual reindeer owners, and the siida is a group of unified independent households. Family bonds are in both cases essential elements in the constellation of the group. The household doesn't own reindeer, but is a subsistence-economic base for the individual reindeer owners. The siida doesn't own reindeer and it is not a subsistence-economic enterprise, but makes up the resource basis for the households. (Strøm Bull, Oskal, and Sara 2001: 278)

The siida consists of different aspects that correspond with the needs for both stability and flexibility. The need for stability has most often been described in judicial and ethnographic studies. A former district judge in Finnmark (Solem 1933) has described the reindeer herding siida system as a stable system of siidas having their own seasonal pastures and migration routes. He testified to the existence of traditional rules and customs, and emphasizes that herders respected the borders between the siidas. Nearly thirty years later a comprehensive ethnographic documentation of the existing reindeer herding nomadism in Finnmark was published (Vorren 1962). Each siida's seasonal pastures, migration routes, and campsites are thoroughly described and mapped. Anthropological studies, on the other hand, have focused on seasonal breakup and coalition of siida units, and herders' discretionary authority for arrangements to adjust herd sizes and herding practices to variable and difficult natural environments (Whitaker 1955, Pehrson 1964, Paine 1970, 1994).

In 1966 a law committee preparing a new Reindeer Herding Act had denied the existence of a siida system (Ravna 2008). The following was said about the siida (author's translation): "Such an institution is today non-existent in the reindeer herding society" (Reindrifstlovkomitéen 1966: 22).

Since then, the legislative authorities have come to another conclusion. A law committee, appointed in 1998, prepared legislative amendments on internal matters concerning the reindeer herding industry in Norway. Their report and draft proposal was published three years later (NOU 2001: 35). The committee unanimously concluded that *siida* should be acknowledged as the basic institution regarding land rights, organization, and daily herding management. After a long period of standstill and administrative procedures, the Norwegian Parliament passed the new Reindeer Herding Act in 2007. Now the first steps are being taken towards restoration of the *siida* system.

Siida and Traditional Knowledge

In classical Sámi literature about life and culture of the nomadic reindeer herding Sámis (Hætta and Bær 1958, Pirak 1937, Skum 1955, Turi 1910/1987), which covers a time span from 1845 to 1935, there are no attempts to explicitly describe basic elements of *siida* formation and functioning. The *siida* is taken for granted as the institutional framework and locality for practices and events throughout the yearly cycle. Yet aspects of the *siida* itself will appear one by one when actualized through events and stories told about them. Actually, this is the way of experiencing a *siida* when living inside it. *Siida* as theme is inexhaustible with all its aspects and the multiplicity of natural and social surroundings. Herders are focused on the process of continuous formation of *siida*, i.e., *siidastallan* (gerund based on the verb *siiddastallat*: to have a *siida*). In this view different incidents and multiple encounters with, for example, members of other *siida* units, animals, landscape, and weather conditions, form the actual *siida* as much as its infrastructural aspects like the seasonal pastures, the migration routes, or *siida* membership.

Siida topics mainly concern ecology, herding strategies, coordination of herding tasks, and relations to surrounding *siida* units. Practices and discussions around reindeer herding may thematically interpret natural and social relations as different aspects of the same issue. Events may be viewed by the herders as having both ecological and social implications, where animals and other natural surroundings also play an independent role. This article focuses on knowledge and examples about reindeer and relations to natural surroundings.

Regular participation in the daily life of *siida* is the entrance to deeper understanding of traditional Sámi reindeer herding knowledge. The following definition of traditional ecological knowledge can also be used for traditional knowledge in *siida* settings:

... a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. (Berkes 2008: 7)

The specialized language represents another doorway to Sámi reindeer herding knowledge. Even fluent Sámi speakers will have problems following herding discussions. This is because of the abundance of specialized terms about reindeer, herding activities, and the environment, and the fact that well-known words and phrases can have a second meaning in the context of reindeer herding. In published books and dictionaries the Sámi reindeer herding language is just rudimentarily documented, one exception being a book in Sámi that presents terms for classification and characterization of snow and reindeer (Eira 1994).

For me, the author of this article, upbringing and training inside a reindeer herding siida has been a precondition for interest in and access to closer studies of Sámi reindeer herders' traditional knowledge. The next step has been studies of the scientific literature relevant to reindeer herding, and also reading and translating old documents concerning siida into Sámi (Sara 2006). Furthermore, engagement in projects initiated by herding district boards has brought me in professional contact with herders representing different siidas (e.g., Bajos report referred to in Reindriftsforvaltningen 2003). Eventually, self-initiated interviews with reindeer herding Sámi elders have allowed me a more flexible approach to exploring the themes of siida and traditional knowledge. Some of this work is published in Sámi (Sara 2001), and is referred to in this article.

This article is also written in Sámi. My intention is that the article can be read and discussed by those both inside and outside the context of a traditional siida.

