



ous animals as meat in our daily diets. Different societies have developed elaborate ways of conducting our affairs with animals, and Edward Wilson, a sociobiologist, has pointed out that we have some “innately emotional affiliation to other living organisms” (1997: 165). It has been noted in prominent earlier studies that the very question of who we are lies at the heart of our interest in human-animal relationships. Both before and after Darwin, who linked humans and animals intimately through common ancestry, the definition of what it means to be human has often been constructed based on the concept of animals as the *significant other* (Ingold [ed.] 1988, Morris 2000). In order to act as an important factor in our self-definition as humans, animals need to be close enough to us to relate to, but also far away enough to allow us to distinguish ourselves as different. This relation between these similarities and differences embraces human and animal beings in their natural as well as their supernatural environment. It is in this respect not surprising that anthropomorphic animals and zoomorphic humans are among the oldest known representations of supernatural beings (Shanklin 1985: 376–377, Havelka 2009). It is partially because of this process of self-definition that animals have figured so prominently not only in biological studies but also in the fields of social sciences and humanities.

The introduction to this volume, a work primarily concerned with the social significance of pastoral animals, starts therefore with a reminder that our interest in animals is essentially connected to our interest in ourselves. In this manner, sociocultural research concerning human-animal relationships tends to be confined to humans in their capacity as agents and subjects who act upon and think about animals. The Dutch anthropologist Barbra Noske argues: “[A]nimals tend to be portrayed as passive objects that are dealt with and thought and felt about. Far from being considered agents or subjects in their own right, the animals themselves are virtually overlooked by anthropologists” (Noske 1993). Molly Mullin agrees with Noske on this point and concludes that “It is likely that sociocultural research on human-animal relationships will continue to be as much, if not more, about humans” (Mullin 1999: 201). Even though animals are seen as having agency in older ethnographic accounts (e.g., Riesman 1977), we maintain that a somewhat anthropocentric approach to human-animal relationships is justified in social sciences such as social anthropology. Animal studies, on the contrary, have a greater responsibility to focus on non-human animals in their own right. In order to pursue a more holistic understanding of these issues, it may be fruitful to bring these two fields closer together.

This volume is a moderate attempt in this direction, as the authors analyze the importance of animals for people, and reciprocally, the importance of people for animals. While most of the contributors in this volume come from the field of social anthropology, we also present a view from the ‘other side,’ in which Kantanen (in this volume) emphasizes the importance of human decisions in the preservation of genetic uniqueness of animals – in this case the Sakha cow. Kantanen, Osva, and Granberg all participated in the same project investigating the significance of the Sakha cow. We treat this project as an example that illustrates the way in which the study of human-animal relations has developed since the seminal works of Evans-Pritchard (1940, 1956), and Ingold (ed. 1988). A recent comprehensive encyclopedia

on this topic (Bekoff 2007) illustrates how studies of animals and people can help break down disciplinary boundaries if this research is justified by the topical focus. The focus in this volume is clearly more limited and does not claim to encompass the encyclopedic character of Bekoff's work. In this collection the authors explore the various ways in which animals are important for twelve different pastoralist societies in three different continents. By doing this comparatively in one volume, the papers are situated in the social and/or cultural anthropological tradition of a science that investigates the essence of human social and/or cultural similarity and diversity.

#### **SOCIAL SIGNIFICANCE OF ANIMALS**

It is obvious that for pastoralists as well as for hunter-gatherers animals are of tremendous importance, as it is animals that form the subsistence base for these peoples. The term 'social significance' as applied to animals needs some further definition, since the concept might be interpreted so broadly that it could encompass virtually anything and everything related to the connection between humans and animals. We suggest a working definition stating that the social significance of animals is a process of conversation in which animals give meaning to groups of people and individual humans through particular characteristics and practices based on the animals. Similarly, humans give meaning to and influence animal livelihoods through culturally embedded engagement with animals as one component in an environment that we would like to call a total social phenomenon in the sense of Mauss (1924). This reference to Mauss is purposeful, because among pastoralists the exchange of animals, both living and dead, in different forms is one of the most important methods to provide the 'social glue' for a community. Animals are used as an item in gift exchanges in the sense of Mauss: in addition to their immediate material meaning, animals carry a whole universe of socially important messages for the society. These meanings include, as the reader shall see in the following chapters, the use of animals to establish culturally specific systems of hierarchy and prestige, their use as bride price/dowry, their position as crucial human partners for joint agency in the environment, their role as the main currency in a society, and their ability to sustain relations with spirits through sacrifices. By choosing the term 'conversation' in the sense outlined by Ingold (2007), we emphasize the importance of interaction between humans and animals as a process that is a constituent of the social significance of animals.

