Technologies of Modern Reindeer

Breeding as Technologies of Power in Circumpolar Russia: a Study of Selective Breeding of Evenki Reindeer

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Abstract

This article explores how reindeer science in Circumpolar Russia is a field of constitutions of indigenous people and animal subjectivities. It is based on empirical research of selective breeding of the Evenki breed of reindeer in the specialised Soviet literature and in the Reindeer Herding Enterprise in the village of Surinda, Evenki Municipality. Reindeer herding has historically played a significant role for the majority indigenous Evenki people. Neat classification of reindeer into distinctive breeds was completed in Soviet time, when “proper” selective breeding technologies were established. This article looks into some of the basic assumptions about animals, humans, and society that such breed classification and selection methods reveal. I analyse the role of scientific knowledge in the Soviet era to better understand why selective reindeer breeding appears more attractive to state authorities than to support indigenous reindeer husbandry, which has been experiencing a serious crisis since the early 1990s. I explain the local politics of reindeer herding and agricultural science through the contextualisation of the field case within Soviet and contemporary Russian Arctic and indigenous governance, trying to contribute to the broader issue of post-Soviet perceptions of animal husbandry, selective breeding and reindeer.

Keywords

Reindeer Husbandry, Agricultural Science, Selective Breeding, Evenki Breed Reindeer, Indigenous Evenki, Subjectivities

Introduction

Modern representations of science are saturated with rhetoric, abundantly used by Soviet ideologists, about its utility to human society in terms of material accumulation and well-being, life improvement, and intellectual and cultural progress. Social scientists have provided critical analyses of the complex role of science and scientific knowledge (Foucault, 1980; Scott, 1998). Studies of the colonial and postcolonial conditions have multiple examples of its contributions to the creation and reproduction of inequality, capital, and power (Grove, 1996). Critical theorists show how scientific ideas and education shape popular conceptions about the world and society and the role such conceptions have on peoples’
relations to society, to the environment and to themselves (Bazzul, 2014). Employing Foucault’s concept of subjectivity, scholars have attempted to trace how scientific ideas play an important role in the constitution of human subjects. This paper takes inspiration from such traditions of critical research in order to contribute to the study of the complex role that the Soviet science of reindeer and husbandry has had on indigenous people in the Russian Arctic.

The last three post-Soviet decades have prompted numerous critical studies and analyses of Soviet governance over indigenous people in Russia. Reindeer herding, as one of the most common and original indigenous economies, has also attracted scholarly attention. It would be impossible in this article to provide a comprehensive overview of anthropological studies and perspectives on reindeer herding in Circumpolar Russia, or to describe the complex transformations that approximately forty indigenous groups underwent in the Soviet and post-Soviet era. However, several anthropologists have revealed different technologies of power, both in the realm of representations and discourse, and in practice. Nikolai Ssorin-Chaikov, for example, undertakes a study of how the state and the “indigenous” are domains recursively and differently defined in relation to each other over time, and of how state-defined work produced new “traditional” lifestyles and identities among the Evenki, who discursively exploited the concepts of modernity and tradition in order to resist state agendas (Ssorin-Chaikov, 2003). The establishment of population statistics in the form of the first Polar Census, for example, and its role in the creation of new relations between local residents and their surrounding environment, has received prominent attention (Anderson, 2011). Brian Donahoe (2011) has described how legislation in Russia has been producing indigenous subjects without making social citizenship rights available to them. For many years, David Anderson has been producing empirical and theoretical knowledge on indigenous people and their relations to reindeer within a complex framework of state power (Anderson, 2004; 2014; Anderson et al., 2014; Anderson et al., 2017). In the realm of knowledge and its institutional pillar, science, the role of Soviet ethnography in establishing state power over indigenous people has received due attention (Anderson et al., 2019; Slezkine, 1994). In their relation to indigenous groups, other branches of science, however, have so far remained little studied. As I describe below, agricultural science is one of the pillars of reforming reindeer husbandry in the Arctic, along with collectivisation and sedentarisation of indigenous population. In contrast to the latter processes, however, less critical analysis of agricultural science has been published (Anderson, 2014).

