Animal Autonomy and Intermittent Coexistences

North Asian Modes of Herding

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Leading anthropological theories characterize pastoralism as a relation of protective domination in which humans drive, protect, and feed their livestock and dispose of its life. On the basis of ethnographic fieldwork performed among six different husbandry systems throughout North Asia, we challenge this interpretation by showing that indigenous techniques tend to rely preferentially on animal autonomy and a herd's capacity to feed and protect itself. In defining five modes of herding, in each of which the proportions of human and animal agencies differ, we explore the issue of the stability of the herder-livestock bond in a nomadic context with loose human intervention. Our argument is that the shared nomadic landscape is the common ground that enables a balance between animal autonomy and human-animal engagement in cooperative activities. We propose the notion of intermittent coexistence to describe the particular kind of human-animal relationship built and maintained in North Asian husbandry systems.

Leading anthropological theories about human-animal relationships in North Asia set in contrast hunting-gathering societies, characterized by animist cosmologies and relations of reciprocity with wild animals that are treated as subjects, and herding societies that consider domestic animals as property at their owners' disposal. The contrast between hunting ideology and herding ideology was often interpreted as a contrast between two successive stages in a unilineal evolutionist scenario. In her wide-ranging synthesis on North Asian shamanism, Roberte Hamayon states that, when hunting gives way to herding as the main activity in a society, "animal moves from the condition of a being to that of a product" (Hamayon 1990:327). Tim Ingold supports a similar position, arguing that, in hunting, the main mode of relation is trust and reciprocity, while domination characterizes the treatment of animals in herding (Ingold 1994). Therefore, with the rise of reindeer pastoralism in the Arctic, "animals moved from being quasi-persons to being consumable things" (Ingold 1986:10). Spatializing Hamayon's opposition between hunting and herding ideologies, Morten Axel Pedersen built a cosmological dichotomy between "animist" northern North Asia, the realm of horizontal relationships between human and nonhuman beings, and "totemist" southern North Asia, where these relationships are hierarchical and vertical (Pedersen 2001). That dichotomy was endorsed by Philippe Descola, who, however, defined southern cosmologies as "analogist" rather than "totemist" (Descola 2013:371, 372). Northern societies (Chukchi) remain close to the relational scheme of animist hunting societies, characterized by reciprocal exchange with animals, while in southern pastoral societies (Buryat), animals are subjected to the power of their owners. The treatment of animals by humans in pastoral societies, which involves feeding, handling reproduction, watching, and defense against predators, entails an asymmetric and irreversible relational scheme, the "protective domination" (Descola 2013:326, 327, 373).

The opening of the postsocialist world has allowed a considerable amount of ethnographic fieldwork to be performed over the past 20 years, leading several researchers to question these classic interpretations by attenuating the dichotomy between hunting and herding and breaking with the binary evolutionary framework. Several studies underline that, in the everyday life of Siberian societies, hunting and herding are tightly complementary activities (Jordan 2003; Ventsel 2006). Different

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authors acknowledge the importance of trust and reciprocity between herders and animals in reindeer herding (Anderson 2014; Beach and Stammler 2006; Donahoe 2012). In the southern part of North Asia, Natasha Fijn concludes from her fieldwork on Mongolian pastoralism that "Mongolians have much the same attitude as the North hunter-gatherers to which Ingold refers in that the relationship is viewed as a reciprocal one" (Fijn 2011:44). Some authors stress that, in the hunting world, "trust" is nothing but an ideological claim of humans, whereas wild animals actually run away from hunters; in husbandry, however, a true interspecific trust emerges that enables daily intimacy between herders and livestock (Armstrong Oma 2010; Knight 2012).

Discarding the description of North Asian herding exclusively in terms of "domination," many authors prefer today to use the biological notion of "symbiosis" (Beach and Stammler 2006; Takakura 2015:7, 8; Vitebsky and Alekseyev 2014); thus, according to Florian Stammler, Arctic herders establish with their animals an "intimate partnership" that is the basis of a "symbiotic domesticity" (Stammler 2010).

The disadvantage of the new models that replace the notion of domination with that of symbiosis is that, by taking the opposite view of previous models, they keep their premise, namely, the idea that herding communities are based on a dyadic relationship of reciprocal dependence between humans and animals. Yet the vital interdependence conveyed by the biological metaphor of symbiosis better describes a sedentary kind of herding with fodder supply and fixed structures (e.g., barns and enclosures), which bind the livestock to the human settlements, than the forms of mobile grazing herding that are widespread in North Asia (nomadic pastoralism, transhumance, and hunting with subsidiary herding; Stépanoff et al. 2013). Moreover, by ignoring the relationship to the environment, this dyadic model occults the triadic nature of nomadic herding, which associates humans, animals, and landscape in an ongoing reciprocal adaptation (Anderson et al. 2014; Stépanoff, forthcoming).

In this synthesis article, we will try to identify the principles that guide indigenous herders of North Asia (Siberia and Mongolia) in their relationship with livestock on the basis of their herding techniques and their conceptions of animals. Our goal in this synchronic comparative study is to highlight widespread preferences and tendencies but not to reveal universal features common to all North Asian herding systems, which, of course, need to adapt depending on the species and circumstances and also had to make compromises with Soviet zootechnics. We will show that neither protective domination nor symbiosis are the ideal mode of relation that North Asian herders seek to establish with their animals. In indigenous herding systems, livestock are quite often let loose, with rare supervision and without food supplies, shelter, or fences. What kind of link then keeps together humans and animals in North Asian mobile herding systems? What is the foundation of this interspecific association on the move? Our argument is that North Asian herding systems maintain a balance between two possibly conflicting tendencies: animal autonomy and animals' disposition to engage in cooperative interaction with humans.

This study is mainly based on our ethnographic fieldwork, performed in several regions representative of different herding systems, with a collection of migration routes and, in some cases, GPS recording of herd's and herders' movements: nomadic large-scale reindeer herding among the Eveny in Sebyan-Kyuel, Yakutia (Nicolas Bureau); multispecies pastoralism in the Gobi and Arkhangai regions in Mongolia and among the Aga Buryats, southern Siberia (Charlotte Marchina); large-scale reindeer herding among the Eveny in Kamchatka, far-eastern Siberia (Camille Fossier); and small-scale reindeer herding among the Tozhu and steppe Tuvan pastoralism, Tuva, southern Siberia (Charles Stépanoff; fig. 1).

Livestock Animals as Agents Endowed with Souls

North Asian peoples recognize that not only wild animals but also livestock draw their life and their sensibility from an enduring invisible component, a soul. Moreover, marks of respect to the animal and its soul are demonstrated during the slaughtering of livestock, which is performed with precautions and ritual procedures, whereas they are absent from the killing of game—the issue of which is, of course, efficacy—and are reserved to the cutting up of the animals (D'iatchenko and David 2010). Before the Soviet period, the Chukchi used to consider the slaughtering of domestic reindeer as a sacrifice intended to send the soul of the animal to a spirit (Bogoras 1904–1909:368). When slaughtering a mare, the Yakut would pronounce words of apology, such as "We had a bad year" (N. A. Alekseev 1975:48).

Today, Mongolian and Buryat herders ascribe a soul (Mongolian *süns*, Buryat *hünehe*) to all livestock animals. Therefore, they take precautions during slaughtering, particularly to avoid shedding blood. Mongolian herders orientate the head of the animal toward the north and, just before killing it, whisper or think the Buddhist prayer "*Om mani padme khum*" or apologies, such as "I had no idea to kill, I killed you by mistake, I wish you to become a many-coloured calf" (Charlier 2015:71, n. 10). Some Buryat herders cut a tuft of hair from the tail of the horse or cow and sweep its nostril with it while pronouncing words for the preservation of the household's fortune (*talaan*).

In Mongolia, herders leave horse skulls in high places. They explain this practice by the fact that the horse is a "superior" animal. Ordinary horse skulls are placed in trees, whereas those of exceptional individuals (favorite riding horses, racehorses, and stallions) are found on mountaintops and *ovoo* sacred places. The funerary treatment depends, therefore, on the horse's status and its relationship with the herder during its lifetime.

In Sebyan-Kyuel, Eveny herders kill reindeer by making an incision between the cervical vertebrae and then stabbing them in the heart. Between these two knife blows, the herder wipes the blade on the fur while apologizing to the slaughtered reindeer, aloud or in a murmur. Among the Kamchatka Eveny,

Figure 1. Location of the research fields in North Asia.

it is believed that reindeer, like all other animals and like trees, as well, have a soul—only fish do not. The Tuvans avoid making sheep suffer when they slaughter them, because the soul (*sünezin*) of the animal could take its revenge by casting a curse. These different examples show that herders do not treat their animals as consumable goods over which they have an absolute right of life and death; otherwise, why should they bother with precautions and apologies? Everywhere in North Asia, a domestic animal that struggles during slaughtering and whose sufferings linger is perceived as an animal that refuses to give itself, which can entail a loss of the "herd fortune" (Willerslev, Vitebsky, and Alekseyev 2015). While livestock slaughtering is often interpreted by Western scholars as necessarily implying a reduction of the animal to the status of an inert object, it appears that North Asian herders, at the very moment when they kill their domestic animals, treat them as sentient beings endowed with will and able to understand human speech.

Companion Animal

In their oral traditions, North Asian peoples do not represent animal husbandry as the result of a conquest that allowed humans to establish their domination over animals, as in Western conceptions of the Neolithic revolution. On the contrary, myths describe the domestication of animals as an effect of a divine decision or of a choice by the animals themselves to come and live with humans (e.g., Vasilevich 1969:79).

The rich North Asian epic traditions portray riding animals as clever and initiative-capable companions of the hero. In Mongolian epos, the hero's horse is endowed with intelligence (*ukhaan*) and knowledge (*erdem*) which it puts to good use for its rider, once the latter has tamed it (Hamayon 1990:286). The horse's insight is often described as superior to that of the hero. These exceptional skills allow the horse to predict the future and to give the rider salutary advice that helps him to triumph. Likewise, in the North, in Tungus epos (Myreeva 1990) as well as in Nenets legends (Golovnev 1995: 220), the riding or sledge reindeer provides its master with wise advice.

Throughout North Asia, among pastoralists and hunter-gatherers alike, rituals and oral traditions depict livestock animals as agents endowed with souls, and some of them, the working animals, are depicted as no less intelligent than humans and able to engage in cooperative interactions with humans. The interpretations of herding peoples themselves appear

to contradict classic anthropological oppositions between wild animals as subjects and domestic animals as objects.

Modes of Herding and Animal Autonomy

North Asian herders often do not regard human agency as the only, or even the central, factor of the prosperity of their herds. The Western Tuvans, Tozhu, Buryats, and Eveny perform rituals by which they ask spirits of the land for herd growth and protection. Livestock losses are often interpreted as the result of punishment meted out by the spirits for a ritual negligence. Not surprisingly, Soviet agronomics considered such an attitude of indigenous people as blameworthy carelessness.

Particularly revealing is the traditional attitude toward the wolf, the main predator of livestock in North Asia. Although anthropological definitions consider protection to be an essential aspect of pastoralism, herders demonstrate a surprising reluctance to struggle against wolves. Both Dörvöd pastoralists of northwestern Mongolia and Tundra Nenets consider that the wolf, being the "dog" of spirits, is allowed to feed on their herds (within reason). Immoderate takings by wolves are held to be a punishment of an offense made by the herder (Charlier 2015; Golovnev 1995:222, 223). Explicit taboos forbid the shooting of wolves from Kamchatka to western Siberia, among such peoples as the Alyutor Koryak (Stebnitskii 1938), Chukchi (Bogoras 1904–1909:81, 88), Yukaghir (Gogolev 1975:79), Evenki (Shirokogoroff 1929:31), and Khanty of Vakh (Lukina 1973). Actually, it is often not the herders themselves who protect their reindeer, but rather the reindeer that rush up to the camps and find shelter when they are threatened by wolves (Shirokogoroff 1929:31). Thus, wolves efficiently contribute to strengthen the herd-human bond and hence embody the role of the environment's agency in the building of the herding community. Nenets herders acknowledge that wolves help them to drive their reindeer herd, to such an extent that their myths claim humans learned herding from wolves (Golovnev 1995). This may be one of the reasons why they are so tolerant of the presence of this predator.

It is only in Soviet times that active plans for wolf extermination were generalized. Today, in our research fields, we observe contrasted situations: while the Tozhu do not protect their herds and do not hunt wolves, the Eveny, whose husbandry system has retained more Soviet techniques, defend their herds with rifles against wolves and bears, although they do not actively chase these animals. In Mongolian Arkhangai, watching sheep and goats is often aimed less at protecting the herd from wolves than at avoiding mingling with neighboring herds, which is not specifically a form of protection.

Five Modes of Herding

In a herding community, humans seek by different methods to maintain the link binding them to their livestock. While the notion of "husbandry system" includes all the aspects of the long-term management of animals (property rules, uses, and production), we will focus here on temporary strategies that we call "modes of herding." A mode of herding is a set of techniques, interactions, and cognitive expectations that builds a specific relational configuration between herds, herders, and the environment. Several modes of herding can be distinguished depending on the inversely proportional roles they grant to animal autonomy and human control. Each herding community combines and alternates temporally different modes of herding according to the seasons, the species, the animals' age, and the environmental context (e.g., presence of predators, neighbors, and social obligations). The modes of herding are classified below in order of decreasing animal autonomy and ascending human constraint and control.

Seasonal freedom. In this mode, animals are left virtually without contact with humans during an extended period, often one or several seasons. Herders expect that the functions of protection, feeding (including the choice of pastures), and reproduction will be entirely assumed by the herd.

Attraction. This is a set of techniques designed to attract animals in the vicinity of camps, sometimes combined with techniques to prevent them from moving far (hobbles). Animals are not watched; attempts to find them are made only in the case of prolonged absence. In this mode, people rely on the animals' tastes to incite them to come back regularly near human settlements.

Checking. Animals are led or sent in one direction and move and graze without being watched over, as in the preceding modes, but they are regularly checked, gathered, and reoriented if necessary by herders who go back and forth between camp and pasture.

Watching. The herd is watched over by a shepherd *in praesentia* all day long or most of the day. The shepherd regularly rounds up the herd, leads it to grazing and watering places, and protects it from predators or prevents mingling with other herds.

Captivity. In this mode, built structures limit the space of movement of livestock (e.g., fences, corrals, and stables).

Modes of herding are not mere techniques; they associate actions with conceptions of animals' capacities to deal with several tasks. In the seasonal freedom, attraction, and checking modes, most of the functions are taken up by the animals themselves (table 1); animal autonomy prevails over human constraint. On the contrary, in the watching and captivity modes, human intervention and control outweigh animal autonomy. Several case studies will briefly illustrate these modes of herding and their combination in different husbandry systems.