The social, cultural, and spiritual significance of animals has been treated separately for hunter-gatherers (Anderson & Ikeya 2001), nomadic pastoralists (Ingold 1980, Stammers & Beach [eds.] 2006) and agriculturalists. Others, however, have pointed to reindeer and their interactions with humans as providing examples supporting the argument that the distinction between domestic and wild animals is neither entirely clear (Blench 1997: 5) nor useful (Takakura, this volume). Several contributions in this volume revisit such boundaries. While the categorizations of various hunted or wild animals and domestic pastoral animals may prove useful for our analysis of the closeness or distance between humans and animals, they are less useful in analyzing the social and economic significance of these animals. Significance is related to closeness, yet these concepts are different: closeness is revealed through

the importance of the practical physical and emotional engagement of humans and animals, whereas significance is revealed through anthropological analysis of the position of the animals in society. While animals hold significance even for those not directly engaged with them, it is the practical and processual link between humans and animals that is most obvious in the study of pastoralist peoples.

One noteworthy difference between the wild and the domestic animal is that in the case of the latter, humans interact with their own live animals on a daily basis. In context of nomadic pastoralism, they do this rather far away from other humans, as nomadic migrations dominate life in remote areas with low population densities and harsh environments. Such settings increase the intensity of the human-animal relationship, hence increasing the social significance of animals. Evans-Pritchard's famous statement that herds are replicas of human society (1940: 37, 1956: 258–260) provides an excellent starting point for analyzing the social significance of animals among pastoral peoples. His statement posits an assumption on the collective level that expands on the view that individual humans and individual animals can represent mirror images of each other. Unlike urban pet owners, pastoralists not only accompany and care for their animals from birth to death; they also kill these animals and use their flesh, skin, and other products as sources of nutrition and livelihood. This indicates that the significance of animals for pastoralists is distinctive, and for this reason the contributions in this volume are selected exclusively from studies that investigate pastoralist groups.

#### **ANIMAL SPECIES DIVERSITY AND SOCIAL SIGNIFICANCE FOR PASTORALISTS**

Worldwide, most pastoralists raise more than one species of animal for reasons that include, among others, risk management and pasture efficiency. This has been particularly well documented in Central Asia, while other areas have become best known for pastoralism in which only a particular species is raised. The popularity of certain regions in anthropology may play a role in this situation, and for this reason Africa still holds a great deal of influence, as it is the classical area for research on cattle holding peoples. The powerful cliché of Herskovits' (1926) cattle complex, and the stereotypical dominance of cattle (Khazanov 1994: 63) in the ethnography of East African pastoralists have emphasized this dominance. However, this bias has been rectified by balanced anthropological research (Broch-Due 1990) that pays more attention to species diversity.

The Arctic, on the other hand is best known for reindeer pastoralism; this is primarily due to ecological and climatic reasons in an environment that outsiders find particularly hostile. It is because of the generally held idea that reindeer are the only domestic animals able to survive in this environment that there has not been an 'African style' discussion about the stereotypical importance of reindeer in the circumpolar North.

Northern Eurasian pastoralism is commonly viewed as interchangeable with reindeer pastoralism, and seen as the "only fully monospecialised form of nomadism" (Khazanov 1994: 41). This statement opens Khazanov's (1994: 41–69) useful overview covering the geographical distribution of pastoralist species diversity in Africa, Asia,

and Europe. But there are cases, both historical and current, in which people keep domestic pastoral animals other than reindeer to aid their survival in the high North. In the European Arctic, this occurred under the influence of the Vikings and their descendants. The Norse brought cattle to Greenland in the early middle-ages, and nowadays herders in Greenland and Iceland raise sheep. Additionally, cattle and sheep were also brought to Lapland and raised by the Finns and the Saami. In the Asian Arctic, the cattle and horse herding practiced by the Sakha of Yakutia are the most notable example of species diversification in Arctic Pastoralism, and six papers in this volume refer to the activities of these herders (Takakura, Osva, Kantanen, Granberg, Stammler-Gossmann and Stammler). The ethnography detailing the social significance of several pastoral species, as well as hunted and fished animals, should serve to bring studies of the Arctic and Siberia out of the isolation of reindeer-monoculture, and invite more topical comparisons with African and Central Asian pastoralist societies.

Khazanov (1994) points to the obvious fact that animals of different species have different needs, graze on different plants, and have different capabilities regarding their mobility. Though, in many cases they do not graze together, or at least not throughout the entire year. It is therefore no surprise that these animals occupy different niches of significance for their respective holders. However, seeing species diversity as a mere function of ecological imperatives implies that we have missed a whole range of socially, culturally, and religiously determined practices involving animals among pastoralists. The contributions in this volume look at these factors that exist beyond the field of ecology without negating the importance of the natural environment. In this way we follow the path taken earlier by Galaty & Johnson (1990: 21), who emphasized the need to understand which 'socially defined objectives' lay behind the strategies of pastoralists, because through the consideration of economic rationality alone it is impossible to understand decision-making and human-animal relations.