My purpose here is to contribute to the critical study of Soviet agricultural science and its implications for past and contemporary reindeer husbandry among indigenous people of the North. Agricultural science has produced a series of studies about reindeer and their biological, behavioural, and social characteristics, and about the environments they inhabit. Further, agricultural science has been presented as the basis for the new methods for organisation of the reindeer economy in Soviet times. Agricultural science has thus had profound impact on indigenous reindeer herding. Soviet science has not only influenced reindeer knowledge and husbandry, but created the appropriate context for indigenous resistance. Reindeer are a prominent species for many indigenous people and cultures, and the knowledge and practices involved are among the most important sources for reindeer herders’ subjectivities.

In their treatment of subjectivities as effects of power relations emerging through specific technologies and spaces, Foucault (1982) and other influential poststructuralist and feminist theorists (Butler, 1997) form the theoretical basis for this article. Subjectivities are constituted by, but also depend on, power relations. They shape our desires and ambitions
and what and who we are. They provide a sense of coherence and stability in our being, and predefine the way we change and develop. Subjectivities are at the same time dynamic and always evolving. Science creates knowledge about what is “normal” and expected for a subject. It also provides the means for monitoring individuals and society by judging to what extent they adhere to “normality.” Finally, subjects internalise a continual reflexive self-discipline that enforces normality. Feminist theorists (Butler, 1997; Nightingale, 2011) contribute to the analysis of subjectivities by stressing their plural and dynamic character. They explore the multiple dimensions of resistance to subjection and the paradoxes of empowerment within subjection. Subjectivities are not only imposing control over us, they also provide and determine human agency.

One of the promises of post-humanist social science is the exploration of a new theoretical field – animal subjectivities. I would like to point out a few important aspects of this. Human-animal relations, in the context of contemporary agricultural production, are intersubjective relationships that emerge in particular contexts or techno-spatial configurations (Holloway, 2007; Wilkie, 2005). In addition to the embodied character of subjectivity and its materiality, stressed by some feminist scholars, studies on animal subjectivities emphasise the importance of material things within a complex ecology (Bruno, 2019; Holloway, 2007). As Anderson et al. argue (2017), human relations with domesticated reindeer are inscribed in material infrastructures, such as fences, corals, lassoes, etc. The study of them should thus consider the whole complex of ideas, practices, territory (place) and materiality surrounding reindeer husbandry and human-animal interactions it encompasses.

I thus acknowledge that human and animal subjectivities in reindeer herding are shaped within a complex ecology. In his work, Anderson theorises some aspects of this ecology that give shape to practices of reindeer breeding in the Russian Arctic. State officials at different levels, ideologists, scientists and local indigenous people, reindeer, and finally features of the environment and other material objects and infrastructures (Anderson, 2004, p. 3). Agricultural science has an important place in the production of ideas and practices of “correct”, “rational”, “scientifically sound” reindeer husbandry. It provides also, or approves of, a set of technical objects; the inventory of reindeer herding. This is important in the emergence of herders’ and reindeer subjectivities in the Russian North, even in cases when they are questioned and resisted.

I refer here to Soviet and contemporary scientific texts about reindeer and husbandry in Circumpolar Russia that aim to provide practical guidance for improving herding methods and technology. I also use data collected during a field study1, conducted by an international team of four anthropologists, of a selective breeding project in the village of Surinda, Evenki Region, in September 2010. This project is a cooperation between the Surindinskii Municipal Reindeer Enterprise and the Research Institute of Agriculture and Ecology of the Arctic (Branch of the Federal Research Center Krasnoyarsk Science Center of the Russian Academy of Sciences, abbreviated NIISKh). The project aims to study the selection, genetic structure, growth, development and feeding of reindeer, and the scientific improvement of the technology of reindeer breeding. I focus on three aspects: the objective of increasing reindeer size, artificial insemination, and pure breeding. In this study, I mostly use data obtained through interviews of key informants and group discussions, recorded both in villages and in nomadic herding camps in the taiga. I argue that agricultural science provides a field where a process of construction of subjectivities takes place. Imposing certain rep-

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resentations and practices of reindeer husbandry, science provides a pedagogical means for shaping relations toward animals, humans, and society.