Seasonal Freedom

The Kamchatka Eveny, whether reindeer herders or fishermen, possess horses used during the warm season for mounting and packing purposes. The herding methods alternate a mix of checking and attraction in summer and seasonal freedom during the cold period. In autumn, as soon as they can no longer be used because of the snow, the horses are gathered in

Table 1. Functions generally managed by animals or by humans depending on the mode of herding

	Mode of herding				
Function	Seasonal freedom	Attraction	Checking	Watching	Captivity
Reproduction	Animals	Humans	Humans	Humans	Humans
Choice of pasture	Animals	Animals	Animals	Humans	Humans
Food extraction	Animals	Animals	Animals	Animals	Humans
Protection	Animals	Animals	Animals	Humans	Humans
Initiation of contact	Humans	Animals	Humans	Humans	Humans

one herd of sizes reaching several dozen animals and are led to a valley, where they roam until the beginning of spring. Belonging to the Yakut race, these horses are adapted to harsh winter conditions and find their food themselves—in particular, horsetail stems that emerge from the frozen wetlands. During this time, the horses are not given any fodder, because the Eveny do not collect hay, and the horses are checked rarely, if ever. The Eveny rely on the stallions' ability to lead and protect their "harem" of mares and foals. In the spring, herders find their horses after several days of searching for them, and most of the animals easily return to cooperation with people. However, it can happen that some stallions become feral and impossible to catch. We also observed a technique of temporary freedom in Mongolia, in which isolated herds of castrated horses and camels are not ridden for several months and are left to graze freely. Some Buryat herders sometimes send unused cows to the meadow, where they can stay unattended for several weeks.

Before the socialist collectivization of agriculture, seasonal freedom was often used among hunting peoples practicing herding as a secondary activity. In western Siberia, the Ket, Southern Khanty, and Selkup used their reindeer only in the cold season to draw sledges, and they released them in the forest when the snow melted. Reindeer were retrieved in autumn with the first snow, after a search that could last several weeks: the Selkup "hunted their herd," following their tracks. Herders often discovered their herds with huge losses, up to 100% of the offspring of the year (Levin and Potapov 1956:671; Lukina 1973). On the contrary, in the Evenki type of reindeer husbandry, according to Vasilevich's typology (Vasilevich 1969), reindeer are used mainly in summer as riding and pack animals, while during the cold season, when hunters move around on skis, they graze freely in very snowy valleys, where their movements are expected to be limited.

Attraction

In the Sayan range (southern Siberia), the Tozhu are hunter-gatherers with small herds of a few dozen reindeer that are used for riding, pack transport, and milk (Stépanoff 2012*b*). The reindeer graze without being watched over and come back spontaneously to the camp after a few days. They are looked for only in the case of prolonged absence. A range of attraction techniques is used to favor their regular return. As soon as the reindeer appear near the camp, people offer them salt in their hands. In addition, urinals are installed in the camp to collect men's urine, which the reindeer drink because of the salt that it contains, of which they are particularly fond. Herders make sure that, from the reindeers' birth, human contact is a source of pleasure. At their return, the leaders are tied up all day long, so that they remain familiar with human presence. After the calving in May, mothers and fawns are alternatively tied up, so that, while one group is immobile, the other grazes without going too far away. In the summer, the Tozhu light smudge fires to drive away mosquitoes, so that the reindeer find a zone close to the camp that is sheltered from the painful harassment of these insects.

The use of salt and urine to attract reindeer is widespread throughout Siberia. At the beginning of the twentieth century, the Koryak carried special vessels in which they urinated that were used to gather the reindeer to be harnessed (Jochelson 1905). The Khanty distribute dry fish and pour fish soup around the camp to encourage the return of reindeer (Lukina 1973). Today, in our research fields, the Eveny of Sebyan-Kyuel attract reindeer by giving them salt, whereas the Eveny of Kamchatka distribute biscuits. The use of smudge fires is also known among the Eveny of Kamchatka, and it has been described from the Khanty in Ural to the China Evenki. The mutual attraction of dairy does and fawns by alternating their tying up in the camp is also in use in Sebyan-Kyuel.

Mainly used for reindeer, attraction techniques are also used for other species. The Mongols tie up foals and young camels, and the Buryats keep calves in pens to prevent their mothers from going far away. Milking, which relieves the females, is also a factor of attraction that brings them back to the camp every day, or even several times a day.

Checking

In Sebyan-Kyuel, the reindeer are owned by a market-oriented corporation and herded by brigades of hired Eveny herders. The methods and durations of checking vary in accordance with the season and herd structure. During the winter and spring, herders form two distinct herds: the main one, up to 1,600 heads, is intended for meat production, and the second one, smaller, is for gathering the working animals (riding, pack, and draft animals and dairy females). These two groups are united during the summer and autumn into one herd, which grazes without being watched but is rounded up and reoriented twice a day.

Every morning, several herders get up early and go by foot or on reindeer back in the direction in which the working

herd was driven the day before. This is generally situated between 4 and 10 km away from the camp, depending on the risk of predator attacks and on the presence of lichens nearby. The search is made by observation through binoculars from the heights and by following the tracks and the sound of the bells carried by some animals.

Working animals are driven back to the camp and put in a corral so as to be ready for use depending on needs and activities. Afterward, two or three herders ride reindeer back to round up the main herd, which is grazing about 10 km from the camp. The herd is then pushed toward new pastures, and the herders check for the presence of predators in the surroundings. Upon returning to the camp, the herders untie the working animals and drive them away from the camp. The direction taken by the working herd is then communicated to those who will be fetching them the next day.

In Tuvan steppe pastoralism, sheep and goats are generally driven in the morning in one direction by shouts and projectiles, checked during the day if they get out of sight, and brought back to the camp in the evening. In Mongolian pastoralism, checking is the dominant mode of herding used for cattle and horses. Herders check the state of the animals when they meet the herd for a specific reason (e.g., selecting an animal for riding or slaughtering). During the milking period females are led from pasture to camp once (camels), twice (cows), or four times a day or more (mares) and are let loose the rest of the time.

Watching

In the Mongolian Arkhangai, sheep and goats—which, unlike large stock, graze in one herd—are generally kept under close watch during a large part of the day. The presence of a shepherd can be necessary when there is the risk of predators, but often the main function of this presence is simply to avoid mingling with the neighboring flocks (fig. 2). The shepherd can then spend hours walking slowly beside the herd or even lying down until he needs to redirect it. When they are not beside the animals, the herders watch over sheep and goats with binoculars. At night, the herd is led to the camp and, during the cold season, is kept in pens. Animals stay near the yurt and remain under the surveillance of the herder, who pays attention to suspect noises, even from his bed. If the region is not too infested with wolves, and if there are few neighbors, the mode of herding is checking, as it is among the steppe Tuvans, with sheep and goats left free part of the day.

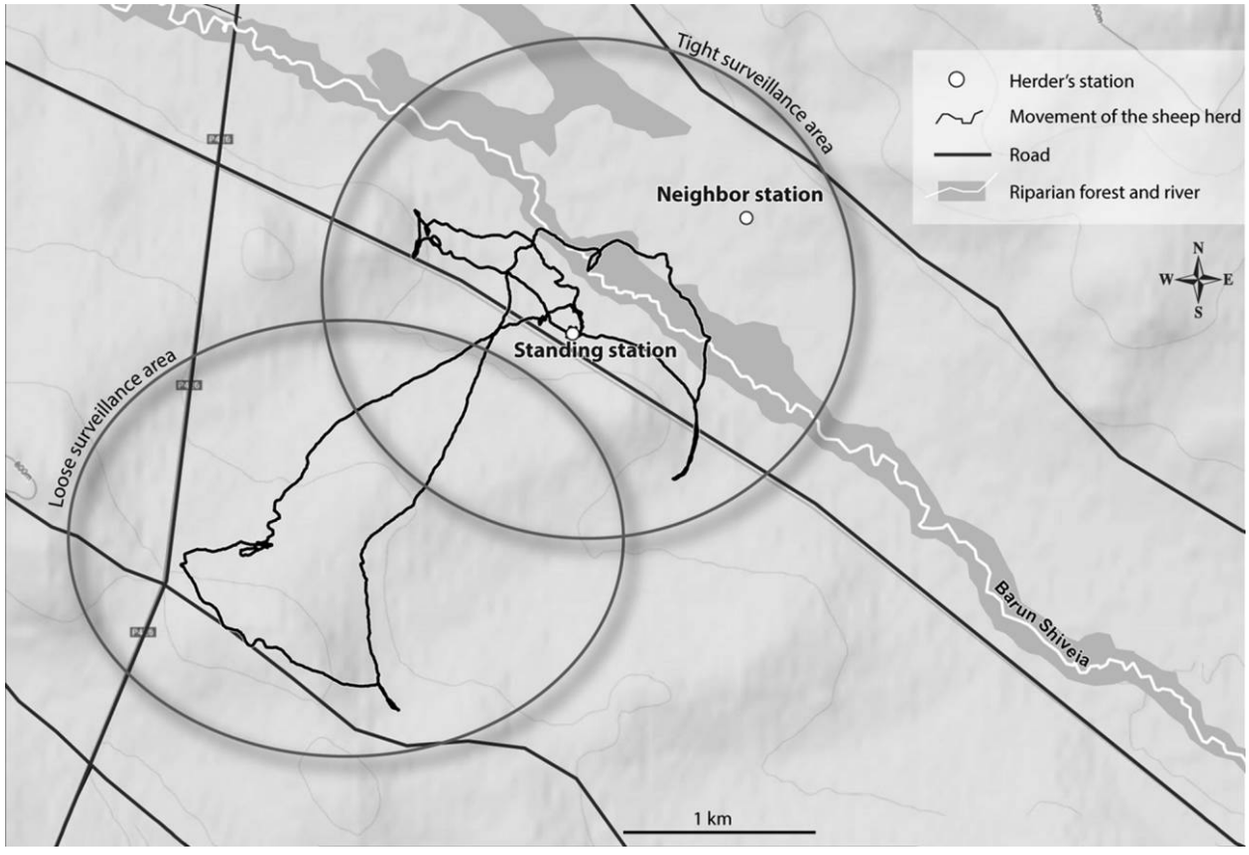

Figure 2. GPS records of a Buryat sheep herd's movements during two differentiated modes of herding. When the herd grazes near a neighboring station, herders watch and redirect it more often than when there is no risk of mingling with another flock. Adapted from Fossier and Marchina 2014.

In Kamchatka, Eveny reindeer herding is similar to reindeer herding in Sebyan-Kyuel, organized in brigades of contracted shepherds. In spring and summer, shepherds take turns to maintain a continuous watch, day and night, over a herd of 1,500–2,000 heads to keep the reindeer rounded up and to deter predators. Herders lead the herd to watering places and pastures selected by the head of the brigade. In winter, on the other hand, the mode of herding is daily checking.

Captivity

In North Asia, captivity is not used over long periods of time but is used more as an occasional herding technique for management operations. Inside a pen, the herd can neither drink nor eat, because the ground is usually bare and herders do not bring fodder (the only exception is for fragile animals).

Among the Mongols and Buryats, animals are kept in captivity in several situations. Occasionally, a part of the herd or an entire herd is penned for one or two hours for veterinary care or marking. Captivity is also employed for short periods during the birth season: females are kept in pens and given fodder for a couple of days before delivery.

In Mongolia, captivity is most common during the milking period: lambs and kids are kept in a pen at night, whereas dairy females, separated from the rest of the herd, are enclosed during the day, a few hours before milking. Young camels and foals are tied up all day long in the camp and are usually released at night to suckle their mother. As mentioned earlier, the captivity of young animals entails the attraction of mothers and vice versa.

In Central Kamchatka, as in Sebyan-Kyuel, Eveny herders gather the entire herd in corral two or three times a year to perform operations of marking, castration, vaccination, antler trimming, or selection for slaughtering. Animals can stay six to eight hours in the enclosure without being fed.

Searching Rather than Watching

It emerges from this panorama that the two modes based on human control, watching and captivity, never occur as exclusive modes of herding. In spite of the diversity of functions (transport, milk or meat production, and domestic vs. commercial production) and of modes of management (familial vs. corporate property) of the husbandry systems studied, we have observed a common preference, when circumstances allow it, for the three modes of herding based on animal autonomy: seasonal freedom, attraction, and checking. Generally speaking, we argue that North Asian indigenous herding techniques rely to a large extent on the principle of animal autonomy. This principle implies that herders expect and encourage animals to exhibit skills that enable them to be active agents in their relationships with the environment and humans (Stépanoff 2012*b*).

Animal autonomy reduces the investment of human labor and the building of permanent structures, which is crucial in a nomadic context. On the other hand, the disadvantage of animal autonomy is that it regularly requires looking for the herd, an activity that can appear tedious from a Western point of view, since it may take hours (for sheep and goats), days (for camels and horses), or even weeks (for reindeer). However, herders themselves consider this search more exciting and rewarding than static watching and captivity.

We mentioned above that the Selkup hunt their herd every year. Similarly, Carole Ferret observed that the Yakut horse herders prefer episodic searching for their herds to continuous watching, to such an extent that they can be considered horse seekers rather than horse keepers (Ferret 2007).

Mongolian and Buryat herders regard continuous surveillance of sheep and goats to be a boring activity, and it is generally entrusted to children. The Buryats, calling upon laziness, prefer, when possible, a remote monitoring with binoculars or by telephone with neighbors. In Mongolia, herders show greater interest in the search for and checking of large stock (cattle, horses, and camels), which graze on more distant pastures than sheep. It gives the herders the opportunity to leave the direct surroundings of their camp, locate marmot burrows for a future hunt, or visit neighbors.

Looking for reindeer occupies most of the time of the Eveny herders of Sebyan-Kyuel. They need to check the herd but also search for stray animals and those scared away by predator attacks. The youngest herders are confined to performing the simplest tasks, like driving the herd already gathered by older herders. The long-term searches are the responsibility of the most experienced herders: brigade heads and former herders who have become *etiken*, an elder who knows and has experience. The search involves several men for periods of up to several weeks and at distances sometimes over 40 km from the camp. The search for the herds is not regarded as a waste of time, because it offers the opportunity to gather resources, such as wood for heating or construction, fruit, or medicinal herbs; to fish, hunt, or set a trap; and to collect various information, notably to observe game tracks. Analysis of the animal tracks and other environmental indexes makes it possible to guess the direction followed by the animals. In winter, this activity is based on the presence of animal footprints in the snow, whereas, in summer, the search is performed with very few clues and with the help of binoculars.

A Herding-Hunting Continuity

It emerges from these examples that hunting and herding activities share many common techniques. The consequence of modes of herding that grant considerable autonomy to livestock is that the animals' behavior moves closer to that of wild animals, so that searching for autonomous domestic animals becomes virtually identical to the tracking of game.

The absence of physical watching is made possible by the involvement of the herders' rich ecological knowledge in a form of mental monitoring. For example, the Evenki herders of Cisbaikalia "constantly try to keep in mind the direction in which they can find the reindeer" (Davydov 2014:12, 19). Thus, the

herders must look after their animals mentally by updating, on their mental map, the probable position of the herd. For that, the herders (who also happen to be hunters) need to master a set of skills regarding topography, ecology, animal behavior, and psychology that are similar to those needed for hunting. In the field, they must be able to detect, analyze, and interpret the tracks left by animals (e.g., broken branches and holes in the snow). In their interpretations, they produce inferences about the visible clues by linking them with the perceptions, motivations, and habits that they ascribe to their animals to mentally build scenarios that enable them to decide in which direction to go.

These common skills explain that the border between hunting and pastoralism is by no means sealed, as could be expected from a cosmological perspective. Throughout North Asia, sources indicate that groups of herders who have lost their herds regularly adopt temporarily or definitively a hunting, gathering, or fishing economy (Bogoras 1904–1909:72; Perevalova 2004:272; Vasilevich 1969:79). This "hunter-herder continuum" (Ventsel 2006) was recently confirmed in many areas of Siberia after the collapse of the state herding farms and the subsequent shift of many indigenous communities from pastoralism to a subsistence foraging economy (Baskin 2000; Lavrillier 2013; Takakura 2012; Ventsel 2006).