Traditional Knowledge as a Parallel to Scientific Knowledge

An important aspect of reindeer herding is that human beings seek to exercise control over the animals' movements in their natural habitat. This control entails the possibility of gathering the animals and thus utilizing them as a resource in a lucid and effective manner. Control is, however, never complete or guaranteed precisely because the animals are self-sufficient and in continuous movement over a wide and complex landscape. Insecurity and the experience of lacking control over the environment are underlying themes in many narratives and daily conversations amongst herders. The coexistence

of predictability and unpredictability—i.e., that both the regularly repetitive and the unpredictable are seen as typical phenomena—characterize the traditional thinking of Sámi reindeer herders’ relation to learning, evaluation, and decision making in their daily work. This way of thinking has often been shown not to correspond with the governmental authorities’ methods of managing the natural resources of reindeer herding—a management that has relied mainly on scientific research and its representation of the topic. Robert Paine writes about the difficulties that implementation of state programs, using concepts and models taken from agronomics and biology, ran into. He remarks on the quite dissimilar experiences of the two parties:

... much about the practice of reindeer pastoralism (in the terrain, not at experimental field stations) proved arcane to the experts.
(Paine 1994: 161)

Karen Inga Kemi reports herders’ comments on scientific ecosystem models and the concept of “sustainability” (author’s translation):

Many Sámi reindeer herders claim that authorities’ understanding of the concept is not sufficiently adapted to reindeer herding ... It is, according to their view, not possible to calculate a level of optimal sustainable population of reindeer due to the complexity and unpredictability inherent in reindeer herding. (Kemi 2008: 17)

As previously mentioned, the Sámi reindeer herders exercise control over the movement of animals in their natural environment. This exercise of control is based on a compromise between animals and human beings. This implies, first, that the herders must consider needs related to the animals’ metabolism, energy-economization, and reproduction. Second, there is a need to closely observe that which in Sámi is called *bohcco luondu*. The corresponding term in English would be ‘the nature of reindeer,’ but the exact meaning is probably not the same. The term encapsulates many different phenomena with the purpose of describing the characteristics of reindeer that are apparent through their habitual reactions and behaviours in relation to their surroundings. *Bohcco luondu* is, in other words, an explanatory principle (cf. Bateson, 1972, about instinct). It includes features such as reflexes, reactions to external stimuli, typical behaviour in relation to other reindeer, natural surroundings and seasons, behavioural characteristics of groups of animals, and, finally, imprinted or learned affiliation to specific landscapes.

The third requirement for herders to exercise control over the movement of reindeer is herders' communication with the animals. A considerable part of traditional knowledge about reindeer undoubtedly originates from the times of hunting societies, including the components of knowledge relating to the effect that appearances of humans have on the animals. The Sámi term for wild reindeer, *goddi*, and the term for semi-domesticated reindeer, *boazu*, contain no reference to different degrees of shyness or tolerance of human beings. The degree of tameness does not, by itself, have consequences for controlling the reindeer on the pastures (a causal relationship an earlier provision of the Reindeer Herding Act assumed). Tameness can, on the contrary, sometimes even complicate control. The Sámi term *lodji* (translated in dictionaries as 'tame') always denotes composure and controllability, but only, in limited cases, a tolerance for human beings. Nor is there necessarily a correspondence between the animals being tame as individuals and being tame as a herd. Tameness, in this meaning of the term, varies greatly and seems to derive as much from the natural surroundings as from the animals themselves.

Communication with animals as individual units and as units of the herd occurs through interpretation of each other's creation of perceptible images such as posture, movement, and meta-lingual sounds. The reindeer herders will, through observation, listening, and the tracking of reindeer and their movements, also be able to gain a type of knowledge about the surroundings not attainable through mere sensing or meticulous investigations. It is vital for reindeer herders that the reindeer remain self-sufficient animals in their own natural environment. The exercise of control must therefore not come into conflict with this as such conflict could potentially risk the distinctiveness of the herder's livelihood. Control that touches the line of captivity will run the risk of changing the reindeer and adopting breeding practices—or "making cattle out of reindeer" as herders would put it. The exercise of control must therefore be performed in compromise with the animals' independent adaptations to pasture and the natural surroundings. The ability to exercise control is based on observations and studies of the animals in these surroundings. Furthermore, the needs and behaviour of the animals form a theme for information exchange, discussions, learning, and knowledge acquisition. This is part of the traditional knowledge on reindeer, developed by practising herders through generations of observations and interpretations. Due to the need for a degree of predictability, traditional reindeer herding societies have developed knowledge about the inherent orderliness of the natural environment. This component of traditional knowledge about reindeer and their adaptation to the environment is

based on observation, categorization, concept development, and further discussions about observations in a professional community. The methods and meticulousness of traditional knowledge do not differ qualitatively from that of well-known scientific studies in, for example, ethology. Nor has scientific research on reindeer produced results that add new insights to or contradict traditional knowledge (e.g., Skogland 1974). Other scientific research may greatly differ methodologically from traditional knowledge development, but the results of these studies confirm traditional knowledge. The novelty is that the scientific methodology provides for representation in quantitative forms. Research on the winter diet of reindeer offers us an example. Biological studies document that reindeer combines intake of both lichen and vascular plants during the winter (Storeheier 2003), a well-known fact to herders by observation of reindeer herds' grazing pattern in the terrain. A journal published by the Norwegian Administration of Reindeer Herding writes about the new findings (author's translation):