Earlier research has noted that the area of northern Eurasia and the practice of reindeer pastoralism are both under-represented in theory building and academic debate concerning pastoralism. The monographs by Khazanov (1994) and Blench (2006) and the volume edited by Galaty & Johnson (1990) are important exceptions. The other significant area that is underrepresented in pastoralist debates is South America. This region shares with the North the commonality of having a domestic pastoral animal that makes use of the same habitat at the same time as its wild counterpart; in South America this animal is respectively known as the Lama Alpaca (domestic) and the Vicuña (wild). This situation mirrors that of the Arctic where domestic and wild reindeer coexist in the same habitats. South American pastoralism is 7000 years old; approximately as old as African pastoralism according to Browman (1974: 195), whose article is one of the few prominent attempts to bring studies of the Andes area into general pastoralist theory building. A difference that must be noted in comparing llama alpaca pastoralism with the much younger practice of reindeer pastoralism is that llama alpaca pastoralism has been declining in its importance for many centuries. Nonetheless, future research could fruitfully compare results from research focusing on the Arctic and the Andes, contributing to the-

ory building of the hunting-herding continuum and investigating what degrees of difference exist in the social relations of people with domestic and wild animals; a topic to which Takakura will address in his contribution to this volume.

Species diversification is a logical pursuit for pastoralists (Khazanov 1994, Blench 2006, Miller 1998), and three of the most important reasons are:

- 1) Different animals occupy different niches in harsh and unpredictable environments where often agriculture is not possible.
- 2) Raising different animals that have diverse needs and reproductive rates insures their holders against losses caused by diseases or conditions that affect just one species.
- 3) Herds consisting of diverse species provide a variety of resources for subsistence and market production.

Risk aversion figures prominently among the reasons for species diversification. Studies of risk and uncertainty point out, however, that pastoralists diversify species as only one of multiple strategies to insure themselves against natural and social unpredictability. In addition to species diversification, strategies to buffer risks include non-pastoral activities to generate income, as well as such practices as delayed exchange, mutual assistance, spatially dispersed alliances, increased mobility, and ritual practices (Galaty & Johnson (eds.) 1990, Bollig 2006).

When herders raise animals of different species, each of these species will have a particular niche of significance economically, socially, culturally, and spiritually. The most important aspect of the various animal species for the husbander is well summarized by an African scholar, whose statement may be seen as valid for any pastoral setting: "The multiple meanings attached to the various species of livestock are combined and interwoven in various ways related to ethnicity, social status, and gender" (Woldetensae 2002: 78). In this volume, Stammer-Gossmann's and Mazullo's papers show this type of relationship between animal-species and ethnicity. Through various examples examining the importance of an aboriginal cow breed in a Sakha village with three species pastoralism, Granberg, Osva and Kantanen highlight the relevance of their research for the increasing status of the cow. Virtanen shows in her paper how animal significance is gender-specific among the Mbororo. In addition to the three principal spheres of ethnicity, social status, and gender; several authors in this volume demonstrate that the meanings of pastoral animal species are additionally related to the relative value of animals (Nakamura), to political agendas (Stammer-Gossmann), to religion and ritual (Virtanen), and to mobility and prestige (Stammer).

Let us contrast Kahsaye's statement from Africa with one from the Arctic: "The reindeer is a sacred animal for us. They are our daily food, clothes, transport, housing, and saving accounts." (Sergei Serotetto, March 2007, Nadym, YNAO, Russia). This type of statement, typical of reindeer pastoralists, leads scholars to argue that since the reindeer is the only pastoral animal in the Arctic, they therefore have to fulfill all the niches of significance simultaneously (Stammer 2005: 164-166). This situation results in a stereotypical over-emphasis on reindeer (see Stammer, this volume),

which is maintained by reindeer herders who themselves are politically interested in having an emphasis on their animals. Reindeer therefore become an all-encompassing social phenomenon in the societies of Arctic pastoralists on the one hand, but on the other hand, such over-emphasis neglects the fact that even reindeer herders diversify their risk in an unpredictable environment by relying on other animals, including non-domestic ones. Stammer shows in this volume how these animals become significant for the societies in question, but are underrepresented in studies on pastoralism.