Landscape as an Interspecific Common Ground

We have seen the significance of animal autonomy in North Asian herding techniques, which implies that this human-animal association can be reduced neither to domination nor to symbiotic fusion. The question is now "What is the basis of this fragile link between people and animals in a context where they are frequently separated?" Theories of cooperative interaction among humans, notably communicational interaction, stress the key role of the "common ground," a set of knowledge, routines, and shared expectations between participants, without which they could not correctly interpret the exchanged signals and coordinate their actions (Clark 1996; Tomasello 2009).

Does an interspecific common ground lie at the foundation of the daily interactions and the long-term association between humans and livestock in North Asia? Surely, this common ground cannot be as reflexive as that which underpins interhuman interactions, in which each participant knows that the common knowledge is shared with the others. F. Zeuner suggested that, through domestication, a "meeting ground" emerges "on which the social media of the two species 'overlap'" (Zeuner 1963:47, 48). In the case of reindeer, Zeuner argues, this "meeting ground" is constituted by a common mobile relation to the space (migration) and by the distribution of salt, which binds reindeer to humans (Zeuner 1963:47, 48). The hypothesis we will support here is, more precisely, that the interspecific common ground uniting the hybrid nomad communities of North Asia is the territory as it is perceived and memorized by humans and animals, forming a shared nomadic landscape.

Changing Territory Weakens the Human-Animal Bond

The role of territory as a common ground can first be demonstrated through a proof by contradiction: when the connection with the territory is broken, the link between humans and animals is weakened. During the Soviet period, zootechnicians transported reindeer breeding males from Tofalaria (southern Siberia) to Yakutia (eastern Siberia) to improve the breed. A high number of these reindeer could not acclimatize to the new environment and to the habits of local herds and ultimately perished (Pomishin 1972:18, 19).

Some transfers were massive. In the Khantaika region (low Yenissei), local Evenki reindeer herders were deemed incompetent by the Soviet government. In the 1970s, to create an industrial husbandry, a group of "mountain people," who were considered to be more efficient, were moved to this region along with more than a thousand Nenets reindeer, whereas the local Evenki were excluded from herding activities. While the displaced humans had no other choice than to stay put, giving rise to long-lasting interethnic conflicts, the reindeer showed less docility and disappeared within a few months (Anderson 2000:58, 59). The dramatic failure of these experiments reveals the importance of the link with the territory, ignored by the zootechnicians but well known to the herders.

Mongolian and Buryat pastoralists know that recently acquired animals often try to go back to the camp of their former owner. They are said to be animals which "run" (Mongolian *güideg*) and that try to reach their "homeland" (Mongolian *nutag*). This behavior is found among horses, camels, and cattle, but it does not affect small stock. Some techniques exist to acclimatize an animal that runs to its new location, such as temporary containment or the binding to a fellow animal. To avoid repeatedly going after the runaway animal, the new owner may let it remain with its former owner and fetch it only in case of need. The act of running can also affect a whole group. In this regard, a Mongolian camel herder explained how, during an unusual migration of hundreds of kilometers that was initiated after the heavy snowfall in 2000, part of his herd ran away to go back to the province they had just left.

In Kamchatka, the Eveny herders specially preserve old reindeer females from slaughter because of their leading role: as holders of the spatial memory of the herd, they tend to drive reindeer to familiar places where the herders will easily find them. By contrast, when the herd is moved to a new migration route, they will be preferentially slaughtered to let the herd learn the route. This was the case for the fifth brigade, which used to migrate around the Krutogorova river in 2000. The hiring of a new brigade chief in 2005 who was unfamiliar with the territory led to the loss of more than 500 reindeer (out of 1,100) because of his inability to find his way and predict the reindeer moves. The herd was thereafter displaced to the Saichik region, which was well known by the brigade chief. It was necessary to slaughter old females to prevent them from bringing the herd back to the previous route so that the herd could get to know this new territory. This case of difficult ad-

justment attests to the essential complementarity of human and animal knowledge in relation to shared territory.

Relying on the Animal Memory

Herders give great attention to animals' landscape perception, sometimes ascribing them perceptive abilities higher than those of humans. When a reindeer herd walks round in a strange way when arriving at a new camp, Tozhu herders consider they must leave, because the place is inhabited by spirits. Taking animal perceptions seriously is not simply a matter of religious belief; it is also a key element in the nomadic human-animal association.

Dwyer and Istomin (2008) demonstrated that the decision to migrate in Arctic reindeer breeding is not only a matter of human will but also the result of tightly meshed human and animal factors. Indeed, environmental parameters, such as the state of pastures and weather change, are not assessed by humans but by reindeer. The herders migrate when their reindeer tend to move spontaneously toward the next camp (Dwyer and Istomin 2008). This analysis is widely confirmed by our observations among reindeer herders. For Tozhu herders, the first reason to change campsite is that their reindeer no longer stay in the same place. In Kamchatka, in early spring, the reindeer begin to "pull" from the plateau where they graze lichen and move toward the valleys in search of new shoots to vary their diet. Herders see from this behavior that the time has come to migrate. However, they also have to take account of logistic imperatives in their decision, so they will effectively migrate only when the winter equipment (e.g., cast iron stoves, skis, and snowmobiles) has been helicoptered away and when horses have been recovered from their winter pastures.

Among the Mongols and Buryats, seasonal moves depend mainly on climate and pasture quality. The precise moment of the move can be determined by animal behavior. Buryat herders assert that, close to the moment of the migration, cows graze increasingly toward the destination site, to which they eventually move of their own accord. Depending on the environmental conditions, the herders follow them shortly after or bring them back if they deem that it is too early. Sheep behavior, although less decisive, is also taken into consideration by the herders: sheep indicate it is time to reach the wintering area by clustering together at night (Chabros and Dulam 1990:2), show signs of restlessness during the days preceding the nomadic migration, and are quieter after migrating, which is an indicator, according to herders, of their need to migrate.

Animals play an active part in the pastoral mobility system thanks to their spatiotemporal memory of the yearly itinerary, a memory herders are fully aware of. The migration route as practiced by the Kamchatka Eveny reindeer herders is annual, with some pastures more targeted at winter stopping places, others at summer stopping paces, and some at the calving place (Fossier 2013). From one year to the next, minor variations are adopted to allow the renewal of the pasture (for about two or three years). The herders explain that stable routes facilitate the herding tasks, because reindeer are bound to the itinerary and barely move off track. Among the different herds, the one whose route is the most stable, unchanged since the Soviet period, is the quietest, and the reindeer accept to walk a few meters from the humans during the herd driving. In other herds, when herders want to come near, the reindeer gather and sometimes begin to walk in circles, as they would when facing a predator. Therefore, a high level of spatial acquaintance limits the use of constraints and favors familiarity between humans and animals.

However, according to the herders, all the herds memorize their routes, or at least the key locations, in particular the calving place. This is confirmed by a study of reindeer and herder moves via GPS records in March 2011, just before the calving season (fig. 3). The herd was grazing south of the calving place used five years before on a wide maritime tundra plain. Left unwatched during the afternoon and at night, the herd tended to go toward that calving place, and every morning the herders had to drive them back south, near the camp. Once the decision to move the camp had been taken, the reindeer were set loose and moved spontaneously to the former calving place.

The Tozhu take into account the memorization of places by their reindeer. For herders of small herds (10–20 reindeer), a few stable seasonal places are sufficient, such as the wintering area and calving place, whereas the rest of the route can vary each year. However, from about 100 head of reindeer, it is necessary to follow a fixed route using the same path in spring and autumn. When animals disappear during a migration, the herder knows he will find them at the next camp, because "they are clever, they know the path" (Stépanoff 2012*b*).

The link that brings humans and livestock together in a hybrid community is based on their mutual attachment to a shared landscape, structured by familiar places (see Anderson 2014:20) and by itineraries in which spatialized routines are forged. Yet, repeatedly moving through a memorized landscape leads to an adaptation of this landscape. In the steppe, as in the tundra, herds remove the shrub layer, deposit excrement, trample the soils, and favor the development of grasses where only spiny or toxic "antipastoral" shrubs can subsist (Riehl 2006). In Yamal, repeated migrations of large reindeer herds create broad corridors that, in turn, facilitate grazing for the reindeer and the progression of animals and sledges. The latter leave the ground rutted, forming bundles visible on satellite imagery (Forbes et al. 2009). In the taiga, humans and herds find their way thanks to a structured network of paths adapted to the needs, memory, and preferences of animals and their herders (Shirokogoroff 1935:69).

In this way, the landscape records the shared memory of humans and animals and strengthens it by materializing itineraries. By reciprocally adapting, herds, humans, and the

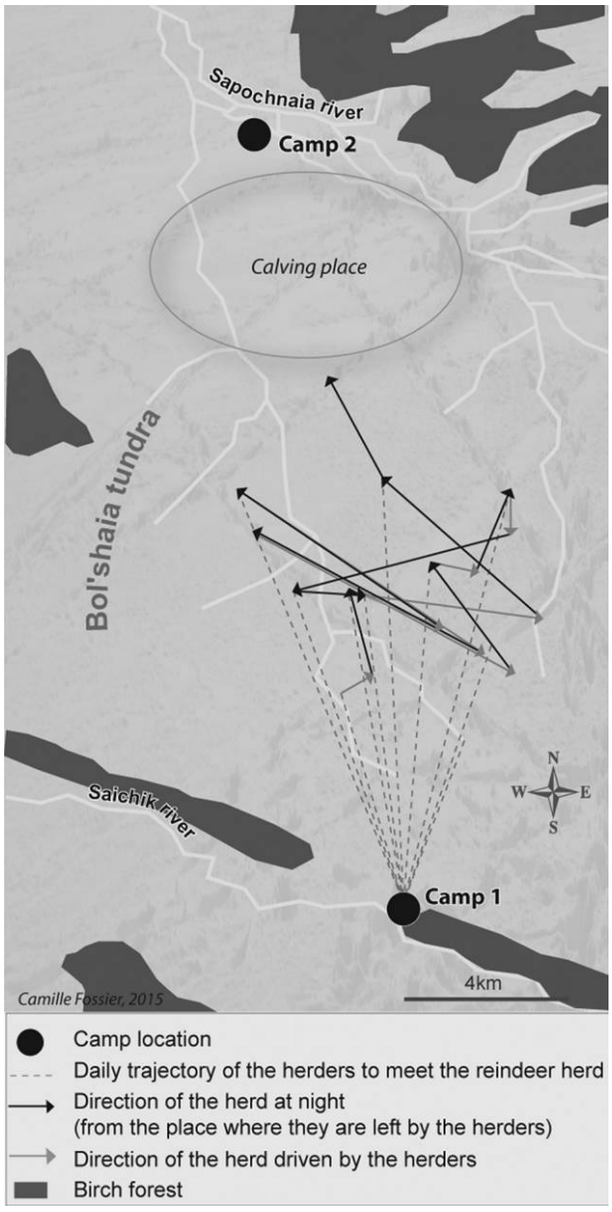

Figure 3. Daily GPS records of reindeer herd and herder movements in Kamchatka. By themselves, reindeer tend to move in the direction of the calving place, and the herders redirect them toward the pastures surrounding camp 1.

landscape stabilize their triadic association via a set of feedback loops.

Individuation, Cooperation, and Herd Sociality

North Asian shamanic traditions devote considerable attention to the diversity of individuals and to the presence of uncommon singular beings within living species, including livestock (Stépanoff 2015). Therefore, the herders do not perceive their herds as an undifferentiated mass of food on the hoof but as a social unit made up of individualities united by relations of descent, friendship, and hierarchy.

The herders appreciate the physiognomic diversity of the individuals within the herd, which has several practical advantages. A herd with various colors is more easily detected remotely and is less likely to be lost. Moreover, the variety of coats helps to describe and easily identify the individuals sought within a herd. The herders develop and encourage among their children an impressive capacity to memorize all the members of their herd individually "by their face." This individual memorization helps herders to notice the absence of certain animals in a herd of several hundred heads without even counting them.

The herders are also attentive to the individual psychological characters of animals. The Tozhu distinguish violent (*karzhy*, *dezig*), soft (*chaash*), or wary reindeer that run away like wild reindeer. "It is like among people," a Tozhu explained to us, "there are very rough people, some are soft. A soft reindeer, as soon as you give him some salt, comes without saying anything." Most of the Tozhu reindeer have a name, whereas among the Sebyan-Kyuel Eveny, only tame working reindeer are named, while animals of the main herd are not. In North Asia, working animals usually have a name, but naming can be broader: in certain Mongolian families, sheep, goats, camels, cows, and horses each have a name, which in some cases implies memorizing a thousand names.

Interspecific Cooperation

Herders engage certain animals in cooperative tasks, joint actions where human and animal participants coordinate and adapt reciprocally in pursuit of a common purpose. This purpose can be to move places, to capture another animal, or to participate in milking (which relieves females). For instance, cattle come back to the camp for milking, and in the Gobi, once the first goats have been tied up for milking, the others put themselves in a head-to-tail position to be tied up and milked.

The herders consider that riding animals, selected for their physical qualities and their tameness, understand the purpose of joint actions and demonstrate capacities to take initiatives and to cooperate, on which they can rely in daily tasks. Reindeer are the most widely used means of transport among the Eveny herders of Sebyan-Kyuel all year round (Bureau 2013). Riding a reindeer requires balance and mutual coordination. To sit on the animal, the rider raises himself slowly on the right-hand side of the reindeer, holding in the left hand the rein and leaning on a stick with his right hand. Once seated, he has to tighten his thighs, use his legs as pendula, and vary the inclination of the bust according to the animal's movements and the topography. He directs his reindeer with the rein and controls the pace by gently kicking the animal's flanks, as well as hitting its rump with the stick.

Once the direction is chosen, the rider leaves a certain freedom of movement to the animal to avoid tiring it. From then

on, the rider can carry out other tasks: discuss, smoke, listen to some music, or look for tracks. The riding reindeer plays an active role during the operations of rounding up the herd: it slowly approaches animals liable to move away and stops a few meters from them, while the rider can be busy with another task. This operation draws the attention both of the rider toward the straying reindeer and of the reindeer in question toward the rider. The rider takes advantage of this to redirect the targeted reindeer by a shout. However, mounts are not always cooperative, and the rider can strike his reindeer when it refuses to obey.

The Mongolian riders also rely on their mounts' ability to take initiatives in daily situations. A good horse breaks into a gallop when leaving the camp and slows down when approaching a yurt. This autonomy of the riding horse is particularly valued in the case of decreased vigilance: an intoxicated rider who is unable to give indications to his mount is carried back to the camp by his horse, which knows the way and makes sure that its rider does not fall off by counterbalancing his unstable movements. Should the rider fall off, the horse will graze beside the man, waiting for him to get back in the saddle. The most eloquent case of rider-horse cooperation is given by the lasso-pole horse (*uurgach mor'*). This horse is used when a herder wants to capture an animal with a lasso-pole (*uurga*), a long wooden pole with a leather loop at its end. The role of the horse is to assist its rider in this operation. According to the herders, the lasso-pole horse has to understand which horse is the target and to follow it by itself. Sometimes, the rider drops his reins to concentrate on the pole. The riding horse is guided by other signs, such as the movement of the rider's legs, the direction of the pole, and the rider's posture in the saddle, by means of which the rider communicates, consciously or not, the orientation of his body and thus his gaze (Marchina 2016). Once the loop is attached around the neck of the targeted animal, the lasso-pole horse stops by stretching out its forelegs and folding its hind legs under its body. The rider can then anchor himself in his saddle and stop the captured animal. This cooperative interaction is complex, because the sequence of actions and movements is fast and requires considerable coordination to avoid falls and injury.