Plants that stay green under the snow cover during the winter are probably more important for the reindeer than researchers have been aware of. (Reindriftnytt nr. 1 2004)

Similarities in methodology and/or results aside, there are also some essential differences between traditional and scientific knowledge. Scientific studies are characterized by the following: regardless of the type of data—be it registrations, reproductions, or notes based on observations—these are representations that need to satisfy the requirements of dissemination in the scientific community. The material must be presentable in diagrams and text, and thereby be moved to a higher level of abstraction. At the same time, the distinctiveness of the material is reduced in order to allow it to be described from a distance and to be universalized (Latour 1995). Traditional knowledge, on the other hand, remains in its own specific environment. In a traditional reindeer herding community the nature of reindeer is viewed against the backdrop of the natural surroundings. In more general terms, the fixed or the predictable is attempted to be distinguished from, while at the same time viewed against, a framework of variability and unpredictable change. The following passage from a reindeer herder's explanation of the orientation principles he uses when looking for a missing reindeer illustrates this (recorded and translated to Norwegian by Konrad Nielsen 1926):

The reindeer moves 'alongside the terrain' (njuolggo-eatnamiid mielde). It does not move across the terrain (badjel eatnamiid njuolga). Its movement is also determined by the direction of the

wind, but the composition of the terrain is of greater significance than the direction of the wind. When the animal is startled it will run directly towards the wind, and then it will move also across the terrain.

The reindeer herder also mentions elsewhere that the reindeer's acquired affiliation to seasonal pastures and migration routes is important for its direction of movement. In other words, there is a certain degree of order. The order is, however, modified or strengthened depending on how the terrain, wind, and season affect each other, and on the influence of other factors. The application of generalizations occurs in the framework of a concrete and fluctuating environment, forming the basis for daily herding decisions.

The traditional knowledge of reindeer pastoralism is principally aimed at the operational system and at the resource management of the livelihood itself. Central authorities have, however, become increasingly involved in reindeer husbandry and the use of reindeer herding areas. This has created new management levels that are in contrast to and often in conflict with reindeer pastoralist's self-management. The management of central authorities is characterized by a distance corresponding to the formal, scientific representations and concepts. Besides the common features of distance and reduction between science and central authority management, scientific authority in the production of knowledge also plays a role in the authorities' decision making framework. These are decisions relevant to the external conditions of reindeer pastoralism and involve, to some degree, considerable conflicts of interest. It should be noted that reindeer pastoralism is represented in decision making bodies specifically involved with issues concerning the livelihood. In addition, the publicly established administrative units in reindeer husbandry are to be given the opportunity to express their opinion on all major issues, and reindeer pastoralists' knowledge is to be included in decision making processes. Still, different types of knowledge are incorporated into the logic of the political field (Bourdieu 1991: 375), where the power of the group supporting an idea determines the strength of the idea. More specifically, the relationship between the Sámi as an Indigenous and minority population, and the majority population in the respective states, is characterized by a long-standing asymmetry in the different institutional and political contexts. Within this framework the western scientific approach and accumulative character has operated as a resource for the majority population and denied the right of the minority population itself to deliver the final theory of its own problems and relations (Keskitalo 1976/1994). In our case, the core issues concern ideas about organization, ecological balance,

and economic development with reference to scientific representations. Such ideas enjoy precedence while the application of traditional knowledge, when it actually occurs, is subordinated or incorporated into these ideas (e.g., the reindeer husbandry board's decision on total population of reindeer, case 02/02, with case documents).

Since 1989 there have been positive steps taken in Norway to build up Sámi political and educational institutions (e.g., Sámi Parliament, Sámi University College) and to strengthen the position of Sámi culture and the Sámi people's influence in political matters concerning them (e.g., the new constitutional section about Sámi culture, the signing of the International Labour Organization's Convention no. 169 concerning Indigenous and Tribal Peoples in Independent Countries). Increasing international attention on Indigenous knowledge as a resource for both local communities and global environmental issues (e.g., the United Nations' Rio Declaration on Environment and Development, and the United Nations' Agenda 21 program) has been beneficial for the growing acknowledgement of traditional Sámi knowledge. This development has been at the level of principles, but it has not yet permeated all areas of the scientific, administrative, and political efforts. Especially in cases involving conflicting interests (like in the aforementioned case), agrotechnical and biological approaches and models have taken precedence.