In this same vein, Takakura argues in this volume for revisiting our separation of categories for domestic and wild animals. Nakamura adds to this argument with empirical evidence showing how livestock acquires what she calls the symbolic 'value' of wild animals through changes in practice, citing rituals in which Mongolians began to use the bones of domestic animals instead of wild ones. Nakamura's concept of the 'pragmatic value' of animals seems to be very similar to that of their economic significance, while her 'symbolic value' represents part of the broader social significance of animals. Using terms of significance rather than value, Stammer elaborates along similar lines on the inter-changeability of reindeer and fish among the Yamal Nenets nomads. In this respect the terminology of the papers differ, while the concepts seem to be similar. Acknowledging that such diversity of animals exists even in the Arctic brings the study of reindeer pastoralism out of its academic isolation, and at the same time shows how studies from the North can contribute through theoretical insights of broader relevance. The comparison of the significance of different animals can illuminate reasons why some animals may have become 'keystone species'<sup>1</sup> for certain societies, while others remain undervalued.

#### AN OVERVIEW OF 'KEYSTONE SPECIES' AMONG PASTORAL ANIMALS

In order to position reindeer alongside other animals kept by pastoralist peoples, we should first review the animals primarily raised in pastoral societies. In most of these societies one particular species of animal stands at the very top of the social significance ladder. In the most prominent cases, these are cattle (East Africa), to which many owners try to convert other animal property. In South America, this niche of significance is occupied by camelids (llama, alpaca) in the Central Asian highlands, it is held by the yak, in the Central Asian steppes by the horse, in the deserts by the camel, and in Northern Eurasia by reindeer. The assessment of the significance of the supreme animal in different pastoralist societies is remarkably similar across the species. In order to show how scholars have evaluated the social significance of a variety of animals for various peoples, we have cited some examples and arranged these according to the size of the species.

The **CAMEL** determines the wealth and social status of many pastoralists in Africa's deserts, in Somalia, Sudan, Ethiopia, and northern Kenya (Getahun & Belay 2002: 158). Schlee identifies what he calls a camel complex as a "cluster of cultural features associated with camels" (1989: 72) around which a Proto-Rendille Somali culture evolved and formed the basis for the pastoralist livelihoods of northern

<sup>1</sup> We use this term for animals that are accredited with outstanding importance for their owners in the different pastoralist societies.

Kenya, southern Ethiopia and Sudan, and western Somalia. In such a baseline culture the camel is the supreme animal, or keystone species, even though Schlee himself, and Konaka in this volume show that most of the groups in the area raise a multiplicity of animal species. As described by Schlee, camels are a symbol of wealth and prosperity among the Gabbra, Sakuye, and Rendille. This is even true among the Ariaal, although here cattle have more social significance (Fratkin & Roth 1990: 387). The importance is well illustrated in the rule stipulating that that Gabbra and Sakuye men should not marry girls from the neighbouring Boran, who do not belong to the camel complex. Boran girls “are bad for the camels” (Schlee 1989: 73).

**CATTLE** have been called the ‘supreme form of property’ (Comaroff & Comaroff 1991) for many pastoralists, particularly in East Africa, where among the Nuer the herd of cattle is seen as a replica of human society (Evans-Pritchard 1940). It is from the classical African ethnographies that we derive most of our understanding of the significance of animals. Diamond (2005) also partially attributed the collapse of the Greenlandic Norse culture to its irrational obsession with cattle, which were prohibitively costly to maintain in an unfavorable climate. Along similar lines, Fratkin & Roth (1990: 389) show that cattle are more susceptible to extreme weather events, and Khazanov (1994: 46–48) rightly notes that cattle are not well suited for highly mobile pastoralists. They cannot graze too far from water, and their range of mobility is limited. That is why in most regions of the world cattle are associated with sedentary or less mobile pastoralism rather than with nomadism. In this volume the articles of Virtanen on the Mbororo, and of Osva, Granberg and Kantanen, and sections of Stammer describe this agropastoralist setting in Northeast Siberia.

As Miller (1998: 2) points out, for Tibetan nomads the **YAK** represents wealth and prestige. Therefore we can see cases where pastoralists keep exceptionally high proportions of yaks in their herds, though maybe these animals are not necessarily of calculable economic importance. In Nakamura’s (this volume) terms, this illustrates the high ‘symbolic value’ of the Yak. In Western Tibet, for example, yaks counted for 46% of the livestock biomass, but only 5% of the livestock income. Raising sheep and goats delivered much faster and better returns, and yet people invest in yaks (Miller 1998: 4).

Just as yaks typify Tibetan pastoral nomadism, **HORSES** are well known as a key pastoral species for central Asian nomads, who are represented in this volume by Nakamura’s contribution. A Kazakh proverb states, “not the man who is reprovved dies, but the one who loses his horses” (Khazanov 1994: 47). Less recognized in pastoralism studies is the social significance of the horse as supreme pastoral animal among the Sakha (Maj 2008, Takakura 2002, 2007), even though cattle may be more economically significant in remote rural areas (Crate 2008). “Almost the entire worldview of the Yakut concentrates on horse-livestock. And he lives, as a fairy tale says, instead of counting money, measuring the thick fat of his mares (female horses), and dividing the fat according to vertebrae. He improves his throat with *kumys*, and with cracked bones he fixes his teeth” (Khudiakov 1869: 229). Maj (2008: 43) notes that the prestige of horse herding lies in its mobility in ‘open nature.’ Cattle herding is considered ‘boring, restricting, and bad smelling.’