Consecrated Animals

Throughout North Asia, an institution sanctifies individuality within the herd: the consecrated animal. The herders select from among their herd an animal with salient physiognomic or psychological features and dedicate it to the spirits during a consecration ritual (Charlier and Stépanoff 2013).

Among Mongols and Buryats, the consecration ceremony may be Buddhist or shamanic. The consecrated animal is preferentially a horse, but camels, cattle, sheep, or goats can also be dedicated. Consecration (*seterlekh*, from *seter*, the ribbon which is tied to the animal after the consecration) is often a response to a health problem afflicting the herder. The initiation of the consecration comes from a ritual specialist, during a previous consultation, or sometimes from the herder himself. The specialist indicates the selection criteria, which generally concern the coat, in order to find the appropriate animal. Most of the time, the animal is a castrated male.

For consecration, Mongolian herders select a horse having similar physical characteristics, such as a racehorse. It is considered a "powerful" animal (*khüchtei*). Once consecrated, the animal should not be touched, a fortiori slaughtered. It is deemed to be the riding animal of the spirits, who are thought to be delighted by this consecration and to grant luck and prosperity to the herders and their herds.

Among the herds of the Eveny in Sebyan-Kyuel, one reindeer has a specific status: the *kud'ai*. This animal, generally a white entire male reindeer, protects the herd but also the herders and their household (A. A. Alekseev 1995:63–71). Most of the time, it is chosen by the head of the household. Once designated as such, the animal will be used neither for riding nor as a draft or pack animal; furthermore, it will also not be castrated, its antlers will not be cut, and its flesh will not be consumed.

The Tozhu also consecrate a particular reindeer, called *ydyk*, "sacred." "Its differences will be a privilege," as the herders explain. They assert that the consecrated reindeer watches over them and protects them, whereas they themselves hardly ever watch over or protect their herds (Stépanoff 2011).

The institution of the consecrated animals is particularly revealing: its extension from Mongolia to the Arctic attests strong homogeneity in North Asian herders' conceptions of livestock. Herders insist on leaving one particular animal unused among their domestic herd as a living connection with the wild nonhuman world. One of the main functions of this animal is to "protect" the household, both in its animal and in its human dimensions. Therefore, the relation of protection does not necessarily imply a unilateral human domination over animals: for herders themselves, it can be reciprocal.

Role of the Herd's Social Organization

The attention to individuality and the creation of personal bonds with certain animals result in a "differentiating familiarity" of animals (Takakura 2010). The presence of very tame animals facilitates the control of the whole herd by the herders (Vaté 2007), as they often occupy the position of leader.

Generally speaking, acknowledging the herd's social organization is an essential element in its management. Although, in the Mediterranean world, shepherds castrate and specially train animals that will endorse the function of leader (Tani 1989), North Asian herders try, rather, to strengthen the social status of animals already demonstrating both the authority of a leader and familiarity with humans. Acting on or attracting the leader is therefore equivalent to doing the same with the whole herd.

Tozhu herders strengthen the position of leader (*bashtanchy*) of certain old females by fitting them with bells with different pitches and by teaching the young fawns to follow the sound of their leader's bell. Selected leaders are familiar

females prone to come regularly to the camp. Fearless males, which deter wolves with their antlers and their hooves, are valued. Their position of dominant male is made indisputable by the castration of the other males, used for work.

The Mongols, as well as the Kamchatka Eveny, gather a "harem" of 10–20 mares accompanied by their foals around an experienced stallion. The stallion leads its group to pastures and is able to defend it against wolves by using its hooves. Entire Mongolian camels, with big canines, prove to be very violent during the rutting season (January and February). They protect their herd from predators and dissuade other entire males as well as humans from approaching.

Between Autonomy and Cooperation: Intermittent Coexistences

North Asian herders ascribe contrasted levels of intelligence to and demonstrate unequal consideration of their diverse livestock species. In Mongolia, horses are regarded as clever because of their bond to their homeland, whereas sheep are said to be the less intelligent domestic species. A Mongolian herder explained: "Sheep are stupid; they do not know their home. Goats do know. If we did not put goats among sheep, sheep would walk straight and never notice that they do not return home." Horse skulls receive a funerary treatment, which is not the case for sheep skulls. The ascribed intelligence may depend on herding techniques and on the degree of autonomy they grant to the animals. In the Tozhu husbandry system, herding techniques rely a great deal on animal autonomy, and herders state that reindeer are "smart like people." By contrast, in Eveny husbandry systems, more marked by Soviet inheritance in Sebyan-Kyuel as well as in Central Kamchatka, human control and supervision are stronger, and it is no surprise that herders consider most reindeer to be unintelligent.

Generally speaking, intelligence in herders' interpretations seems closely connected to the animals' capacity to find their way around the landscape to appropriate places and follow familiar routes, as well as to feed and protect themselves spontaneously. This is why wild animals, overall, are deemed more intelligent than domestic ones, and among the latter, the most valued are those demonstrating environmental skills closest to those of wild animals (insofar as the herding technique gives them the opportunity) while remaining inclined to engage with humans in cooperative tasks. Wild behavior is often valued: Mongolian riders possess several mounts so that each one can regularly integrate the herd and recover ardor and vigor. Ferret reaches a similar conclusion concerning the Yakut: "Domination over the animal leaves them apparently cold. They pride themselves on its wildness and carefully preserve its independence" (Ferret 2010:312). That is why the Yakut prefer "discontinuous" herding actions rather than a "continuous" kind of control (Ferret 2010:312).

It appears, then, that in their conceptions as well as in their practices, North Asian herders grant high value to two potentially contradictory qualities among domestic animals: autonomy and disposition to cooperate. The herders endeavor to maintain a balance between the periods of separation and the periods of control by avoiding two risks: on the one hand, autonomy may result in a loss of contact (animals becoming wary and feral), and on the other hand, too close a control may result in a fusional dependence (animals requiring constant care). In the case of reindeer, the necessity of this balance is sharpened by two concrete threats: excessive autonomy exposes the herd to the external threat of the predators and the call of wild reindeer, whereas excessive concentration under human watching triggers the internal threat of the spread of epizooties (Stépanoff 2012*a*).

Symbiotic fusion is deemed undesirable: livestock animals must not become family members or pets. For the Khakas, it is no less forbidden to have a tender and caressing attitude with livestock than to beat them (Butanaev and Mongush 2005:92). For Mongolian herders, an excessive attachment would make their slaughtering too painful. As Fijn points out, herders prefer their animals to remain "not too closely bonded to humans and reliant on them for survival" (Fijn 2011:132). Although tamed wild animals are treated as "children" in the Siberian world,[1] the ideal treatment of domestic animals seems to be rather a matter of "companionship," a mode of relationship that brings together, in temporary cooperative interactions, participants who retain their autonomy the rest of the time (Safonova and Sántha 2013). We mentioned above that, in the epic, the relation with the mount is precisely described as a relationship of friendship or companionship.

Ingold used the term "dual allegiance" to describe the balance by which reindeer are incorporated both into their own society and into human society (Ingold 1980:99). Companionship, dual allegiance, and temporal discontinuity all represent different facets of one specific mode of human-animal relationship we would describe as "intermittent coexistence," to underline its temporal dimension. Indeed, one of the major recurrent characteristics of the various husbandry systems we observed is the alternation of modes of herding based on human control and modes relying on animal autonomy. Mongolian camels as well as Tozhu reindeer alternate between intensive working periods, during which they are tied up and not fed, and periods of complete autonomy. In our different fields, we found this amazing capacity of animals (horses, reindeer, camels, cows, and goats) to shift from one sociality to another: at first running away from the humans looking for them, the animals surrender once tactile contact is established and become cooperative when they engage in the work or in

1. Among the Ket, Selkup, and Nivkh, parents could replace a child by a tamed bear cub, which was treated as a "son" or a "daughter," and if necessary, women suckled these adoptive children (Alekseenko 1968; Kreinovich 1973:180; Levin and Potapov 1956:669, 873). This kind of treatment is similar to the "adoptive filiation" applied to tamed wild animals in the Amazonian world, according to Carlos Fausto (Fausto 1999).

the milking. This sharp alternation of interspecific sociality with humans and internal sociality within the herd, summarized by the notion of intermittent coexistence, is one of the salient features of North Asian herding.

Breaks in the Socialist Period

In the socialist period, the State and the zootechnicians undertook a policy of modernization of North Asian animal husbandry activities, considered primitive and ineffective. With regard to herd management, the native attitude of laissez-faire had to be replaced by a rationalized and productivity-oriented technology (Stépanoff 2012*a*). As a result of the imposition of sedentary lifestyles and population displacements, the landscape lost, in many places, its role of common ground. Furthermore, new breeds were introduced, selected for their productive capacities rather than for their adaptation to the North Asian biotopes. These changes called for the introduction of heavy herding technologies (hay cutting, fish meals, warmed barns, and huge enclosures) and the generalization of watching (*upravliaemyi vypas*, meaning controlled grazing around the clock; Humphrey and Sneath 1999:12; Stépanoff 2012*a*). In numerous cases, the social organization of the herd guided by experienced leaders was eliminated by the separation of animals into age groups (in the case of Yakut horses, see Takakura 2015:123–137). In the same way as children were separated from their parents by the school system at the same period, the young animals were separated from their mothers, making it impossible to transmit environmental skills. The principle of autonomy was replaced by a principle of dependence and centralized control.

In the case of the Buryats and Mongols, the collectivization and the division of labor in herding led to a high degree of specialization. Each production unit was specialized in not only one species but even one category of age and sex. Some sheepherders were specialized in the breeding of reproductive rams, year-old ewes, reproductive ewes, and so on. From then on, every herd had only a single function (e.g., production of meat, wool, or young), and the tasks and skills of herders consequently became specialized (Humphrey 1998:232). In Mongolia, this system collapsed at the beginning of the 1990s, giving way to the generalization of a domestic kind of herding with the "five muzzles" combined. In Buryatia, by contrast, state farms remained in the form of cooperatives. Nowadays, Buryat herders belonging to a cooperative specialize in the breeding of one category of animals of one species. They nevertheless mix these animals with their private livestock of various species, which provides them with the main part of their subsistence.

In Central Kamchatka, the traditional use of reindeer for transport (riding, pack, and draft) was abandoned during the 1980s under the influence of Soviet modernization, which was intended to give rise to a meat-production-oriented husbandry. Snowmobiles completely replaced sledges in winter. They are used for carrying resources and sometimes for driving the herds. This mechanization of animal guarding is considered inappropriate by the old herders, because it entails a loss of autonomy among the animals, which are chased away by the snowmobiles instead of being led by gestures and voice. Facing the industrialization of reindeer herding, the Eveny tend to transfer the relational mode of intermittent coexistence toward another species, the horse: horses now assume the role of mount and are herded according to a mix of attraction and seasonal freedom used for reindeer before the generalization of continuous supervision organized by the Soviet zootechnicians.

Conclusion

Protective domination and symbiosis, which both imply reciprocal dependency, are not the leading principles that guide and inspire North Asian indigenous herders in their relationship with their herds, neither in their conceptions nor in their practices. Herders exert close control over animals only when necessary, as a last resort; otherwise, the functions of driving, food supply, and protection are often endorsed by the animals themselves (namely, by experienced female leaders or dominant males). This frequent animal autonomy is possible because herders acknowledge the animals' perceptions, desires, preferences, and memory. They appreciate, encourage, and take advantage of a balance among the animals between, on the one hand, an autonomy founded on environmental skills and animal social organization and, on the other hand, a disposition to readily engage in cooperation with humans. The common ground on which the interspecific link between humans and herd is built and maintained is a shared nomadic landscape: a range of familiar places, routes, and spatial routines. The balance between autonomy and cooperation is maintained by an alternation between control- and autonomy-centered modes of herding that gives rise to a specific mode of relation: intermittent coexistence.

In other parts of the world, domestication often resulted in a loss of animal autonomy, leading to a decline in the animals' environmental skills and spatial cognition, accompanied by a decrease of their brain size and other morphological changes (Zeder 2012). Strikingly, this "domestic syndrome" appears far less dramatic for North Asian domestic animals: it is well known that domestic reindeer have no significant phenotypical differences from their wild counterparts, but in North Asia, other livestock species have also preserved, although to a lesser extent, numerous morphological and cognitive features in common with their wild cousins (Fijn 2011:23–28). Is this morphological closeness to wild species an evolutionary consequence of the principle of autonomy in indigenous herding techniques? The particular characteristics of domestication in North Asia suggest a specific man-animal coevolution, divergent from that of Near-Eastern domestication, a topic that diachronic studies should explore further.

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Comments

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North Asian social landscapes had fuelled European social imaginaries for centuries, up until the relatively recent socialist revolutions unexpectedly made them recede. The members of this authorial collective, with their wide-ranging and detailed overview of hunter/herder societies in eastern Eurasia, aim to bring North Asian herders back into anthropological debate. They have chosen the recently reinvigorated debate on domestication as their platform. They make a powerful argument by fusing together, into the same camp, contributions not only by Hamayon, Ingold, and Descola on protective domination but also by proponents of social symbiosis. They astutely note that both meld humans and animals into a dyadic dependence that leaves out the important common ground of a shared nomadic landscape and the discontinuous details of an intermittent coexistence. They suggest that our current understandings of domestication leave out an appreciation for animal autonomy.

I fully support the project of citing North Asian hunter/herders into the wider debate on political ecology, but I wonder whether the authors are not overplaying their hand with their schematic list of five separate modes of coexistence, each ratcheting up the degree of control of humans one step higher. To those steeped in cultural evolutionist accounts, the examples they give of domestic animals sometimes having complete freedom to self-provision may seem unexpected. To ethnographers of the region, however, these discrete modes themselves seem oversubscribed. All of these techniques are often employed by hunter/herders in the region regularly and not in temporal succession. Furthermore, their tabular scheme, ironically, takes its structure from the same dyadic stereotypes of freedom versus control. Just pulling one extreme example from their list—captivity—I would argue that enclosures, or fences, can often serve as communicative devices rather than instruments of confinement. Within taiga Evenki pastoralism, for example, corrals cannot truly be said to be confining, because they are employed for only a few hours and are often made tolerable through the use of smoke and salt. They are continuous with the other would-be modes. Similarly, the other extreme, complete seasonal freedom, would be absolutely unworkable if it did not involve some level of checking and watching or an expectation that nonhuman herding entities, such as snow cover or mosquitoes, can be enrolled to do some of the work for the human hosts. Rather than breaking human practices up into separate bundles, as if they were so many hypotheses to be measured and tested, it would be sufficient to note that people employ a wide variety of techniques on animals that often work alongside the hopes and intuitions of the animals themselves.

One also wonders about the degree to which this respect for autonomous and reflective animal wards is exclusively a North Asian phenomena. Would one not expect a cowboy tending cattle herds in the fenceless uplands of the British Columbian Cariboo to do the same? For that matter, Vicky Singleton (2012) documents how industrial cattle farmers in northern England attend to the sense of autonomy and initiative of their tagged and fenced animals. The contributors tell us that the Cold War prevented outside ethnographers from documenting these North Asian autonomous relationships (or, alternately, that Soviet zootechnicians beat the autonomy out of their animals). However, this is likely also overstated. Throughout the Cold War, fieldwork-based ethnographic accounts of these regions were published in translation, although they were often dismissed or abridged for political and ideological reasons (Anderson and Arzyutov 2016). Soviet industrial pastoralism, with its helicopter-borne marksmen, sacks of chemical feed, and tyranny of counting, undoubtedly strained these relationships—but not to the degree that neoliberal markets have done. The five modes lack a political, economic, and ecological context.