Historical Overview of Evenki Reindeer Herding
Numbering about 37 000, Evenki are one of the Numerically Small indigenous groups of the Russian North that are dispersed from Northern Kamchatka, along the Pacific Ocean and the Yenisei River, and in Yakutia, Tomsk, and Taymir, with small minorities in the Far East (Sakhalin, and finally in China). The Evenki Region of Krasnoyarsk Province, our field location, is an administrative unit in which Evenki are a titular ethnic group. Until the 2000s, the Evenki Region was an independent administrative unit, but is now merged with Krasnoyarsk Province. The village of Surinda is one of the isolated settlements that can only be reached by air transport. Its history is relatively short; it was created in the 1950s at the location of an older trading post and named after the nearby river. It took over the functions of the previous sovkhoz, which was situated 60 kilometres to the south.

The Evenki Type of Reindeer Herding
It is important to mention that the category Evenki is a Soviet construction. Before Soviet rule, the Evenki identified themselves by clan membership, and did not have a shared ethnic affiliation (Fondahl, 1998; Vasilevich, 1969). Earlier scholars used the larger category Tungus people, on the basis of language. Before the collectivisation of reindeer in the early 20th century, Evenki were predominantly nomadic people whose economy was based on hunting, fishing, gathering, and farming (Tugolukov, 1985). Evenki lived and moved in extended patrilocal family groups, and different groups met infrequently for rituals and marriages, often in the proximity of trading posts (Vasilevich, 1969). If narrowing down the focus to the area of Surinda and reindeer herding, according to older studies the Evenki practiced the so-called “Evenki Type” of reindeer herding until collectivisation. The main characteristics of this type were the infrequent slaughter of reindeer for meat if a need occurred, the small size of the herd, the exclusive use of reindeer to carry loads, and free grazing during the winter, when men were predominantly busy with hunting or fishing (Vasilevich, 1964, p. 4). Later scholars questioned this rigid typology, arguing that the autumn slaughter of reindeer was perhaps related to more than food supply. Pointing out that it makes little sense to produce supplies of reindeer meat before the usual autumn hunting, Turov sees this slaughter of a small number of animals as a measure to bring the herd to the optimal size by getting rid of old, non-productive and poor quality animals that are not going to be useful to graze in the winter. He also speculates that in this way, Evenki perhaps also exercised some kind of selective breeding by leaving for the rut the strongest, best and most productive animals (Turov, 1990, p. 83). David Anderson provides persuasive arguments about a different selective method: the controlled crossbreeding of domestic reindeer with wild ones (Anderson et al., 2017).

2. According to the Russian Legislation, the Numerically Small Peoples of the North are groups that do not exceed 40 000, live in the territories that were historically occupied by their ancestors, and are employed in traditional economic spheres, such as reindeer husbandry, hunting, and fishing. Members of these groups have some special rights that are dependent on ethnic belonging (defined by primordial criteria), occupation in administrative areas that have been officially marked as “ethnic”, and employment in traditional economic activity. Such rights include special access to some resources, such as a small quantity of fish and game, or the right to organise a special kinship or neighbourhood-based subsistence economy unit called obshchina (a kin community). Obshchinas are entitled to some special rights too, such as to lease natural resources on preferential conditions, and even to receive special financial help from state (Donahoe et al., 2008).
Soviet Reindeer Herding and Evenki