**DONKEYS** have been a symbol of relatively low prestige since ancient times (e.g.



in the bible), although domestication of the donkey in Africa 6000 years ago was essential for the development of both pastoralism and ancient cities and states. This can be seen in the fact that donkeys were used to carry provisions for the early Egyptian pharaohs (Rossell et al. 2008). Today donkeys serve an essential purpose on a daily basis as beasts of burden in parts of the Near East and Africa. Among some pastoralists such as the Turkana, the milk, meat, and blood of donkeys belong to their normal diet. Corresponding to their rather low status in society, donkeys get less attention in academic studies, many of which are more concerned with keystone species. Twerda et al. (1997: 48), for example, reported that the importance of donkeys was 'discovered' as a side effect of a development project focusing on Turkana and Samburu pastoralists in northern Kenya – the region represented in this volume by Konaka's paper. This was viewed as being connected to the fact that human-donkey relations take place mostly in the women's sphere in pastoralist societies that are characterized as camel-keeping.

In South America, **CAMELIDS (LLAMA, ALPACA)** are described as having a long history of crucial cultural and ritual significance stretching from the time of Inca Empire (Wheeler 2005), to modern times as seen in research concerning the Quechua and other pastoralists (Tichit & Genin 1997: 178). According to Dransart (2002: 13), until the present "the quality of the bond maintained between human beings and animals is the hallmark of the society." Nowadays with more importance being placed on agriculture and also sheep, camelids are kept primarily for their social significance, as Browman suggests in order "to participate in the institutionalized system of reciprocity" (1974: 195). This is confirmed in the most recent study by Marke-mann et al. (2009), which states that traditionally important functions of keeping Llamas prevail.

**REINDEER** are the only pastoral animal in the High North. They share their southernmost habitat with the Evenki of northeastern China. Reindeer have made much of the permanent human presence possible in otherwise inaccessible and uninhabitable areas (Vitebsky 2005). Reindeer are extremely adaptive, and hold various roles in different societies. These roles range from the animals being used mainly for the production of meat (Chukotka, northern Europe) to their being employed primarily for transport (taiga Evenki, southern Siberia) in long distance migrations as well as local circular mobility for grazing. This adaptability leads to diversity across the Arctic, where reindeer can acquire significance as both small stock and large stock, as purely economic and mostly socio-cultural entities, and as combinations of all of the above (Stammler 2005: 164–166). Five papers in this volume touch upon this versatile significance of reindeer: Vuojala-Magga and Stammler emphasize the personal relation between reindeer personalities and human personalities in a process of symbiotic domestication (Beach and Stammler 2006), while Takakura applies similar concepts in his analysis of the closeness between humans and reindeer. Mazzullo analyses the importance of reindeer for the Saami perception of space and social environment, Stammler investigates the relative social and economic significance of reindeer within several animal species kept by Arctic peoples, and Stammler-Gossmann deals with reindeer in terms of their power as a political symbol. All these examples show how, for many of the Northern Eurasian indige-

nous peoples, reindeer have advanced to the status of prime identity marker, even though hunting and fishing are more important for subsistence in many areas.

**SHEEP** and **GOATS** are, often conceived as 'poor alternatives' for large stock and used in many cases for 'stocking up' (e.g. Africa, Inner Asian Highlands) (Spencer 1998: 22), without possessing much direct social significance. However, Barth's (1964) seminal study of the Basseri detailed the importance of sheep for the nomads of Iran. Sheep have also traditionally been highly esteemed in parts of central Asia. This is demonstrated in an Uzbek belief that states sheep came straight from heaven (quoted in Khazanov 1994: 46). Sheep have also been used in East Africa in marriage transactions, in particular in exchange with intermediaries and members of alliances (Spencer 1998: 23). In this volume Virtanen highlights the increased significance of sheep among the Mbororo in the course of the ongoing Islamization taking place amongst these people. In some places the goat has gained more economic significance for its valued cashmere wool, particularly after the breakup of the Soviet Union, but goats still stand as an impoverished alternative to sheep (for impoverished peoples, Timkovsky 1824: 79 after Khazanov 1994: 47). In Africa, Broch-Due has qualified the understanding of Turkana as cattle holding people by showing the symbolic, ritual, and social importance of goats; going as far as saying "goats in a sense construct Turkana as pastoralists and people – as Turkana proper" (1990: 57), while Twerda et al. (1997) point to the gendered importance of the donkey for the very same people.