The problem, therefore, seems to be not the lack of reliable ethnography but the clumsy expectations that we hang on terms like domestication. I agree with the authors that the vast majority of our definitions imply that to domesticate is to transform a creature into a radically different natural type that is subservient and extremely reliant on human attitudes of care. There is likely a deep political culture that lies behind this conviction, and it would be interesting to investigate how it became so powerful. However, it is a bit unfair to export this stereotype to North and Inner Asia and then conclude that it is inappropriate. The authors have given us a very rich summary of the cosmological expectations of North Asian peoples—something that this particular research group excels at. However, missing is an analysis of regional scientific accounts, which are also richly ambiguous, starting from the standard, somewhat musty Russian word for domestication, *priruchenie* (literally "bringing to hand"; Bogdanov 2011), to an intense early-Soviet interest in the domestication of animals that mixed together neo-Lamarckian theories of how physical form reflects

an ecology of practice—a model that values animal agency (Vavilov, Bogo͡liubskiĭ, and Lus 1933). All of these literatures have their limitations, and each is not particularly well-grounded in the views of local indigenous peoples. However, they are nowhere near as prescriptive as the protective domination thought to have driven the Neolithic revolution.

The closing pages of the article are different and enticingly unique, although the ethnography here is spread thinly. In the conclusion, the authors argue that what is seen from the outside as autonomy is possible because of the acknowledgement of the animals' perceptions, desires, preferences, and memory. The role of animal memory in building a nomadic landscape is given great credit, especially as reassuringly documented through GPS mapping. But here the GPS does not record the human participants who hint at, cajole, or nudge animals toward these habitual routes. Rather than suggest that stereotypical forms of domestication through domination are exercised in this region discontinuously and sporadically but are essentially the same as in all other contexts, I expect that the success of these self-limiting models is linked to animals and herders working together to appreciate their home landscapes together.

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Charles Stépanoff, Charlotte Marchina, Camille Fossier, and Nicolas Bureau argue that none of the existing anthropological theories, such as the ones discussing producer and products, human domination, and the biological notion of symbiosis, fully demonstrate human-animal relationships in North Asia. They propose an alternative interpretation, "that North Asian herding systems maintain a balance between two possibly conflicting tendencies: animal autonomy and animals' disposition to engage in cooperative interaction with humans." They accurately claim "North Asian peoples do not represent animal husbandry as the result of a conquest that allowed humans to establish their domination over animals, as in Western conceptions of the Neolithic revolution." Moreover, different examples they present show "herders do not treat their animals as consumable goods [and objects] over which they have an absolute right of life and death." This claim makes a valuable contribution in accurately understanding the human-animal relationship in North Asia. Releasing animals from the reductionist position of product, good, and object enables the authors to persuasively develop their idea of animal autonomy in North Asian pastoralism. All of the four authors' ethnography shows that, across North Asia from Mongolia to the Arctic, herders do not always watch, check, and keep animals; instead, they also leave animals free (seasonal freedom, one of the five modes of herding) and unattended, and they spend more time in "seeking" those animals than in "keeping" them. This is what they call "frequent animal autonomy." I argue that this is autonomy mostly in the understanding of the scholars rather than herders. In the following, I will demonstrate why herders sometimes leave some animals unattended and how they continue their control without watching and being there in person.

Many herders do not intend to grant autonomy and cease human domination over animals when they leave animals free. The concept of animal autonomy can be absent from the languages of North Asian peoples. In other words, this mode of herding does not have much to do with granting autonomy. The theoretical discussions of domination, symbiosis, and autonomy are Western academic constructions. Instead, herders, at least in Mongolia, consider animals' *targa* ("fatness") and *khüch* ("strength") to be the most important priorities, rather than the granting of autonomy. Different types of livestock have different ways to gain weight and strength in different seasons. The general division lies between *urt höliin mal*, literally meaning "livestock with long leg," and *bogino höliin mal*, meaning "livestock with short leg." The former refers to horses, camels, and cattle, whereas the latter refers to sheep and goats. The length of the leg indicates not only body structure but, more than that, the size of the land needed to graze. Compared with sheep and goats, horses, camels, and cattle graze in much larger areas, and this is much better for them to gain fatness and strength. In terms of labor, it requires great effort to constantly follow horses and camels that travel dozens of kilometers for grazing. Therefore, especially for households with a limited labor force, it is common to leave horses and camels unattended for certain periods of time with no immediate watching. However, this does not mean that control, checking, or domination is absent and that livestock are being autonomous. Herders often inquire about unattended livestock and discuss with neighbors and with visitors, in the course of their everyday lives, to locate the unattended livestock. Besides inquiring, on the basis of their experiences, herders can always anticipate the location of the livestock by considering the behavior of the animals, the weather, the time they travel, and so on. In this way, herders do not start seeking the livestock when the animals are missing; instead, the herders are in a constant state of controlling by inquiring and anticipating.

Therefore, in my view, seasonal freedom and other forms of unattended herding are different types of control—not by physically and immediately watching in person, but by remotely and indirectly controlling, which questions the argument about animal autonomy. In fact, animals are not autonomous, because their autonomy is under the indirect control of man. The term autonomy is not the best fit to demonstrate the human-animal relationship and the particular state of animals in which man continues to exert overall control and domination over animals in different ways. Here, in the article by Stépanoff and colleagues, the use of the word autonomy needs further explanation as to what it means in the context of human-animal relationships in North Asia. By say-

ing this, I am not in a position to disagree with the authors' argument against the existing anthropological theories. I do not acknowledge the conventional anthropological theory of human domination over animals. I think the problem is not in how the human-animal relationship works but in the way anthropologists present and describe it using different analytical terms, such as domination and autonomy. In my reading, the term autonomy is intentionally used in this article against the term domination, rather than serving to produce a coherent demonstration of human-animal relationships in North Asia. The concept of domination is a Western philosophical and academic construction, always engaging repression, coercion, opposition, resistance, and struggle. For example, Max Weber writes of "domination in the quite general sense of power, i.e., of the possibility of imposing one's own will upon the behaviour of other persons" (Weber 1986:29). Eric R. Wolf writes that "the enactment of power always creates friction—disgruntlement, foot-dragging, escapism, sabotage, protest or outright resistance" (Wolf 1990:590), a panoply of responses well documented with Malaysian materials by James Scott (1985) in *Weapons of the Weak*. Cultures of North Asia have a different mode of domination; not necessarily "imposing one's own will upon the behaviour of others," including animals, but instead, in the case of animal husbandry, managing control by relying on the natural and spiritual ways that things work. In such a mode of domination, the relationship is more about managing than oppressing and harassing. This also does not mean that the human-animal relationship is symbiotic, in the sense of equality. There is a hierarchy in Mongolian cosmology that places humans at a higher rank than animals. I argue that the concept of managing is a better analytical tool to describe human-animal relationships in North Asia.

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The theme of control in human-animal relations and in the process of domestication is not reflected enough in anthropology. The article by Stépanoff and colleagues addresses questions that have received a lack of attention from researchers. Even though recently the theme of domestication has been discussed in a number of seminars and conferences, there is still a lack of ethnography and theoretical discussions devoted to this problem in the anthropological literature. This article raises a number of new aspects, such as the memory of animals, and tries to address the questions to the readers. It is rich in ethnographic examples from different regions of Siberia and suggests interesting comparative materials. Nevertheless, many problems were not discussed. An interesting question to investigate would be the role of architecture in a domestication process as well as a comparison of taiga and tundra reindeer-herding strategies.

The article lacks reflections on ethnographic sources from the nineteenth and twentieth centuries, which actually raised many of the questions that were discussed in the text. For instance, the authors give some examples from Shirokogoroff's work, but they do not mention the contribution to the theme made by the classical ethnographic works of Middendorf (1878), Bogoras (1904–1909), Laufer (1917), and Charnoluskii (1931), where they discuss the questions of reindeer domestication and describe it as a process, rather than something fixed. For instance, Bogoras (1904–1909) stressed the role of ethnic environment in the domestication process; he mentioned the difference between the habits of Tungus and Chukchee reindeer. Charnoluskii (1931) raised the question of the role of structures in domestication of reindeer. Finally, it is necessary to mention that, more than a hundred years ago, Kropotkin (1902) developed an idea of coevolution that was later transformed into the idea of symbiosis by biologists and ecologists. Later, the notion of symbiosis was borrowed by anthropologists.

The use of the term autonomy seems to be problematic in the context of human-animal relations, because it poorly describes what we can call the high degree of animal agency. Actually, the dog or cat in a flat in the city has a large degree of autonomy as well, especially when an owner periodically leaves animals alone. At the same time, reindeer herders interact with predators, the border between the wild and domestic reindeer is not so strict, and the terms wild and domestic can be used in different contexts (Sirina 2012:488). For instance, Evenkis used to interbreed wild and domestic reindeer (Kharinskii 2010:191) and call a calf born from a domestic mother and a wild father *beiunchikan* (Evenki).

In the case of human-animal relations, reindeer have much greater freedom of movement compared with cattle. Reindeer herders always reflect on the movement of domestic animals and predators and take them into consideration when organizing camps or moving from place to place. They are sensitive to reindeer needs. However, these processes do not present animal autonomy. They rather show the reflective character of relations that are not based on protective domination. Sensitivity and reflexivity are probably better terms to use.

Actually, the concept of autonomy, to a certain extent, expresses almost the same idea that was suggested by Ritzer (1996, 2011) in his McDonaldization thesis. The model based on a concept of autonomy is pretty similar to the idea of a fast-food restaurant where customers, instead of waiters, perform many tasks on their own; this creates an image of a kind of rationality where reindeer herders allow animals to feed and protect themselves rather than fulfilling these important tasks for them.

In many places, the authors of the article list different examples from the field and ethnographic literature to support their argument. For instance, they write that herders demonstrate "surprising reluctance to struggle against wolves" and cite

the taboos that forbid the shooting of wolves among different groups. It is true that many ethnographic sources stress the respect given to wolves. But the way people speak about the wolves is often in the context of an ecological balance. In cases in which wolves take a small number of animals, reindeer herders may not shoot wolves, because they believe that the wolves kill weak and sick reindeer. I witnessed that northern Baikal Evenkis blamed reindeer rather than wolves when animals returned to a camp wounded. However, in cases when the population of wolves increases, they may try to use different methods to exterminate the wolves, including poisoning. In this sense, people are tolerant of the presence of predators only in the situations they are actually able to control.

Even though this article stresses the disadvantages of the analytical models that are based on dyadic relationships, it suggests a new dyadic scheme, representing North Asian herding systems as maintaining a balance between two conflicting tendencies, such as animal autonomy and animals' disposition. The authors suggested five modes of herding that can help us to analyze particular strategies of reindeer herding, but they do not include many other possible strategies, which can be approached as separate modes as well. For instance, these modes may potentially include the use of specially educated reindeer herders' dogs (*olenegonnaia sobaka*). In practice, these modes are always intermixed; there are no reindeer herders who rely on just one of them. Moreover, it is difficult to separate these modes from each other, because they can easily overlap. Let me give an example. Captivity implies the creation of structures such as fences (*gorod'ba*). Watching the physical condition of the fences is very important for Evenkis from southern Yakutia to observe predators' movements and to see a moment when the herd should be driven to a new place, rather than kept enclosed in one place. In this sense, captivity will always imply watching and can give animals an opportunity to be the agents themselves. In case of breakages, Evenkis do not reconstruct broken fences with the use of iron wire, but they often make repairs very fast, as if they want animals to break the fence in case they do not want to stay inside anymore. Therefore, it is difficult to agree with the statement that, in seasonal freedom, attraction, and checking, most functions are taken on by the animals themselves, whereas watching and captivity mean the domination of human intervention and control. For instance, the use of smudge fires and sounds by people to attract animals is certainly not a function made by animals themselves. These strategies are intentionally used by reindeer herders to attract animals. In the case of watching, the auditory dimension, when reindeer herders try to hear the sound of bells, is important as well. Captivity may include not just the use of structures but the use of landscape instead of enclosures (e.g., the shores of rivers and mountainous ridges).

In this sense, research on the theme of control in human-animal relations and the process of domestication seems to have a large potential for anthropological research, and the article by Stépanoff and colleagues tries to start the discussion on some related issues.

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I applaud the premise of this article, which provides comparisons between the different field locations of the authors across North Asia. This synthesis of herding techniques is not as prominent in the literature as the more common anthropological focus on peoples' relations with wild animals and hunting in North Asia, particularly Siberia.

An earlier paper by Stépanoff (2012*b*) on "joint commitment" between herders and reindeer is a good basis from which to read the current paper. Within the previous article, Stépanoff emphasizes that reindeer can be domesticated only by retaining elements of independence, autonomy, and wildness. The categorization of the degree of autonomy of the herd animals is an insightful extension within the current paper, as the level of independence of a herd animal does differ depending upon the species and the kind of landscape and according to context. Reindeer herding is perhaps the most autonomous example, because reindeer can exist well without human intervention. It is remarkable that reindeer cooperate and communicate with herders at all.

In my book *Living with Herds: Human-Animal Coexistence in Mongolia* (Fijn 2011), I focused on the significance of the domestic sphere of the herding encampment, as a domus, and on how Mongolian herder and herd animal are codomestic: coexisting and depending upon one another for survival within this sphere. Stépanoff and colleagues extend their focus beyond the domus to encompass relations in the surrounding landscape. During particular times of year, herd animals may have very little contact with humans and may hardly visit the encampment at all. In this sense, the coexistence between herder and herd animal is indeed intermittent. The social relationship, at least in Mongolia, is indeed about the juxtaposition between animal autonomy and individuality, countered by animals seeking to engage in cooperative communication with humans. The authors' use of the term "intermittent coexistence" describes this relationship in the North Asian context well.

There is a need to steer away from the term symbiosis, but for a different reason than the dichotomy indicated by the authors within the paper. Symbiosis is derived from a zoological term and was taken up by archaeologists to describe animal domestication as a counter to a human domination framework. The term is generally used on an evolutionary time scale, in adaptive terms. Ethnographic comparisons, however, relate to social relationships over the time frame of two or three generations at the most. I prefer to think of the coexistence relationship between herder and herd animal in Mongolia as reciprocal, rather than as one of symbiosis or symmetry. To put this social relationship into comparable human terms, the engagement may be reciprocal and codependent, yet not necessarily entail the same level of social status, as one individual

may exhibit the characteristics of a leader or have a tendency to dominate in social situations. This also occurs in cross-species hybrid communities, where the herder tends to adopt the role of leader or manager of the herd.

The authors are right to counter linear evolutionist approaches, particularly those that imply distinct boundaries between the development of hunting and herding in Siberia. The point that reindeer herders and hunters need to locate animals through their skills in tracking is indicative of the blurred line between hunting and herding in the mountainous taiga. A nice aspect of this paper is that the authors are featuring different modes of life and ways of living with animals that are not along the linear progression portrayed by the classic Neolithic revolution perspective of domestication; instead, both herders and herd animals become attuned to the different landscapes and environmental circumstances in each place.