After a long time of dismissal of Indigenous affairs we now experience a shift towards a growing interest to safeguard Indigenous knowledge. Arun Agrawal (2002) presents some of the new initiatives on Indigenous knowledge: creation of databases. His critique of these databases for storing and demonstrating Indigenous knowledge may be expanded to also include the above mentioned use of traditional knowledge. A selection process occurs whereby forms of knowledge are submitted to scientific explanation in order to be made available as an instrument for institutions claiming to control both the development and the knowledge needed for development. This process (particularization, validation/abstraction, and generalization) aiming to support the validity of Indigenous knowledge, also separates these pieces of knowledge from the knowledge perceived as being useless or irrelevant for development, removing culturally conditioned experience, perceptions, and contextual practice. All in all, the process separates the knowledge from an already marginalized people to whom the knowledge belongs. Efforts to strengthen Indigenous peoples' position without attention to processes of power are therefore futile:

Without explicit and continuing attention to how power structures knowledge, it will remain impossible to achieve the aim of working in the interests of indigenous or other marginal groups. (Agrawal 2002: 295)

The divide between scientific studies and traditional knowledge, despite the certain areas of overlap, may be illustrated by the following example. Scientific research has documented and quantified the tendency of reindeer to avoid developed areas, especially during the calving period (Vistnes and Nellemann 2000). The results have been presented to reindeer herders through seminars (e.g., seminar on reindeer herding rights, 24 March 2000, Kautokeino). Reindeer herders' reactions to these seminars have been entirely positive, with comments like: "It is good that science now confirms that which we have always known and tried to communicate to the authorities." A more critical approach is not adapted mainly due to the fact that these conclusions are commonly known by reindeer pastoralists; i.e., that reindeer to a greater or lesser degree avoid human activity. Further, the lack of a critical approach is related to the acknowledgement of the stronger position science holds in mainstream society. The authority of science, representations in the form of diagrams, and precise quantitative analyses have a greater impact on the decision making processes of mainstream society. When perceived as a partner, reindeer research enjoys a certain degree of acknowledgement as a necessity, and of practical use for the reindeer herders, but this does not entail a critical approach. One reason for this is that the relationship between the types of knowledge is viewed in relation to their relative positions in the political field. Still, a critical approach to scientific findings from the traditional knowledge perspective is possible to imagine. It would be possible, for example, to question if the above mentioned evasion by reindeer is corrected by the influence of specific local and time-limited conditions (e.g., terrain type, wind directions, characteristics of snow conditions during the year in question, acquired behaviour of reindeer, and actual reproduction of the herd in question). The same critical questions could be raised if the conclusion had been the opposite, namely that evasion is minimal.

In fact, there are other scientific findings showing that tourist traffic in summer pastures does not contribute to evasion by reindeer (Skarin et al. 2004). The areas affected in this context are *bálgosbáikkít* (in the southern Sámi area), i.e., terrain that reindeer seek to escape heat and insects. The study shows that the reindeer's dread of certain types of insects (which are especially active in July and August) surpasses its fear of humans. Again, this is a fact known by reindeer herders and is the reason that reindeer, for

example in Fálá Finnmark, find their way into the town of Hammerfest. The expansion of cities creates, in the first instance, areas where the reindeer meet settlement on their natural route. Because these encounters occur at a time when the animal is plagued by heat and insects, some older male reindeer learn that concrete buildings create spaces with cool and insect-free shadows. Younger animals subsequently following the older animals learn the same fact. Thereafter reindeer learn that there is some nourishment available near these insect-free spaces, namely in people's gardens. The result is the creation of a conflicting relationship where local residents perceive themselves as the injured party. Above all, it creates the impression that reindeer are generally not affected by human activity and encroachment in the natural environment. The actual situation is, however, that reindeer by nature (*bohcco luondu*) have the potential for an in situ and time-restricted tolerance of human activity. From a traditional knowledge perspective, this tolerant reaction to humans, similarly to the evasive reaction, is viewed in the context of the specific surroundings. In other words, generalized claims of evasion and non-evasion are neither valid nor sufficient.

So far, the following conclusions can be drawn: through the development of traditional knowledge the aim has been, as in natural sciences, to reveal a certain degree of order in the natural environment. This represents an area of overlap between traditional knowledge and western traditional science in the context of methodology and results. An agreement between traditional knowledge and scientific research on the issue of reindeer behaviour can also be established. The demarcation is that traditional knowledge, aimed at the practical exercise of reindeer pastoralism, views orderliness in the context of continuous variations in the natural surroundings. Order and variation are considered equal in the understanding and predictability of results in the specific context. Scientific studies, however, aimed more specifically at an application in public management and thereby at further political relations, aspire for distance and universalizations, which is a factor separating the result from the place, situation, and time-specific. Scientific representations and discussions occur within an institutional framework, where the scientific approach to the material creates the premises for what is important or relevant. Traditional Sámi reindeer herder knowledge, on the other hand, exists within the *siida* as its professional forum, where the practice-related approach to the problem at hand lays the foundation for what is viewed as relevant contributions for the situation. Exchange of knowledge through critique is, in principle, possible and desirable. However, the characteristics of the two knowledge types suggest that the possibilities of complete

concurrence are limited, despite the fact that there are overlaps in problem situations and methodological approaches.