#### ORGANIZATION OF THIS VOLUME

The above overview has shown that various animals occupy different niches of significance for their holders. While most groups identify with one keystone species, other animals are also significant for these people in the various spheres of their pastoral livelihood. The field sites of the contributions in this volume cover vast regions across Northern Eurasia and Africa. Certainly there are still other regions not covered here that practice pastoralism; such as some parts of Inner Asia, the Mediterranean and Middle East, and South America. However, in the regions on which we focus in this volume, most of the animals introduced above are socially significant. All the papers are united by the theoretical interest in the closeness of the human-animal relationship and the defining significance that animals have for humans and their culturally specific pastoral livelihoods in different remote areas of our planet. We have chosen, however, to organize the volume into four clusters, each of which deals with the socio-cultural significance of animals among the nomadic pastoral societies from the following different perspectives:

- 1) The significance of the conceptual distinction between wild and domestic animals.
- 2) The importance of socio-cultural factors for the subsistence dimension of human-animal relations in pastoralism.
- 3) Animal symbolism in its gendered, religious and political dimensions.
- 4) The global significance of local animal species for humanity.

*Reconsidering the Borders between wild/domestic or hunting/herding* The first cluster focuses on human-animal relations through a re-examination of the conventional distinction between hunter-gatherers and pastoralists. Existing research presupposes the difference between wild and domesticated animals as being crucial not only for human physical subsistence activities, but also for human modes of dwelling and moving in the environment (Ingold 2000). We recognize the importance of animal domestication in human history and the feedback that this domestication provides to animal morphology and genetics. However, the way a given human population perceives and deals with domestication is culturally, historically, and geographically different, and recent research has pointed to the pronounced long-term and continuous processual character of domestication not only in the Arctic (Beach and Stammer 2006), but also in other pastoral regions such as Africa (Rossell et al 2008). Therefore, here we begin to reconsider the delineation between wild and domestic animals in order to explore their social significance in human pastoral societies.

Hiroki Takakura critically considers an earlier theoretical assumption of the exceptionalism of reindeer herding in the paper "Arctic Pastoralism in a Subsistence Continuum." Rather than the concept of tameness, which is associated with an evolutionary perspective directed from the wild to the domestic stage of an animal, he proposes a new idea, familiarity with the animals. He inquires as to why hunting and herding are considered continuous in the Arctic regardless of reindeer domestication. Takakura insists that the arctic pastoralists strategy for differentiating familiarity with animals enables them either to maintain large-scale reindeer production or to engage in hunting and fishing. The combination of choices may seem random, but actually it forms a "subsistence continuum" within a specific context. Investigating this continuum of familiarity with animals, he argues, enables us to analyze the relations of all pastoralists with their animals within the same framework.

The next article is "Knowing, training, learning: the importance of reindeer character and temperament for individuals and communities of humans and animals," by Terhi Vuojala-Magga. She vividly describes the process of training reindeer as a personality-forming experience for both the human and the animal partner. Her ethnography makes us recognize how closely humans relate to reindeer as individuals with personality. On the other hand, her paper also exemplifies how this animal never loses its wildness. Her description sheds light on the interaction of individual reindeer in the herd of livestock with the herder, which supports the theory of symbiotic domesticity proposed by Florian Stammer in the concluding paper of this volume.

The necessity of reconsidering the wild/domestic dichotomy is further evidenced in the study of the Samburu pastoralists of East Africa by Shinya Konaka in his paper "Metaphorical Projection and Integrated Cognitive Systems: The Samburu in North Central Kenya." He focuses on their perceptions of livestock, humans, and wild animals and argues that the Samburu's cognitive system does not separate these categories, but instead perceives them as parts of an integrated system that is loosely and flexibly connected by the logic of metaphor. The distinctions between the three categories are vague, permeable, and even convertible.

*Socio-cultural factors and the subsistence dimension of human-animal relations in pastoralism*

The next cluster deals with the flexible formation of subsistence patterns in the Arctic as a response to pressures by political-economic systems beyond the pastoralists' control. The paper "Establishment of large-scale reindeer herding in the European and West Siberian Tundra" by Shiro Sasaki focuses on changes that have taken place in the herding practices of the Nenets people in the European and West Siberian tundra in the 18th and 19th centuries. He introduces some previously presented theories concerning the reasons for these changes and emphasizes the importance of socio-economic factors such as the colonization by the Russian state, rather than climate and ecological factors as the reasons for these changes.