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This very interesting and valuable article aims to challenge what the authors name "the leading anthropological theories," which characterize pastoralism as "a relation of protective domination" of humans over their herds. Although I do understand what the authors are writing about here, and I share their dissatisfaction with the pastoralism-as-protective-domination approach, I would still note that this approach, despite being popular, has never been the only one in anthropological studies of pastoralist economy and ecology. (I do not feel myself qualified enough to say something about the studies of folklore and religion, however.) It could be questioned even if it was indeed the leading one. There can be no doubt that Tim Ingold is indeed a very prominent figure in anthropology and particularly in Arctic and Northern Eurasian studies. However, alternative approaches, direct empirical assessments of and theoretical generalizations about the degree of control the herders impose on their animals, existed also in reindeer herding research. I find it strange that the authors do not cite, discuss, and take advantage of this literature, which could have made their argument much stronger.

Thus, the notion of animal autonomy and human constraint, which provides the basis for the distinction between the five modes of herding in the article, seems to be similar to the notion of herding intensity and extensity introduced and discussed in length by Hugo Beach as early as in 1981 (Beach 1981; see also Beach 1990). It is important to note that the analysis of herding techniques and practices of just one ethnic group—Scandinavian Saami—convinced Beach that any attempt to define discrete modes of herding of the sort the authors are making would be rather futile. Instead, he introduced intensity/extensity as one of several dimensions of reindeer herding, a continuum in which different herding techniques, models of interaction with animals, and ideas about these interactions fall in different places but do not make up distinguishable complexes. If this choice was justified in the case of Sápmi (and I believe it was), it would be even more justified in the case of a much bigger and more diverse region of northern Asia. Indeed, the authors probably feel themselves that quite a number of herding practices do not fall easily into the five modes they describe. For example, Taz Nenets, with whom I have had direct experience, round up their herd and bring the deer to the camp twice a day in summer. The reindeer usually spend a considerable time (3–4 hours) near the camp enjoying relief from mosquitoes. Then the animals slowly walk away, but they are still visible from the camp most of the day, and the herders give cursory glances toward them from time to time to check how they are doing. Is this "watching" or "checking"? What about the autumn, when the herders start to round up the herd once a day? Is visiting the herd once a month (as some Komi herders of Bolshezemelskaya Tundra and the Kola Peninsula do in winter) enough to qualify for the checking mode or is this already seasonal freedom? From my experience, I would say that the practice of finding and rounding up the herd daily and the practice of visiting it once a month are qualitatively different in terms of the autonomy granted to the animals and the knowledge of animal behavior required. However, the same can be said about visiting the herd every month, on the one hand, and leaving it unattended for the whole summer, on the other!

However, nothing of the abovementioned can decrease the value of what I think is the central idea of the article: the idea of "shared nomadic landscape" as the "common ground" enabling the human-animal interaction. Indeed, I cannot overestimate my support for this idea. Again, I do not think that the shared knowledge of territory is the only component of the common ground: in my opinion, the herders' knowledge of the details of animal behavior and their ability to interpret it, as well as the animals' inherited behavioral adaptation to the herders' mode of behavior (see Istomin and Dwyer 2010 for details), also play a role. However, I agree that the shared knowledge and perception of the territory of the sort the authors describe is indeed the central component. I would like to point out only one aspect of the discussion by the authors that I would disagree with. From this discussion, it seems to follow that the herders' control over the animals decreases and the cooperation and trustful interaction with them increases as the extensity of herding increases. In other words, the authors argue that cooperation and trust are minimal in the captivity mode of herding and maximal in the seasonal freedom mode. I believe that this is not true. Indeed, as Tim Ingold and other scholars who have had a chance to directly observe the hyperextensive reindeer herding systems have attested, reindeer are often highly objectified there, and very little trustful interaction between them and human "masters" is going on. On the contrary, reindeer usually try their best to avoid humans, who have to rely on different technical means, like

fences and snowmobiles, to impose their will on the animals. Tim Ingold has found the very apt term "predation" to characterize these relations: there can hardly be any trustful interaction between a predator and its prey. Therefore, I would say that the relation between extensity of herding and the human-animal cooperation is not linear, but rather parabola-shaped: as intensity of herding (or "human constraint," as the authors put it) decreases, the rate of cooperation first increases, reaching its maximum in what the authors term watching and checking, and then decreases again. However, more research is surely needed to clarify this.

Generally, I would like to thank the authors for a very interesting paper, which surely contributes a lot to our understanding of Nomadic pastoralism.

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5 VII 16

My initial impression of this article is that it sheds light on previously unaddressed issues. The concept of North Asian modes of herding is intriguing and suggests an alternate understanding of pastoralism. This reviewer, as someone who has worked on Siberian pastoralism since the collapse of the Soviet Union, has not always been comfortable with the literature of anthropological inquiries on herding and pastoral adaptation in primarily dry environments. The reason was that the arguments on reindeer herding as a type of single-species livestock management and socialist modernization deviated from points common in mainstream research. In this context, the article is a breakthrough in its examination of human adaptability and the anthropology of pastoralism, based on the ethnographical documentation and consideration in North Asia in the 25 years since the end of the Cold War.

The most powerful theoretical argument here is its new perspective on pastoralism as a technique forming "animal autonomy," or more precisely, as a technique of interspecific cooperation between humans and animals "materializing" pastoral landscape or "interspecific common ground." Previous ethnography has emphasized reindeer herding as engaging in less control management than other types. Tim Ingold (1980) described the absence of reindeer herds at camps and posed an important question: "Why, if the herds are wild, do we not find a hunting economy?" Japanese anthropologist Takeshi Matsui (1989) formulated a theory of semidomestication to explain human resource use and adaptation on the basis of the ethnographical status of reindeer as an untamed but domesticated animal. Previous assumptions held that domesticated animals should not live in the wild to any degree and be well controlled by humans. In this view, reindeer are exceptional livestock in that they are allowed to freely roam. However, the authors of this article take a different view and develop an idea of animal autonomy; this is not based on a feral quality but, rather, is the result of long-term regional human-animal interaction. This view defines the concept of "North Asian modes of herding."

The second contribution is the reconfiguration of the concept of integration in the North Asia of Mongolia and Siberia. Previous research has separately dealt with the pastoralism practiced in Mongolia as well as that seen in Siberia. Both of these pastoralists experienced socialist modernization, but in terms of human-animal relations, issues concerning Mongolian herders are placed in comparative perspectives of arid pastoralists, and those concerning reindeer herders are placed in relation to circumpolar hunter-gatherers. Although this reviewer has researched the Eveny and Nenets reindeer herders in northern Siberia and Sakha horse herders, people who originated from Baikal-Mongolia, and recognizes some similarities in modes of herding (Takakura 2010), the authors of this article explore the extensive comparative field research stretching from Kamchatka, to Yakutia, to Mongolia and successfully find a common ground in North Asian herding as a basis for conceptualization.

The authors' broadening of these horizons should be evaluated on a number of issues. The concept of North Asian modes of herding is conceived on the basis of not only subsistence practices but also belief and cosmology. The tradition of North Asian shamanism recognizes "uncommon singular beings" and individual diversity among livestock. It explains why herders identify livestock individualities through "descent, friendship, and hierarchy" and why herders engage in different relationships with each animal.

The reviewer believes the authors should further explore and develop the issue of North Asian modes. It is true that North Asian herders do not perceive the herd as "an undifferentiated mass of food on the hoof," which is the typical perception of herders in Mediterranean and Near East pastoralism. Yutaka Tani (1989, 1997) interprets the Mediterranean herding management shown in the relationship among herder, castrated animal leader, and herd (flock) as a reflection of cosmology of the Bible in the relationship among God, priest, and believers (stray sheep). North Asian modes would imply that there are cultural differences in relationships to the environment.

The authors present their views on how socialist modernization, such as the introduction of veterinary sciences, changed the socioecological conditions for herding modes. In addition, they carefully incorporate the related detailed ethnographical description of the classic work of Sergei Shirokogoroff. These authors' extensive perspective increases the inclusiveness and appropriateness of the theory.

To conclude, I would like to state that the article shows how important and decisive the evolutionary perspective is for pastoral and human adaptation research; it clearly shows that domestication does not provide results that can be generalized to all human-animal relations. Rather, results should evolve according to the type of animal to be domesticated, the character and behavior of the species, and the socioecological environ-

ment of the interspecific common ground. I believe that North Asian modes of herding can be found due to their evolutionary context.

The authors cast doubt on "symbiotic domesticity" due to the dyadic perspective of human and animal and, rather, insist on the triadic nature of herding in humans, animals, and landscape. I partially understand this statement; however, the concept emphasizes that domestication contributes benefits not only to humans but also to domesticated animals. In this perspective, are not the North Asian modes evolutionarily formed as a result of symbiotic domesticity in the region? A second criticism is the terminology of the "West." The authors use "Western point of view" to pose a contrast to the concept of North Asian modes of herding. Where is the West? Does it include Korean or Japanese viewpoints? The vague usage of "West" should be avoided. Rather, I recommend referring to Mediterranean and Near East modes of herding, which create "an undifferentiated mass of food on the hoof." Of course, whether such a concept could be formed is a subject for future inquiry. I also have a question regarding the relation of the size of livestock and herding modes, because it seems that the idea of animal autonomy could be applied only to larger livestock, such as reindeer, horse, cattle, and camels. Even in North Asia, the sheep and goats would seem to in a somewhat different position, possibly closer to the undifferentiated mass?

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2 VII 16

This intriguing article questions proposed dichotomies between hunting- and herding-based societies in North Asia, whether these are organized in terms of trust versus domination (Ingold 1994; see also Descola 2013), subject versus product (Hamayon 1990), or totemism versus animism (Pedersen 2001), just as it opposes more recent arguments that switch the dichotomies on their head by talking about herders and their animals in terms of partnership or symbiosis (Anderson 2014; Vitebsky and Alekseyev 2014). Human-animal relations among herders in Siberia and Mongolia are, according to the authors, not opposed to hunting, where animals are seen as subjects or persons with a will of their own. Rather, in North Asia, domestic animals largely run free with rare supervision and without food supplies, shelter, or fences. Thus, herding becomes a matter of maintaining a balance between two otherwise conflicting tendencies: the animals' autonomy and the animals' disposition to engage in cooperative interaction with humans. This latter aspect is marked by a condition in which many of the adaptive functions to landscape orientation, way finding, and the like are taken up by the animals themselves. Previous models of herding largely fail to acknowledge this triadic structure of human-animal relations, which associates humans, animals, and the landscape in an ongoing reciprocal adaptation: "the interspecific common ground uniting the hybrid nomad communities of North Asia is the territory as it is perceived and memorized by humans and animals, forming a shared nomadic landscape."

At the face of it, this is a very exiting argument, because it provides a crucial clue to how the canonical transition from hunting to herding might have taken place in North Asia. Rather than the transition signifying a radical break in human-animal interaction, as has been previously suggested (see Jensen 1967; Smith 1987), it suggests a continuum in subsistence practices and landscape use—that is, herders basically relate to animals in the same way as hunters do, emphasizing a combination of animal autonomy and collaboration. Also, the authors emphasize this point when writing: "The consequence of modes of herding that grant considerable autonomy to livestock is that the animals' behavior moves closer to that of wild animals so that searching for autonomous domestic animals becomes virtually identical to the tracking of game." This in turn makes the authors conclude that "common skills explain that the border between hunting and pastoralism is by no means sealed, as could be expected from a cosmological perspective."

However, here we begin to glimpse the problem with the proposed model, which, although it appears intriguing, has important flaws on the ethnographic as well as the theoretical level of analysis. As a matter of ethnographic fact, North Asian hunters and herders do not entertain essentially different cosmologies. Rather, these cosmologies are astonishingly similar in their make-ups (Ingold 1986; Willerslev et al. 2015; Zvelebil and Jordan 1999)—something that the authors themselves indirectly point to in their extensive descriptions of the similarities in conceptions of soul, spirits, sacrifice, and so on. Could it be that this similarity, rather than being a result of ecological adaptations, has itself been a key driver in the transition from hunting to herding? This has recently been suggested by myself, Vitebsky, and Alekseyev, who propose that the domestication of the reindeer was a result of an attempt of hunters to face up to a moral paradox built into their cosmology, emphasizing that reindeers should "give themselves up to the hunter be killed"—something that wild and free-spirited animals seldom do. Thus, to live up to their own moral ideal, hunters needed to take control of the unpredictable variables of the hunt by means of domination and sacrifice (Willerslev, Vitebsky, and Alekseyev 2015). The authors do not consider any such moral or other kinds of paradoxes on the level of cosmology, let alone any kinds of discrepancies between what people say they do and what they actually do. Instead, the authors slip into a kind of eco-functionalism in which each agent, human and animal alike, plays its perfect part in a relationship of equilibrium with other agents and the environment at large. However, this kind of perfectly organized interplay between humans, animals, and the landscape does not always match ethnographic reality: hunting and herding are far from always perfectly complementary activities. So, while I agree that the downside to the autonomous animal and the relationship of so-called intermittent coexistence

is that herders have to go and look for their herds, which can take days or even weeks, it is outright wrong that this poses no problem for the herders, who, the authors claim, use the time "to gather resources, such as wood for heating or construction, fruit, or medicinal herbs; to fish, hunt, or set a trap, and to collect various information, notably to observe game tracks." Notwithstanding the intelligence, senses, and sensibilities of the reindeer, they do not follow trap lines for sable or moose tracks, but follow their own hardwired migration routes. For exactly this reason, large-scale herding does not go hand in hand with hunting, which is why indigenous peoples, like the reindeer Chukchi of Achaivaiam in northern Kamchatka (see Lykkegaard and Willerslev 2016; Willerslev 2009, 2013) have largely discarded hunting and simply center their life around full-time herding.

So, while I agree with the authors' conclusion that North Asian herding to a large extent relies on animal autonomy, which reduces the investment of human labor in the building up of their herds and which, in turn, gives way to their notion of northern herding as based on so-called intermittent coexistence, I question the explanatory power of their tripartite model when it comes to unveiling the mechanisms that brought about the canonic transition from hunting to herding in North Asia. This would entail less of an eco-functionalist focus, where everything is logically related in a holistic system in which everything has its perfect place and function, and more attention to paradoxes, moral or otherwise, between words and deeds, which, after all, are integral to and drive peoples' lives in North Asia as elsewhere.

Reply

We received with great pleasure and gratitude the comments of the distinguished specialists of the peoples of Siberia and Mongolia who read our article. We are happy to see that they recognize the originality of our comparative analysis throughout North Asia and that most of them are convinced by the usefulness of the approach we propose, although they criticize some of our concepts and interpretations. Their objections will provide us with an opportunity to clarify our arguments and to improve our model.

The most important criticisms deal with our modes of herding. Anderson, Davydov, and Istomin see them as a "schematic list of five separate modes of coexistence" or as "separate bundles" which do not fit the reality of a continuum of practices in North Asian herding. For Davydov, "in practice, these modes are always intermixed; there are no reindeer herders who rely on just one of them. Moreover, it is difficult to separate these modes from each other, because they can easily overlap." These commentators were more convinced by our final reflection on the notions of nomadic shared landscape and intermittent coexistence than by the typology of modes of herding. However, these parts of our argumentation are inseparable: the modes of herding define the different combinations of human control and animal autonomy embedded in the landscape within which the intermittent coexistences alternate.

Let us make more explicit the purpose and the content of our typology, which seems to have raised some misunderstandings. There has been a general feeling in recent years, both among specialists in Mongolia and among those in Siberia, that theoretical models focused on human agency and domination fail to correctly describe the complexity of the ways indigenous peoples in North Asia relate to their livestock animals. The alternative notion of symbiosis is not satisfactory for reasons perfectly explained by Fijn in her comment. One of our goals in this paper is to propose more precise analytical tools, such as the modes of herding, making it possible to draw comparisons between husbandry systems.