The Perception of Animals and their Surroundings

Sometimes the focus of discussions within the siida is on order and predictability in the natural environment, forming the basis for the daily attention to natural resources. Other times, the open, uncertain, and “subject-like” in nature form a theme of discussion with significance not only for the perception of nature, but also for the relationship between non-humans and the humans utilizing natural resources. This theme of relationships extends the perspective of the reindeer herders towards a more holistic view of nature.

The following section is based on narratives about the wolf, experienced by the narrators themselves (Sara 2003). These narratives are intertwined with Sámi reindeer herder traditional knowledge. First I will, however, attempt to explain how perception and recognition in complex natural surroundings develop. Most of the natural surroundings cannot be grasped by human perception. But from the little that is perceptible it is possible to deduce, in the words of Bateson, the pattern or aggregate of incidents or objects. He elaborates with the following example:

If I see the top part of a tree standing up, I can predict—with better than random success—that the tree has roots in the ground. The percept of the tree top is redundant with (i.e., contains “information” about) parts of the system which I cannot perceive owing to the slash provided by the opacity of the ground. (Bateson 1972: 407)

According to Ingold, movement is the chief principle of the animistic perception. Referring to the Inuit of Canada, he notes:

People are known and recognized by trails they leave behind them. Animals, likewise, are distinguished by characteristic patterns of activity or movement signatures, and to perceive an animal is to witness this activity going on, or to hear it. (Ingold 2006: 14)

An example of herding experience might be the following. You are herding the herd. Through the dusk and complex terrain you sense movement and sound indicating that a part of the herd is separating from the rest of the herd. You then send your dog to scare them and lead them back. After this you see movement and hear partial sounds. From these you understand that

first one thing happens, and then another thing happens, i.e., you imagine a chain of events. Events occur in a relatively slow and orderly sequence and create a pattern with which you are familiar, to the degree that you can predict or deduce what the result is or will be. As a herder, these are the types of partial information and deductions available. Further, there are some regularities, such as the herd's coordinated circadian rhythm related to periods of rest (*livat*) and movement (*vuolgin, mannan*).

The above mentioned is represented in one type of pastoral story. A different type of experience appears from narratives about wolves. All narratives reveal, independent from the narrator, a fundamental similarity in how the meeting with a pack of wolves is experienced in a reindeer herding situation (Sara 2003):

It is winter and it is dark. You are out herding, and hear sounds of reindeer digging hollows for forage. A strong feeling of drowsiness is creeping upon you. Just as you are about to drowse off, you hear a powerful rumble.

Anders Bær's description of a simple, ordinary incidence that occurred in the 1840s illustrates the similarity between the sound of a fire of dry twigs and the propagation of fear in a herd of reindeer (translated from Sámi):

People had begun to lie down. I had taken off my boots because the grass inside had become wet. I waited until the fire on the fireplace went out, and the glowing coal was covered by a layer of soot. Then I lay birch twigs on the fireplace and placed the grass from my boots upon these in order to dry it, as it is a Sámi custom to place grass on the fireplace in order to dry it. Afterwards I lay down to sleep. The others had already drowsed off but I was still awake. Suddenly the grass on the fireplace began burning. It flamed up like gunpowder and produced a powerful rumble ... An older herder, Morten-Áslat, heard the rumble of the grass and birch twigs and yelled out half-asleep: "Something scared the reindeer now". (Hætta and Bær 1958: 86–87)

The others present were amused by the old man's misjudgement, knowing that the chain of events was a reliable allegory of a wolf attacking the herd and the herder's alertness for interpretation and action in a sleeping condition.

The explosion-like rumble (described in Sámi by the verb *jamihit*) is identified as a wolf attack. After the rumble the only sound left is a roar or a

rush (in Sámi *šoavva*); even the usual sound of the many and obviously audible reindeer bells is gone (Sara 2003). The roar also represents the wolf, and is in sharp contrast to dogs' or humans' startling effect on reindeer. A chasing dog may, at least visually, resemble a wolf and startle reindeer, but its course leaves behind traces of movement and sound, which can be interpreted as a causal chain of events. First the animals closest will be startled. The sound of their flight then scares the reindeer that are standing further away, and so on. This chain of events is clearly distinguishable from that which is sensed and not sensed when a wolf attacks.