The influence of the state affects nomads in various ways. Nuccio Mazzullo's paper "More than meat on the hoof? Social significance of reindeer among Finnish Saami in a rationalized pastoralist economy" focuses on the importance of the reindeer for Saami cultural identity and their perception of space. The paper details the continued significance of reindeer 'beyond' economy, arguing that increase and decrease of economic and socio-cultural significance are not necessarily correlated. This is in line with the papers by Nakamura and Virtanen in this volume, supporting the theoretical implication, suggested in Stammer's concluding paper, that the economic significance of animals changes faster than their socio-cultural significance.

*Power of Animal symbolism in its gendered, religious and political dimensions*

The next cluster covers the symbolic power of livestock for pastoral and post-pastoral communities adapting to a changing world. The paper "Between Cattle and Islam: Shifting Social and Gendered Significance of Cattle among the Mbororo Pastoralists in Cameroon" by Tea Virtanen explores the symbolic meaning of cattle as a primary animal among the pastoral Mbororo people against the backdrop of increasing Islamization and sedentarization. The author examines the ways in which animal symbols remain embedded in the cultural setting under conditions of social and religious change. The paper shows that the pressures for change coming from outside the pastoral group have resulted in a 're-invention' of the meaning of cattle, and thus ultimately have provided a sense of cultural continuity.

Tomoko Nakamura continues along similar lines in her analysis of livestock as symbols in post-socialist Mongolia. The paper "Fluctuations in the Value of Horses in Mongolia Before and After Socialism" focuses on the role of the horse as a keystone livestock species for Mongolian people and links ethnography to value theory, where she distinguishes between pragmatic and symbolic value of horses for the pastoralists. Anna Stammer-Gossmann further examines the changing role and meaning of animal symbolism from a historical perspective. Her paper "Political animals of Sakha Yakutia" discusses the political symbolism of animals in Yakutia where the reindeer, the horse, the cow, and to some extent even the mammoth are afforded symbolic power according to the changing political climate and directions of given periods. The author emphasizes the interchangeable nature of animal sym-

bols in the process of formation of a regional Sakha identity and its relations with the center of power in Moscow.

***Global significance of local animal species for humanity*** The importance of biodiversity for human life on our planet is recognized in academia as well as international politics. In recent decades major efforts have been undertaken to preserve this biodiversity, which has come under increasing threat from the rationalized global economy. Most preservation measures rely on a combination of efforts by scientific communities, policy makers, influential economical companies, and powerful NGOs. The following three papers add a much needed dimension to biodiversity preservation studies by focusing on the social significance of biodiversity, exemplified through the local breed of Yakutian cattle in the Eveno-Bytantay district of the Sakha Republic; an interesting Arctic 'island' of multi-species pastoralism that also figures in the papers of Takakura and Stammeler in this volume.

Leo Granberg successfully takes biodiversity back from the arena of global politics and returns it to the grass-roots level. His paper "The Interrelationship of Socio-diversity and Biodiversity: Experiences from a Post-Soviet Siberian Village" investigates the processes of privatization and other structural changes in animal production. Granberg finds that sociodiversity facilitated the preservation of a single native cattle breed, the last remnants of the Siberian 'Turano-Mongolian' type of domesticated cattle (*Bos taurus*), and the recovery of animal production after the crises. Granberg sees a correlation between the size and organizational forms of production units (farms, households) in pastoralism and the preservation of biodiversity of small locally adapted breeds. He concludes that a higher sociodiversity in its dimensions of employment and social organization of the production facilitates a higher biodiversity. Kantanen's paper "The Origin and Genetic Diversity of Native Yakutian Cattle as Revealed by DNA-Marker Analysis" adds a background from natural science to the biodiversity discourse in the Siberian remote villages of Eveno-Bytantay, where Yakutian cattle can survive in one of the harshest cold climates in the Northern hemisphere. In addition to the evidence gathered through genetic research, Kantanen, a biologist, also successfully links the natural and the social dimension by indicating the potential role that Yakutian cattle could play for regional socio-economic development in the future.

Interdisciplinarity continues in the paper of Anu Osva "The symbiotic human animal relationship: An artistic investigation of Yakutian cattle." Osva, an artist with scientific background in animal breeding, explores the possibility of using the arts (painting in this case) to position this local species as a mediator connecting science and society. In Siberia she worked with Kantanen's research team, interviewing various people as well as drawing, painting, and photographing the cattle. Osva presents a different vision of the field than that of the social scientists, yet she convincingly shows how serious work employing a different method enriches our understanding of the very same topics. The symbiotic cohabitation of humans and animals is analyzed by Osva from a different angle than in the papers of Vuojala-Magga, Takakura, or Stammeler. Osva emphasizes the link to the broader history of human-animal relations, drawing on ideas from the bible, René Descartes, and

Charles Darwin. Like Stammer-Gossmann and Stammer, Osva problematizes how humans have always been anthropocentric in their perception and study of animals. In visual arts, anthropocentrism in human-animal relations translates to anthropomorphism, which Osva tries to counter with the outcome of her work: large portraits of cows comprising part of an artistic project entitled 'Yakutian Cattle – Exploring Expedition to Siberia in the 2000's.'