Alimentation, reproduction, and protection are the three "vital requirements" in terms of which French ethnobiologist Jacques Barrau recommended the degree of human intervention in the domestication of animals should be assessed (quoted by Digard 1990:211).We completed this list and defined a set of basic functions in the management of livestock: reproduction, choice of pasture, food extraction, protection, and the initiation of contact between livestock and herders. We examined whether these functions are taken up more by humans or by animals themselves in different kinds of interactions that we call modes of herding.

Our definition of a mode of herding is more specific than the common use of the notion: it is "a set of techniques, interactions, and cognitive expectations that build a specific relational configuration between herds, herders, and the environment." We are perfectly explicit on the fact that modes of herding are always used in combination: "Each herding community combines and alternates temporally different modes of herding according to the seasons, the species, the animals' age, and the environmental context (e.g., presence of predators, neighbors, and social obligations)." In all of the examples we provide from our different fieldwork and from the literature, several modes of herding are combined in alternation or simultaneously.

Therefore, modes of herding cannot be considered in any sense as "separate modes of coexistence," as Anderson calls them, an expression which better fits a husbandry system as a whole. In fact, modes of herding could be compared to modes of transport. During a journey toward one destination, an individual easily switches between different modes of transport, such as car, walking, train, subway, and so on. All of these modes of transport require different skills and types of engagement in the environment, and people are completely aware of the differences between them. An individual who confuses trains, cars, and bicycles will simply be unable to travel without risking a serious accident! Similarly, we consider that herders can easily switch between modes of herding, precisely because they perfectly acknowledge the different effects produced by these modes that make it possible to respond differently to diverse ecological circumstances. Therefore, although we agree that our

modes should be completed to include more concrete situations, we remain convinced that, when comparing a variety of human-animal interactions, it is better to use precise descriptive categories than to persist with the fuzzy impression of a continuum of undistinguishable activities.

This being said, it is possible that our table of modes of herding may give the impression of a taxonomy of exhaustive and discrete categories, although, in fact, this table is intended only to highlight certain contrasts between the modes of herding. In this table, as indicated by the caption, the distribution of the different functions between people and livestock is only an estimation in general. Some attributions are obvious, such as the fact that animals in captivity do not choose their pasture themselves, whereas they do so in periods of seasonal freedom. Other attributions may be more open to dispute, as they depend on the species concerned, the size of the herd, and the context.

What should be retained from this comparison between the modes of herding is that human control and animal autonomy are inversely proportional variables. When people relax their control, they do not leave their animals in a void or abandon them to chaos; they rely on the animals' capacity to assume the functions of herding themselves. In a herding community, human control and animal autonomy, bound together by the glue of the landscape, are two sides of the same coin; they cannot be analyzed separately.

Several comments discuss the notion of autonomy in a rather abstract way, without taking into consideration our definition, our criteria (the different functions), and the correlation of animal autonomy with human control. For Davydov, "the dog or cat in a flat in the city has a large degree of autonomy." On the contrary, Bumochir considers that camels unattended in the steppe cannot be called autonomous, because people "can always anticipate the location of the livestock." These opposite views show that, without precise criteria, it is impossible to assess the level of autonomy of animals in different social contexts.

Empirically, we can reply to Bumochir that, if Mongolian herders are constantly aware of the location of their horses and camels, why do they lose them so often and spend so much time in looking for them? We agree with Bumochir that herders endeavor to keep indirect control over their unattended livestock, but this does not imply that they do not rely on their animals' autonomy. In our use of the concept, animal autonomy and human control are not mutually exclusive; they are in constant correlation. Autonomy is not independence. Autonomous cars assume more functions than ordinary cars, but they are still designed to serve human interests. Similarly, when people rely on animal autonomy, it does not mean that they do not expect their animals to perform work or to receive meat, fat, or milk from them when needed.

Bumochir regrets that our notion of animal autonomy is not based on vernacular notions in the languages of North Asian peoples. Indeed, the principle of autonomy that we describe is not a translation of a vernacular notion; it is the result of an extensive comparison between observations performed in several husbandry systems. But we can point out that the concept of "managing" proposed by Bumochir in place of autonomy is also an analytical concept rather than an indigenous notion. The problem with managing, which describes the herders' activity, is that it could certainly be an alternative to our human control, but not to animal autonomy. The same can be objected to Davydov's proposal to replace animal autonomy by the notions of "sensitivity" and "reflexivity," which mean that herders are "sensitive to reindeer needs." These proposed notions describe only the human side of the interaction, and they ignore the role of animal agency. On the other hand, our combination of human control and animal autonomy in modes of herding allows us to describe the interplay of human and nonhuman variables.

One point made by Istomin is that he feels that it follows from our discussion on the "shared nomadic landscape" that "cooperation and trust are minimal in the captivity mode of herding and maximal in the seasonal freedom mode." This is not a deduction that we make, and we can only agree with Istomin's arguments against this idea. As an alternative, Istomin proposes a parabola-shaped relation between extensity of herding and human-animal cooperation. This is a very interesting proposition that requires further investigation. We feel, however, that it may be difficult to make general conclusions in this way as, crucially, a great deal depends on the species concerned and the size of the herd. For instance, extraordinary cooperative interactions can be obtained from a horse raised and trained in captivity; however, a reindeer herd kept in captivity will soon become mad and waste away.

Our argument is that herders have to preserve a difficult balance between two contradictory tendencies: animal autonomy and animals' disposition to cooperate. Animals left in seasonal freedom enjoy maximum autonomy but risk becoming feral, to the effect that they will avoid contact with humans and cooperation will become impossible. The way to preserve the balance is a regular alternation between different levels of autonomy, what we call intermittent coexistence.

Anderson, Davydov, and Istomin, all specialists in reindeer herders, expressed the same regret that we did not give greater space to citing and discussing the literature on reindeer herding. Davydov notes that our article "lacks reflections on ethnographic sources from the nineteenth and twentieth centuries, which actually raised many of the questions that were discussed in the text," referring to several classic authors who discussed the question of reindeer domestication. This literature is undoubtedly very rich, and we would even like to add to the list eighteenth-century references, such as Miller's theory of reindeer domestication (Miller 2009:223–228). However, our paper is not an article reviewing the various interpretations of reindeer herding; our aim was rather to propose an anthropological comparative analysis based on our field observations not only among reindeer herders but also among horse, sheep, goat, cow, and camel herders. Indeed, the only species spread throughout all

our research area from Inner Asia to the Arctic is not the reindeer but the horse, and we had, of course, no room in this article to discuss the literature on horse domestication.

In his comment, Willerslev introduced the fascinating problems of social evolution. He questions the explanatory power of our model "when it comes to unveiling the mechanisms that brought about the canonic transition from hunting to herding in North Asia." We completely agree with Willerslev that our model does not explain this canonic transition, and there are two main reasons for that. First, our article describes and analyzes the daily synchronic interactions between people, animals, and the landscape and does not touch on questions of social evolution. Second, if we open this debate, we would say that the canonic transition is not a model that needs to be explained but rather one that needs to be deconstructed.

As we emphasized in the introduction to our article, we reject unilineal scenarios that consider hunting and herding as separate stages on an evolutionary scale. Husbandry systems are hybrid realities that link people, livestock, and the landscape, and we do not believe in anthropocentric models that attempt to explain the transformation of hybrid realities in terms of purely human factors, such as laws of social evolution or human cosmologies. The reality experienced today by numerous Siberian communities is not a shift from hunting to herding but an opposite noncanonic transition from herding to hunting. This phenomenon is reported by Willerslev himself in his monograph about the Yukaghir (Willerslev 2007:30) and by many authors quoted in our article. How can we explain such a noncanonic and yet rapid shift from herding activities to a foraging economy? Precisely by the notion of hunter-herder continuum (Ventsel 2006) and the recognition of the common environmental skills engaged in hunting and herding activities.

Willerslev is right that looking for their herds is a problem for the herders, but there is no reason to deny our observation that, while they seek their animals, people appreciate the opportunity to observe the environment and note predator or game tracks. Willerslev skeptically claims that reindeer "do not follow trap lines for sable or moose tracks, but follow their own hardwired migration routes." This highly determinist conception of animal movements is rather odd. Are mammals supposed to follow at each step, like robots, hardwired parallel routes that never meet? Herders who seek stray animals have multiple occasions to go across different tracks, which they will note with interest.

Willerslev warns us that we unconsciously "slip into a kind of eco-functionalism in which each agent, human and animal alike, plays its perfect part in a relationship of equilibrium with other agents and the environment at large." It is rather unfortunate that he does not indicate where he observed this dangerous slipping, because at no point do we use the terminology of a "perfect equilibrium" or refer to eco-functionalist theories. Is our statement that "herders often discovered their herds with huge losses, up to 100% of the offspring of the year" a clue to a crypto-theory of perfect equilibrium? On the contrary, we indicate that those people who actually endeavored to build a "system in which everything has its perfect place and function," to use Willerslev's terms—namely, the Soviet zootechnicians—regarded the indigenous modes of herding, with their catastrophic rates of losses, as "blameworthy carelessness" (for more details, see Stépanoff 2012*a*).

In our article, we suggested the existence of a deep contrast between a rather control-oriented Near East domestication and a more autonomy-oriented North Asian domestication but left this idea for further investigation. So we are delighted that Takakura reacted to these suggestions and even developed them in light of the Japanese anthropology of domestication. We can add that some recent archeological findings suggest that captivity was a primary mode of herding in early Near Eastern husbandry. In Aşıklı Höyük, dung accumulations demonstrated that ruminants were held captive between buildings as early as the end of the ninth millennium BC (Stiner et al. 2014). Geochemical analyses also indicated that, in early Neolithic sites in the Near East, people provisioned goats with fodder in the same period (Makarewicz and Tuross 2012). Therefore, the discrepancy between the Euro-American theories of domestication and herding, focused on control and domination, and the ethnographic observations in North Asia may be due to ancient contrasts between the strategies of herding developed in the Near East and those developed in North Asia. Although North and Central Eurasia received domestic cows, sheep, and goats from the Near East, they domesticated horse and reindeer by themselves in conditions that are still poorly understood.

Takakura asks an important question: Is our principle of animal autonomy valid only for large animals, like reindeer and horses, and do sheep and goats form only an undifferentiated mass, even in North Asia? It is right that sheep are less autonomous than horses, and their lack of autonomy and capacity to find their way is the main reason why they are deemed "stupid" by Mongolian herders. However, in North Asia, particular individuals are also selected among sheep to be consecrated as spirits, just like reindeer and horses. In Mongolia and Tuva, a consecrated ram (*seter* in Mongolian, *ydyk* in Tuvan) is expected to protect the herd and the family. So, sheep and goats are most certainly more than simply meat on the hoof for North Asian herders.

How particular to North Asia is the respect for animal autonomy? This is an important question raised by David Anderson, who adds, "Would one not expect a cowboy tending cattle herds in the fenceless uplands of the British Columbian Cariboo to do the same?" As long as animals are alive, they have agency, and this agency has an impact in any husbandry system. However, many husbandry systems, driven by the idea of human domination, do not recognize this agency and do not take it into account in their functioning. Few systems encourage and value animal autonomy to the extent of organizing rituals such as animal consecration. As far as we know, cowboys do not consecrate their cows to far-west spirits and do not beg their par-

don when they slaughter them. What is particular in North Asia, although by no means unique, is the deep convergence of techniques, ideas, and values in the recognition of animal autonomy.

—Charles Stépanoff, Charlotte Marchina, Camille Fossier, and Nicolas Bureau

References Cited

Alekseenko, Evgeniia Alekseevna. 1968. The cult of the bear among the Ket (Yenisei-Ostyaks). In *Popular beliefs and folklore tradition in Siberia*. V. Diószegi, ed. Pp. 175–191. The Hague: Mouton.

Alekseev, A. A. 1993. *Zabytyi mir predkov*. Iakutsk, Russia: Sitim.

Alekseev, Nikolaj Alekseevich. 1975. *Traditsionnye religioznye verovaniia iakutov v XIX–nachale XX v*. Novosibirsk, Russia: Nauka.

Anderson, David G. 2000. *Identity and ecology in Arctic Siberia: the number one reindeer brigade*. Oxford: Oxford University Press.

———. 2014. Cultures of reciprocity and cultures of control in the Circumpolar North. *Journal of Northern Studies* 8(2):11–27.

Anderson, D., and D. Arzyutov. 2016. The construction of Soviet ethnography and "the peoples of Siberia." *History and Anthropology* 27(2):183–209. doi: 10.1080/02757206.2016.1140159. [DGA]

Anderson, David G., Evgenii M. Ineshin, Natalia V. Kulagina, Mika Lavento, and Oksana P. Vinkovskaya. 2014. Landscape agency and Evenki-Iakut reindeer husbandry along the Zhuia river, Eastern Siberia. *Human Ecology* 42(2):249–266.

Armstrong Oma, Kristin. 2010. Between trust and domination: social contracts between humans and animals. *World Archaeology* 42(2):175–187.

Baskin, Leonid M. 2000. Reindeer husbandry/hunting in Russia in the past, present and future. *Polar Research* 19(1):23–30.

Beach, Hugh. 1981. *Reindeer-Herd management in transition: the case of Tuorpon Saameby in Northern Sweden*. Uppsala, Sweden: Upsaliensis Academiae. [KVI]

———. 1990. Comparative systems of reindeer herding. In *The world of pastoralism: herding systems in comparative perspective*. John G. Galaty and Douglas L. Johnson, eds. Pp. 255–298. London: Belhaven. [KVI]

Beach, Hugh, and Florian Stammler. 2006. Human-animal relations in pastoralism. *Nomadic Peoples* 10(2):6–29.

Bogdanov, E. A. 2011. *Istoriia priruchenii͡a domashnikh zhivotnykh. Obshchiĭ ocherk. Proiskhozhdenie domashneĭ sobaki, koshki, loshadi*. Moscow, Russia: Librokom. [DGA]

Bogoras, Waldemar. 1904–1909. *The Chukchee*. Memoirs of the American Museum of Natural History, vol. 11. Publications of the Jesup North Pacific Expedition, vol. 7. Leiden, Netherlands: Brill.

Bureau, Nicolas. 2013. Les rennes de monte des Even de Iakoutie. In *Nomadismes d'Asie centrale et septentrionale*. C. Stépanoff, C. Ferret, G. Lacaze, J. Thorez, eds. Pp. 200–202. Paris: Armand Colin.

Butanaev, Viktor Iakovlevich, and Choigina Valdimirovna Mongush. 2005. *Arkhaicheskie obychai i obriady saianskikh tiurkov*. Abakan, Russia: Khak. Gos. University.

Chabros, Krystyna, and S. Dulam. 1990. *La nomadisation mongole: techniques et symbolique*. Bloomington: Indiana University Press.

Charlier, Bernard. 2015. *Faces of the wolf: managing the human, non-human boundary in Mongolia*. Leiden, Netherlands: Brill.

Charlier, Bernard, and Charles Stépanoff. 2013. Animaux consacrés. In *Nomadismes d'Asie centrale et septentrionale*. C. Stépanoff, C. Ferret, G. Lacaze, J. Thorez, eds. Pp. 209–210. Paris: Armand Colin.