In the case of a wolf attack, the dogs are sent out to bark and dart the reindeer towards a herder yelling and making sound. This becomes a battle between the herd's direction of movement and the audibility of sound, where one side (the wolf) represents a situation without any fixed points while the other side (herder) represents order and control. The reindeer will also try to move towards people when such yelling is heard. Ordinary herding and the presence of the wolf represent two contrasting situations of existence on reindeer pasture land. For people, the first is characterized by traces of reindeer, the herders' dog, and the herder in the relationship between these. The wolf, on the other hand, is characterized by the rumble and the roar heard from the reindeer during a wolf attack. In addition, the narratives also claim that the drowsiness of the herder is an indication of the presence of wolves (Turi 1987, Sara 2003). This notion reveals the background horizon of traditional Sámi eco-cosmology and world view.

The Understanding of Nature and Aspects of Traditional Sámi Cosmology

As demonstrated above, the natural environment is at one extreme predictable and repetitive, while at the other extreme, unpredictable and shifting. To further emphasize this, the atmosphere and celestial bodies can be included in the picture. Wind and weather are central to the herding existence. Although there is an aspect of order to the change of seasons, there is also a considerable degree of unpredictability. The type of weather and its consequences change day-by-day, year-by-year, and there is also great variance in the way that these change. Ingold argues that the virtual absence of weather from a philosophical debate on the development of life results from a logic that encloses the organism in itself and sees, among other things, living beings making their way across a pre-formed surface rather than through a shifting or gaseous medium. This represents, according to Ingold, a logic of inversion since organisms are not set off from their surroundings,

and the “inhabited world” is constituted in the first place by the aerial flux of weather rather than by the grounded fixities of landscape:

The weather is dynamic, always unfolding, ever changing in its moods, currents, qualities of light and shade, colours, alternately damp or dry, warm or cold, and so on. In this world the earth, far from providing a solid foundation for existence, appears to float like a fragile and ephemeral raft, woven from the strands of terrestrial life, and suspended in the great sphere of the sky. (Ingold 2006: 17)

This difference in the way of thinking about living beings’ relationship to their surroundings explains the frequent misunderstandings between Sámi reindeer herders and the authorities’ science-based expertise in reindeer ecology. An example is that reindeer herders use the term *guohtun* (often translated into Norwegian as *beite* and English as ‘pasture’) to refer to snow, the transformation of snow conditions caused by type of weather, the stratum of plants, the lower layers of snow and, finally, grazing and moving animals’ effect on the snow and plant stratum. In Norwegian, literature about pastures (which is often translated in Sámi as *guohtun*) usually only refers to the existence of different plants.

Ingold’s mission is to start with animist ontology—which he sees first and foremost as openness towards continuous birth—and rethink it as “re-animation of our own, so-called ‘Western’ tradition of thought” (ibid: 19). In the western and scientific context animism has been explained as a system of assumptions ascribing life or spirit to different natural phenomena. The traditional Sámi world view is consequently placed within the framework of animistic tradition (see Vorren and Manker 1976: 162). In the 1700s, E.J. Jessen described these notions as follows (translated from Norwegian):

The Lapps and the Finns were earlier so simple-minded that they still took on and honoured wholly natural things as Gods, provided that they thought that these could either hurt or assist them in their earthly trade. Consequently they worshiped the sun, the moon, thunder, mountains and lakes, yes even the currents of the air; they also believed that there was some type of divinity behind light and darkness, morning and evening, leaf and grass, forest and wild animals, health and beauty, recovery and disease; this is the origin of the multitudinous superstition and infidelity which ruled amongst them. (p. 61 in Jessen’s attachment in Leem 1767/1975)

Behind the imprint of Jessen's conceptual world, personal perceptions, and disapproval of what is described, we can sense the outline of traditional Sámi cosmology, which, with the use of Ingold's concepts, can be described as a type of animist ontology. These notions are also found in later accounts and rituals that thematically relate to humans' relationship with the environment. This brings us back to narratives of the wolf and its ability to exert influence over a distance, an influence manifested in the herder as, among other things, unusual drowsiness, and in the reindeer as, among other things, a simultaneous outbreak of fear. Specific concepts such as *lapmut* or *ráibmat* are used to describe the influence of the wolf, referring to its ability to exert power over long distances or the non-physical influence causing mental and physical results with the wolf's intended recipient. The description of influence brings the communicative ability into the understanding of the relationship between animals, and the relationship between people and animals. Since the reaction of the recipient is advantageous for the wolf, it is assumed that the wolf has a subjective purpose. The wolf is then also thought to have potential for and be susceptible to not only physical but also mental influence and communication in its relationship with the human being.

Likewise, the herders speak of reindeer as having different opinions. They will, for example, say that our reindeer is of the opinion (in Sámi *oaivvildit*) that they start moving eastwards. These opinions are seen to be most clearly expressed by leaders of the herds (in Sámi called *viisán* when speaking about a wild reindeer herd and *njunuš boazu* or *ovdamanni* when it is a semi-domesticated herd). Sometimes the cause of the specific opinion or what it means will be unclear for the herders. In other cases the background for the opinion is clear. Reindeer from different *siida* herds will, for example, be spoken of as being of different opinions. This means that reindeer – despite being independent and free to run away – prefer direction of movement and routes they have learned and are accustomed to, for example, which is highly influenced by communication and compromise with herders from their own *siida*. (The main theme in the Sámi myth of the origin of reindeer herding is exactly the agreement of voluntary companionship between human and reindeer, as the ancestor of reindeer herders, *Njávešeatni*, also recognizes the reindeer's perception and point of view.)