*Conclusion: comparison from the Arctic* In the conclusion of the volume, we return to the theoretical potential that the study of Arctic pastoralists holds for our understanding of human-animal relations in general. All groups of nomadic pastoralists except those in the Arctic apply multi-species strategies to their livestock in their own different ways. Various animals occupy different roles and meanings in their societies. By contrast, Arctic reindeer herding is classified as mono-species oriented and therewith somehow positioned beyond comparison with the rest of the pastoralist world. On the other hand, even though all reindeer herders also engage in hunting, the categorization of these peoples as hunter-gatherers does not fit well either, since it is the domestic reindeer that stands out for these pastoralists as both the significant animal-other and supreme property, as the papers by Mazzullo, Vuojala-Magga and Stammer show. Rather than forcing reindeer pastoralism into comparisons taken from a non-arctic perspective, we suggest redefining the format and content of nomadic pastoralist comparison from a northern perspective by choosing topics that are pertinent and important to peoples living in the Arctic but have implications for other pastoralist livelihoods as well. Another ambitious endeavor for future comparative research would be a comparison between high latitude (Arctic) and high altitude (Tibetan, Andean) pastoralism, and a consideration of the Arctic and the Andes on the hunting-herding continuum with domestic and wild reindeer as well as domestic and wild camelids. In this way we can revisit categories such as mono-species orientation, diversification, domestication, and human practices with animals as issues that are embedded in a total social environment.

Stammer in his concluding paper "Animal-diversity and its social significance among Arctic pastoralists" begins to construct an analysis based on the intimacy of the partnership that humans have with animals. The human role in the environment among pastoral people can be analyzed as one that is shaped and mediated in a complex process of domestication, which is seen as a reciprocal process taking place between humans and animals. This leads to a quality in the relationship that Stammer calls symbiotic domesticity, which outlines the principles involved in developing closeness between humans and animals. He suggests identifying 'niches of significance,' hierarchies of prestige, and analyzing how different animals fill these niches, then placing these factors as alternative axes of cross-regional comparison in pastoralism. Supporting the positions taken by Takakura's introductory paper, Stammer also shows how niches of significance can be filled by various animals that may be domestic or hunted, fished, and herded. Drawing on evidence from his own fieldwork as well as from several contributions in this volume (Nakamura, Virtanen, Mazzullo), Stammer concludes that the economic significance of animals is less stable than the social significance, as pastoralists and hunters readjust the former

quickly in responding to changes in their surrounding environment, while they retain the latter as a system of social order.

Shanklin (1985) sees the field of human-animal relations as being broken down into research on the function of animals and on the meaning of animals for humans. Both of these directions are anthropocentric; an orientation that is problematized by several papers in this volume (Osva, Stammler, Stammler-Gossmann). Shanklin argues that the function of animals, mainly in economic and ecological terms, is much better understood than the symbolic and metaphoric meaning of animals. While we acknowledge in principle the usefulness of such a distinction, we do not share Shanklin's view regarding the lack of studies in animal-meaning. Shanklin herself draws our attention to numerous studies in this direction, starting with the classics of Evans-Pritchard and Levi-Strauss and the anthropology of religion, and then continuing on to more recent works. That animals have come to signify wealth, prestige, hierarchy, and human mirror images is well known and these representations have been analyzed since ancient times. We can see obvious demonstrations of this in the Bible; the image of Jesus riding into Jerusalem on a donkey calf (the Bible, Marc, chapter 21), when the camel was the indicator of wealth in the region (for example in the Bible, Genesis, chapter 30: 43 and 32: 15) contained explicit meaning in that the animal transporting Jesus emphasized the message of God's closeness to ordinary people. The lamb as a mirror-image of Christ, and the image of herder and flock for god and his parish clearly invoke the meaning of care for another, which is so typical for human-animal relations in pastoralism (see also Tani 1989, 1996).

The editors would like this volume to illuminate the usefulness in the connections between two fields: the papers in this volume show how the function and the meaning of animals for pastoralists are interdependent, as animals acquire meaning for society through their function, but on the other hand their function is influenced by their meaning. In Arctic settings, the quote by Sergei Serotetto cited earlier in this introduction emphasizes the relationship between the two, as the multi-functionality of the reindeer is linked to its sacredness, which in Serotetto's terms is identical to its multiple symbolic meaning. Along these lines we illustrate how Shanklin's (1985: 380) statement made 25 years ago has not lost any of its timeliness: investigation of human-animal relations continues to be one of anthropology's most fruitful endeavors. One which more recently has also become more open to interdisciplinary enquiry.

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