Charnoluskii, Vladimir Vladimirovich. 1931. *Olen'ia izgorod.' Olenrvodchrskaia ekspeditsyia Gosudarstvennogo russkogo geograficheskogo obshchestva*. Moscow, Russia: Ogiz-Gos. [VD]

Clark, Herbert H. 1996. *Using language*. Cambridge: Cambridge University Press.

Davydov, Vladimir. 2014. Coming back to the same places: the ethnography of human-reindeer relations in the Northern Baikal region. *Journal of Ethnology and Folkloristics* 8(2):7–32.

Descola, Philippe. 2013. *Beyond nature and culture*. Chicago: University of Chicago Press.

D'iatchenko, Vladimir, and Francine David. 2010. Usages ordinaires et rituels de la viande dans le bassin de l'Ienisseï: l'exemple du renne et du mouton. *Anthropozoologica* 45(1):11–23.

Digard, Jean-Pierre. 1990. *L'homme et les animaux domestiques: anthropologie d'une passion*. Paris: Fayard.

Donahoe, Brian. 2012. "Trust" or "domination"? divergent perceptions of property in animals among the Tozhu and the Tofa of South Siberia. In *Who owns the stock? collective and multiple property rights in animals*. A. M. Khazanov, G. Schlee, eds. Pp. 99–120. New York: Berghan.

Dwyer, Mark J., and Kirill V. Istomin. 2008. Theories of nomadic movement: a new theoretical approach for understanding the movement decisions of Nenets and Komi reindeer herders. *Human Ecology* 36(4):521–533.

Fausto, Carlos. 1999. Of enemies and pets: warfare and shamanism in Amazonia. *American Ethnologist* 26(4):933–956.

Ferret, Carole. 2007. Les Iakoutes, des chercheurs de chevaux. *Ethnozootechnie* 80:51–62.

———. 2010. *Une civilisation du cheval: les usages de l'équidé, de la steppe à la taïga*. Paris: Belin.

Fijn, Natasha. 2011. *Living with herds: human-animal coexistence in Mongolia*. Cambridge: Cambridge University Press.

Forbes, Bruce C., Florian Stammler, Timo Kumpula, Nina Meschtyb, Anu Pajunen, and Elina Kaarlejärvi. 2009. High resilience in the Yamal-Nenets social-ecological system, West Siberian Arctic, Russia. *Proceedings of the National Academy of Sciences of the USA* 106(52):22041–22048.

Fossier, Camille. 2013. Techniques de contrôle des troupeaux de rennes au Kamtchatka. In *Nomadismes d'Asie centrale et septentrionale*. C. Stépanoff, C. Ferret, G. Lacaze, J. Thorez, eds. Pp. 187–189. Paris: Armand Colin.

Fossier, Camille, and Charlotte Marchina. 2014. Study of human-animal interactions in Siberian pastoral systems via GIS (Geographic Information Systems). In *Grani social'nogo: antropologicheskie perspektivy issledovaniia social'nyh otnoshenii i kul'tury*. Dmitrii Arziutov and Vladimir Davydov, eds. Pp. 613–625. St. Petersburg, Russia: Kunstkamera.

Gogolev, Z. V. 1975. *Iukagiry. Istoriko-etnograficheskii ocherk*. Novosibirsk, Russia: Nauka.

Golovnev, Andrei Vladimirovich. 1995. *Govoriashchie kul'tury: traditsii samodiitsev i ugrov*. Ekaterinburg, Russia: Rossiiskaia akademiia nauk, Ural'skoe otdelenie.

Hamayon, Roberte. 1990. *La chasse à l'âme: esquisse d'une théorie du chamanisme sibérien*. Nanterre, France: Société d'ethnologie.

Humphrey, Caroline. 1998. *Marx went away–but Karl stayed behind*. Ann Arbor: University of Michigan Press.

Humphrey, Caroline, and David Sneath. 1999. *The end of nomadism? society, state, and the environment in Inner Asia*. Durham, NC: Duke University Press.

Ingold, Tim. 1980. *Hunters, pastoralists, and ranchers: reindeer economies and their transformations*. Cambridge: Cambridge University Press.

———. 1986. Reindeer economies and the origins of pastoralism. *Anthropology Today* 2(4):5–10.

———. 1994. From trust to domination: an alternative history of human-animal relations. *Animals and human society: changing perspectives*. Aubrey Manning and James Serpell, eds. Pp. 1–22. London: Routledge.

Istomin, Kirill V., and Mark J. Dwyer. 2010. Dynamic mutual adaptation: human-animal interaction in reindeer herding pastoralism. *Human Ecology* 38(5):613–623. [KVI]

Jensen, A. E. 1967. *Myth and culture among primitive peoples*. M. T. Choldin and W. Weissleder, trans. Chicago: University of Chicago Press. [RN]

Jochelson, Waldemar. 1905. *The Koryak*. Publications of the Jesup North Pacific Expedition, vol. 6. Leiden, Netherlands: Brill.

Jordan, Peter. 2003. *Material culture and sacred landscape: the anthropology of the Siberian Khanty*. Walnut Creek, CA: Rowman Altamira.

Kharinskii, Artur Viktorovich. 2010. Zhilishche severobaikal'skikh evenkov-olenevodov: etnoarheologicheskii analiz. *Inegratsyia arkheologicheskikh i etnograficheskikh issledovanii*. Ch. 1:190–194. [VD]

Knight, John. 2012. The anonymity of the hunt: a critique of hunting as sharing. *Current Anthropology* 53(3):334–355.

Kreinovich, Ehurim Abramovich. 1973. *Nivkhgu*. Moscow, Russia: Nauka.

Kropotkin, Peter. 1902. *Mutual aid: a factor of evolution*. London: Heinemann. [VD]

Laufer, Berthold. 1917. Reindeer and its domestication. *Memoirs of the American Anthropological Association* 4:91–147. [VD]

Lavrillier, Alexandra. 2013. La flexibilité passée et présente du nomadisme toungouse. In *Nomadismes d'Asie centrale et septentrionale*. C. Stépanoff, C. Ferret, G. Lacaze, J. Thorez, eds. Pp. 61–62. Paris: Armand Colin.

Levin, Maksim Grigor'evich, and Leonid Pavlovich Potapov, eds. 1956. *Narody Sibiri*. Moscow, Russia: Izd. Akademii nauk SSSR.

Lukina, N. V. 1973. Olenevodstvo vakhovskikh khantov. In *Iz istorii Sibiri*, 5. Pp. 145–69. Tomsk, Russia: Izd. Tomskogo gos. universiteta.
Lykkegaard, J., and R. Willerslev. 2016. Regenerating life in the face of predation: a study of mortuary ritual as sacrifice among the Siberian Chukchi. *Sibirica* 15(2):1–39.
Makarewicz, C., and N. Tuross. 2012. Finding fodder and tracking transhumance: isotopic detection of goat domestication processes in the Near East. *Current Anthropology* 53(4):495–505.
Marchina, Charlotte. 2016. "Follow the horse": the complexities of collaboration between the lasso-pole horse (*uurgach mor'*) and his rider among Mongolian horse herders. In *The meaning of horses: biosocial encounters*. Dona Davis and Anita Maurstad, eds. Pp. 102–114. London: Routledge.
Matsui, Takeshi. 1989. Semi-domestication: a reflection on the origin of agriculture and nomadic pastoralism [in Japanese]. Tokyo: Kaimeisya. [HT]
Middendorf, Aleksandr Fedorovich. 1878. *Puteshestvie na sever i vostok Sibiri. Ch. 2. Sever i vostok Sibiriv estestvenno-istoricheskom otmoshenii. Otdel 6. Korennye zhiteli Sibiri s shest'iu tablitsami*. St. Petersburg, Russia. [VD]
Miller, Gerard Fridrih. 2009. *Opisanie sibirskih naodov*. Moscow, Russia: Pamiatniki istoricheskoi mysli.
Myreeva, A. N., ed. 1990. *Evenkiiskie geroicheskie skazaniia*. Novosibirsk, Russia: Nauka.
Pedersen, Morten A. 2001. Totemism, animism and North Asian indigenous ontologies. *Journal of the Royal Anthropological Institute* 7(3):411–427. [RN]
Perevalova, E. V. 2004. *Severnye khanty: etnicheskaia istoriia*. Ekaterinburg, Russia: Ural'skii otdel Rossiiskoi Akademii Nauk.
Pomishin, S. B. 1972. *Tofalarskii olen'*. Iakutsk, Russia: Bibliotechka olenevoda.
Riehl, Simone. 2006. Nomadism, pastoralism and transhumance in the archaeobotanical record: examples and methodological problems. In *Die Sichtbarkeit von Nomaden und saisonaler Besiedlung in der Archäologie. Multidisziplinäre Annäherungen an ein methodisches Problem*. S. R. Hauser, ed. Pp. 105–125. Halle, Germany: Orientwissenschaftliches Zentrum.
Ritzer, George. 1996. The McDonaldization thesis: is expansion inevitable? *International Sociology* 11:291–308. [VD]
———. 2011. *The McDonaldization of society*. 6th ed. Thousand Oaks, CA: Pine Forge. [VD]
Safonova, Tatiana, and István Sántha. 2013. *Culture contact in Evenki land: a cybernetic anthropology of the Baikal region*. Leiden, Netherlands: Brill.
Scott, J. 1985. *Weapons of the weak: everyday forms of peasant resistance*. New Haven, CT: Yale University Press. [DB]
Shirokogoroff, Sergei Mikhailovitch. 1929. *Social organization of the northern Tungus*. Shanghai, China: Commercial.
———. 1935. *Psychomental complex of the Tungus*. London: Kegan Paul.
Singleton, V. 2012. When contexts meet feminism and accountability in UK cattle farming. *Science, Technology and Human Values* 37(4):404–433. doi: 10.1177/0162243911418536. [DGA]
Sirina, Anna Anatol'evna. 2012. *Evenki i eveny v sovremennom mire: samopoznanie, prirodopol'zovanie, mirovozzrenie*. Moscow, Russia: Nauka. [VD]
Smith, J. Z. 1987. The domestication of sacrifice. In *Violent origins: Walter Burkert, René Girard, and Jonathan Z. Smith on ritual killing and cultural formation*. R. G. Hamerton-Kelly, ed. Pp. 191–205. Stanford, CA: Stanford University Press. [RN]
Stammler, Florian. 2010. Animal diversity and its social significance among Arctic pastoralists. In *Good to eat, good to live with: nomads and animals in Northern Eurasia and Africa*. F. Stammler and H. Takakura. Pp. 235–243. Sendai, Japan: Tohoku University.
Stebnitskii, S. N. 1938. Nymylany-aliutortsy. K voprosu o proiskhozhdenii olenevodstva u iuzhnykh koriakov. *Sovetskaia etnografiia* 1:129–144.
Stépanoff, Charles. Forthcoming. Animal desire and the rise of pastoralism in North Asia. *Journal of the Royal Anthropological Institute*.
———. 2011. Saillances et essences. Le traitement cognitif de la singularité chez les éleveurs de rennes tožu (Sibérie Méridionale). *L'Homme* 200:175–202.
———. 2012*a*. Entre piétin et loups. Menace interne et menace externe dans l'élevage de rennes des tožu. *Cahiers d'anthropologie sociale* 8:137–51.
———. 2012*b*. Human-animal "joint commitment" in a reindeer herding system. *HAU: Journal of Ethnographic Theory* 2(2):287–312.
———. 2015. Transsingularities: the cognitive foundations of shamanism in Northern Asia. *Social Anthropology* 23(2):169–185.
Stépanoff, Charles, Carole Ferret, Gaëlle Lacaze, and Julien Thorez, eds. 2013. *Nomadismes d'Asie centrale et septentrionale*. Paris: Armand Colin.
Stiner, Mary C., Hijlke Buitenhuis, Güneş Duru, Steven L. Kuhn, Susan M. Mentzer, Natalie D. Munro, Nadja Pöllath, Jay Quade, Georgia Tsartsidou, and Mihriban Özbaşaran. 2014. A forager-herder trade-off, from broad-spectrum hunting to sheep management at Aşıklı Höyük, Turkey. *Proceedings of the National Academy of Sciences of the USA* 111(23):8404–8409.
Takakura, Hiroki. 2010. Arctic pastoralism in a subsistence continuum: a strategy for differentiating familiarity with animals. In *Good to eat, good to live with: nomads and animals in Northern Eurasia and Africa*. Northeast Asian study series 11. F. Stammler and H. Takakura, eds. Pp. 21–42. Sendai, Japan: Tohoku University.
———. 2012. The shift from herding to hunting among the Siberian Evenki: indigenous knowledge and subsistence change in Northwestern Yakutia. *Asian Ethnology* 71(1):31–47.
———. 2015. *Arctic pastoralist Sakha: ethnography of evolution and micro-adaptation in Siberia*. Balwyn North, Australia: Trans Pacific.
Tani, Yutaka. 1989. The geographical distribution and function of sheep flock leaders: a cultural aspect of the man-domesticated animal relationship in Southwestern Eurasia. In *The walking larder: patterns of domestication, pastoralism, and predation*. J. Clutton-Borck, ed. Pp. 185–99. London: Unwin Hyman.
———. 1997. God, human and livestock: pastoralism and Bible [in Japanese]. Tokyo: Heibonsya. [HT]
Tomasello, Michael. 2009. *Why we cooperate*. Cambridge, MA: MIT Press.
Vasilevich, Glafira Makar'evna. 1969. *Evenki. Istoriko-etnograficheskie ocherki (XVIII–nachalo XX v.)*. Leningrad, Russia: Nauka.
Vavilov, N. I., S. N. Bogoli͡ubskiĭ, and Y. Y. Lus. 1933. *Problema proiskhozhdeni͡ia domashnikh zhivotnykh*. Leningrad, Russian: Akademii Nauk. [DGA]
Ventsel, Aimar. 2006. Hunter-herder continuum in Anabarski district, NW Sakha, Siberia, Russian Federation. *Nomadic Peoples* 10(2):68–86.
Vitebsky, Piers, and Anatoly Alekseyev. 2014. What is a reindeer? indigenous perspectives from Northeast Siberia. *Polar Record* 51(4):413–421.
Weber, Max. 1986. Domination by economic power and by authority. In *Power*. S. Lukes, ed. Pp. 28–36. Oxford: Basil Blackwell. [DB]
Willerslev, Rane. 2007. *Soul hunters: hunting, animism, and personhood among the Siberian Yukaghirs*. Berkeley: University of California Press.
———. 2009. The optimal sacrifice: a study of voluntary death among the Siberian Chukchi. *American Ethnologist* 36(4):693–704.
———. 2013. God on trial: human sacrifice, trickery and faith. *HAU: Journal of Ethnographic Theory* 3(1):140–154.
Willerslev, Rane, Piers Vitebsky, and Anatoly Alekseyev. 2015. Sacrifice and the ideal hunt: a cosmological explanation for the origin of reindeer domestication. *Journal of the Royal Anthropological Institute* 21(1):1–23.
Wolf, Eric. 1990. Facing power: old insights, new questions. *American Anthropologist* 92(3):586–596. [DB]
Zeder, Melinda A. 2012. The domestication of animals. *Journal of Anthropological Research* 68(2):161–190.
Zeuner, Frederick E. 1963. *A history of domesticated animals*. London: Hutchinson.
Zvelebil, M., and P. Jordan. 1999. Hunter-gatherer ritual landscapes: questions of time, space and presentation. In *Rock art as social representation*. J. Goldhahn, ed. British Archaeological Reports International Series 794. Pp. 101–128. Oxford: Archaeopress. [RN]