There are several accounts in documentary literature of ritual speeches to the wolf (among others Friis 1872: 35, Pirak 1937: 51, Turi 1987: 84). This ritual only takes place when wolves are hunted in order to avert and prevent attacks on the herd. The hunter chases the wolf until it eventually stops and turns back towards the hunter (according to Turi, who was himself a hunter, this happens on an expressed request from the hunter). Face to face

with the wolf, the hunter will recite his justification for killing the wolf. The hunter must fully stand for the justification, thus making it function as a thoroughly considered justification for himself. Since the moment the wolf hunt comes on the agenda, the hunter organizes his thoughts in a specific manner (translated from Sámi):

And the wolf has one man's strength and nine men's wits. To hunt wolf, the hunter must know all the names given to the wolf in the local Lapp language of the area where the wolf ventures. Further, he must think of nine different ways of killing the wolf, and leave the method he aims to use last. (Turi 1987: 99)

This can be interpreted in several ways. First, this approach to hunting implies an acknowledgement of the diversity and variability in natural surroundings. Using different names for the animal in focus, all with different connotations, allows the hunter to see the animal from different perspectives. In the case of the wolf the perspectives might be the wild (*návdi*), the fast (*šolven*), the voracious and attacking (*gumpe*), or other names. To first think through the *least* likely way of catching the wolf, and to not think of the *most* likely way until the end, enables the hunter to juxtapose the options. The weather and other circumstances may change; therefore, no plan has precedence. There is a risk in projecting existing circumstances as this might cause the hunter to be sidetracked in his evaluations and deliberations. The likelihood of success with a strict and limited plan is small. This principle of flexibility or mental preparation for change is prominent in pastoralist thinking and is adjusted to daily evaluations and decisions, for example in relation to long-term pasture strategies. R. Paine experienced herding discussions during his fieldwork in a Sámi reindeer community in Kautokeino. He aptly describes the discussions with these words:

They are the subject of endless conversation. In full knowledge that decisions made around campfires may be upset by unpredictable turns of events, herding tactics are discussed ad nauseam. (Paine 1970: 54)

These herding discussions can be seen as parallels to the hunter's thoughts of different ways to hunt the wolf.

Herders often speak of reindeer as *biekka buorri* (Sara 2001), 'a good governed by the wind.' This means that full control is impossible even though you can have reasonable hope to succeed in watching the herd. This is emphasized by quite common stories about herders having an especially

valued reindeer for some specific reason or purpose, or alternately having decided to slaughter a specific reindeer. However, the reindeer were no longer there when the time arrived to gather the herd or slaughter the reindeer. In other similar stories the declared intention has been absolutely *not* to slaughter a specific reindeer, but the result was that the owner had to do exactly that (e.g., because of a broken leg). The owner frankly admits that he did not have the power to realize his or her intention about the specific reindeer. Others suggest that a single, positively declared intention is extremely inclined to the opposite. Anyway, the moral of these stories is that each and every reindeer is a free creature that chooses its own movements and course of life. The individual animal cannot be separated from a larger ecological and social system for the purpose of the owner. And no human being can control the systems. If we translate the expressed intention as propaganda and the ecological and social systems as public opinion, then the following quote can also be applied to the herder:

But in fact the would-be controller must always have his spies out to tell him what the people are saying about his propaganda. He is therefore in the position of being responsive to what they are saying. Therefore he cannot have a simple lineal control. We do not live in the sort of universe in which simple lineal control is possible. Life is not like that. (Bateson 1972: 437)

Further, we can imagine the notion that the hunters' or reindeer herders' thoughts are echoed in the surroundings. With regards to the reindeer we always stand in danger of insulting the animal or its origin (*máddu*, see Magga, Oskal & Sara 2000) by thinking of it solely as a means for our own intentions and not as a means with its own dignity (see Oskal 1995: 166-167). The same is true for the wolf, also capable of sensing the thoughts of the hunter. A successful result is thus dependent on how the hunter steers his thoughts about the upcoming hunt. In literature such accounts are primarily presented in the context of the so-called bear culture (see Holmberg 1989), centred on the idea of expressing respect and avoiding insulting the bear. The ancient Sámi notions related to the bear are not unique in Arctic and Subarctic Indigenous context. Colin Scott has recorded the following explanation by a Cree hunter:

It is said that the bear knows everything. The bear is like a human being, in knowing everything that goes on around him. The bear is far greater than a human being. Even when a person is only thinking of the bear, the bear knows what the person is thinking

about him. It never misses what the person is thinking about him, or even when he is sighted. When a person says: "There's a bear," the bear understands what the person is saying even though the bear can't hear the person talking. When a person is eager to kill a bear, he usually gets a chance to kill it, depending what he's thinking toward the bear. (Scott 2006: 66)