No matter how Pre-Soviet Russian statehood in the periphery occupied by Tungus people is described (Ssorin-Chaikov, 2003, p. 1), the Soviet authorities took important steps to solidify state presence. While anthropological work in the region of Surinda is scarce, studies from other Evenki regions are perhaps representative of common trends. One of the first tools in Soviet times in establishing “order” over indigenous people and territories was the Polar Census from 1926-1927. It set the groundwork for a social experiment aimed at transforming relationships among people and between people and their lands. The census provided a record of people and described their relationships to wild and domestic animals according to categories that were pre-designed by the census authors and state authorities. The census provided a model of how complex relationships could be described in the orderly language and dominant “performative” vocabulary of the regime, i.e. property in number of reindeer, household strictly located in an administrative unit and geographical locality. To many reindeer herders, the wealth that they harvested appeared to them more as gifts of the land than the result of accumulation strategies (Anderson, 2011, p. 17).

Reorganising the reindeer economy was an important point in the profound transformation of all northern peoples and economies in the name of Soviet modernisation. If we focus on Evenki people, the collectivisation of reindeer herds occurred in the early 1930s. Families in a locality were forced to unite under the monitoring of the authorities in small and simple economic units named kolkhozes (cooperatives) (Tugolukov & Shubin, 1969). In contrast to tundra areas, where large-scale intensive reindeer herding was practised as early as the 19th century, Evenki kolkhozes were not forced to fully employ the Soviet model of reindeer husbandry until the 1950s. Simultaneously, small kolkhozes from neighbouring areas were integrated into larger state-managed enterprises (sovkhозes), organised according to a model borrowing many features from large-scale intensive reindeer herding traditions practised by groups such as Nenets and Komi (Kertselli & Hudadov, 1919). Reindeer were divided into large herds (1000 to 2000) and herders into work teams of seven to eight people. Herders were employed by the sovkhoz, while women and children were accommodated in permanent settlements, like Surinda. Herders guarded their reindeer all year round, migrating with them in a strictly determined territory. Only a limited number of herders’ wives were allowed to follow with their husbands by being employed as camp workers and taking care of household chores (Ssorin-Chaikov, 2003).

Fondahl (1989, p. 30) identifies three reasons for Soviet authorities to reorganise reindeer husbandry: growth and prosperity of indigenous people (humanitarian); to strengthen the northern economy, and exploit a resource that cannot be utilised for other purposes; and ideological reasons of the state to attend to development in the North (see also Kertselli, 1931, p. 34). Fondahl (1989) observes that similar justifications have been employed by other countries, such as the USA and Canada, in promoting state-led and state-controlled development in which the state “civilises” natives (i.e. destroys their own institutions and economic relations). Reindeer herding is also seen as developing an industrial economy in the North, and as being of geopolitical importance by legitimising a claim that the Soviets observed the human rights and needs of all people. As several anthropologists show, Soviet authorities transformed people’s relation to the state through re-building identities. For example, the role of a reindeer herder was designed and imposed as a state employment with strictly regulated obligations and privileges, and clearly defined territorial and temporal dimensions (Anderson, 2000; Ssorin-Chaikov, 2003; Vitebsky, 2005; Vladimirova, 2006).

The environmental historian Andy Bruno shows how the Sovietisation of reindeer occurred in three areas: the restructuring of the economy, understandings of locality, and
the transformation of the environment. The reindeer economy was developed through scientific investigations, technological changes, education, collectivisation, the restructuring of herd migration, and the agglomeration of collective farms (Bruno, 2010, p. 120). This process was grounded in two superficially contradictory tropes: besides a species of economic utility that can be subjected to modelling through science, reindeer also constituted a trope of anachronistic and primitive animal that, because of its semi-domesticated nature, binds people to the past and to the wilderness that it occupies. At the heart of collectivisation of reindeer herding was an effort to impose a new regulation of space on indigenous groups, since the nomadism they practised was seen as pre-feudal, and migratory animals raised problems for a rational and predictable systems of modern animal husbandry. Bruno also sees the regime’s obsession with regulation of movement of human and animal populations as a part of the Soviet competition with other states in imposing what James Scott calls a high-modernist ideology, i.e. a “self-confidence about scientific and technical progress, the expansion of production, the growing satisfaction of human needs, the mastery of nature (including human nature), and, above all, the rational design of social order commensurate with the scientific understandings of natural laws” (Bruno, 2010, p. 136; Scott, 1998).