Scott points out that although the so-called "spirit" categories in social discourse may often be directed to metaphysical purposes, the polysemy of the symbols (i.e., their many meanings) implies that they may also frame rational-empirical knowledge, and in fact they often do so in animistic cultures. Scott has hunted with Cree hunters and describes how events are actualized and woven in with different stories and notions. Based on this he writes:

I was drawn, by proliferating stories and events, to take seriously Cree premises about the world and our actions in it, some of which are surely beyond scientific proof or refutation, even though—and in good measure because—they underwrite and invigorate others which are not. In accepting these premises, living them in relation to animals and my human community, I became a better hunter, both practically and ethically, and I lived in a state of heightened attention and significance. Which returns me to the point that semiotic and phenomenal, ontological and epistemological, aspects of perception are immanent, simultaneous and mutually reinforcing in our experience and understanding of the world. (Scott 2006: 60)

The Sámi narratives about wolf and bear are known to and are alive among older people and are told to those showing a special interest in hearing them. The question therefore arises: which actuality do notions of wolf and bear have in the practice of Sámi reindeer pastoralism today? The mere presence and self-management of these species can hardly be sufficient to sustain production of accounts and personal experiences that support practical and ethical attention and significance in relation to the surroundings. Politics concerning protection of endangered species, and authorities' administration of hunting provisions and compensations for predation, have intermeddled with the traditional relations between hunters or herders and the wild animals in their local environment. Nowadays, wolves are seldom seen; instead, wolverines, lynx, and eagles have taken over the scene of predation. Discussions about the place of these species in the environment are increasingly politicized and many herders' comments

on predators, first and foremost, are about their position of opposition and powerlessness in relation to authorities' management based on what the authorities themselves acknowledge as reliable knowledge about these species. Reindeer herders still, however, manage reindeer herds, often in conflictual relationships with authorities and other societal interests. Will there still be room for a self-management in reindeer herding, which supports a self-motivated practical and ethical attention in relation to reindeer and the rest of the natural surroundings?

Conclusion

Traditional knowledge in Sámi reindeer herding siidas is centred on a wide spectre of practices in an overall livelihood adaptation, which includes not just the reindeer but many other resources available in their environment. Here I have only discussed issues that reindeer herders face in their work with the herd, and the compromise resulting from the herd living in its natural surroundings. The issues are centred on practices and discussions central for the traditional institutional siida. Traditional herding knowledge is carried out, tested, and renewed within the framework of the siida. Stories with a further eco-cosmological perspective and, thereby, with a relationship to ethical questions, are also a part of this context.

Traditional Sámi reindeer herders see reindeer as actors inside the siida system. Different herds undoubtedly prefer their regular routes and pasture areas. This preference at least partly reflects the permanency of siida traditions and strategies. On the other hand, herders often use these well-known preferences of the reindeer in their attempts to predict what the neighbouring siidas are going to do next. The lawyer Solem (1933/1970) has noted both the explanations of animals' preferences, and the herders' local knowledge and their observation of rules and norms, and emphasized these as arguments for recognition of customary rights inside the siida system. These rights would represent the aspect of regularity and need for predictability in reindeer herding. On the other hand, the environment of natural and social systems is also open-ended, which is the aspect of unpredictability in reindeer herding. The anthropologist Paine (1970) has noted the practice of discretionary authority to meet unforeseen events, and the siida group's sanctioning of these decisions by way of thorough herding discussions. The philosopher Oskal (1995: 150) notes (author's translation): "It is in the light of the experiences and because of the experiences inside the siida that questions of what a good life is and who I am arise." Siida matters represent a wide range of questions, which are continuously actualized by the group's coordinated and responsible actions and relations to its social and

natural environments. These aspects of reindeer herding and siida represent the prerequisite for self-management if the goal is to keep traditional, independent reindeer herding practices.

There are outlines of siida organization and an infrastructure of migration routes and seasonal pastures connected to the siida (Strøm Bull, Oskal & Sara 2001). These are basic elements of the siida, but do not constitute a ready-made body. Every siida unit is continuously formed by *siiddastallan*—that is, the ongoing practices and siida-members' participation in daily communication, discussions, decision making, actions, and evaluation in response to events and processes in the social-ecological system. Here, knowledge as process and a way of life holds a prominent position (Berkes 2008). The siida system is not, and should not be treated as, a series of uniform units. The siida units might be formed most commonly by widely shared traditional knowledge, but at the same time they are diversified by distinct local adaptation and knowledge.

The recent legal acknowledgement of siida must imply self-management based on siida land rights, customs, traditions, and autonomous processes of knowledge. The alternative is just a new reindeer herding district system disguised and renamed as siida system, which of course would be no real acknowledgement of the siida. It remains to be seen how the new law will influence the rehabilitation of the siida and the siida system.

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