Post-Soviet Crisis of Reindeer Economy
The Evenki municipality has been classified as reindeer herding and hunting, with four state agricultural enterprises (sovkhozes) in Soviet time. In addition to them, the Surindinskii sovkhoz, established in 1974, was highly specialised in selective reindeer breeding (plemzavod in Russian) (Boiko & Kostiuk, 1992). In the discourse of late socialism, it is presented as ‘one of the most important spheres of exercising traditional work habits of the indigenous population’ (op. cit. 82). In 1992, the plemzavod was turned into a joint-stock society and shortly thereafter underwent privatisation. The stock was distributed among local residents and by 1997 the number of reindeer had dropped from 10,000 to 1,000. One herd leader kept his herd of 500 reindeer belonging to 20 families (Anderson, 2004, p. 4), and they became the basis for the present restoration of the enterprise.

Similar processes were occurring throughout the region in 1990s, as a result of which 27,000 head of reindeer left. During my field research, local Evenki emphasised the privatisation of the sovkhoz herds and their subsequent slaughter for sale by local residents striving to survive during the economic crisis of the 1990s. In the Soviet era reindeer husbandry suffered from severe management problems, as well as the so-called non-productive losses because of difficulties in guarding the herd, constant increases in the work-load on herders, the growth of wild reindeer herds, and poor work discipline. The persistent application of random innovations and “rationalisations”, such as mass-scale building of fences, brought disorientation and demoralisation (Boiko & Kostiuk, 1992). Ssorin-Chaikov (2003) calls it “the poetics of unfinished construction,” covering how the furthering of the notion of progress distracts the attention from the disastrous results of the previous situation. As anthropologists stress, these problems should not be taken as “single examples of sloppy science”, but seen as the results of a driving ideology, a competing idiom of cultivation: the necessity for there to be a clear, rational, accountable way of planning nature’s providence (Anderson, 2004; Beach, 2004; Gray, 2004).

In 2003, the plemzavod was re-established by the municipality, an act attributed to the instalment of a new governor in Krasnoyarsk. As the local story goes, as a high-level business manager, he soon became upset with his team’s inability to alleviate the high level of poverty, unemployment and low life expectancy in spots like Surinda. So, he took advice
from the Evenki political and civil representatives and appointed the present director to rebuild the enterprise, and his brother as a minister of agriculture. Being indigenous representatives with family and individual histories deeply inscribed in this locality, they are envisaged as the force behind a slow but perceptible improvement and stabilisation.

In an interview, the director explained that despite their support, the regional authorities are not receptive to seeing the enterprise as a developing business that can generate profit if wise investment and realisation policies are implemented. This is indicative, in his understanding, how the Evenki of Surinda are constructed as a low-income population in need of state governance and social security provisions, rather than as entrepreneurs and rational producers. Below, I will show how reindeer science is contributing to constituting this trope in reindeer herders’ subjectivities.

Reindeer in Science

The establishment of reindeer veterinary services and research at the beginning of the 20th century was initiated both from the bottom up and from above, in response to widespread anthrax epidemics (Diachenko, 1975, p. 3). The early Soviet state made particular efforts to institutionalise veterinary stations and study the aetiology of diseases, and to develop curative and prophylactic treatments. In the 1920s, a number of veterinary clinics, institutes and mobile units existed to provide medical care and offer expertise on selective breeding and pre-slaughter fattening, and to teach prophylactic measures for disease prevention (Borozdin et al., 1979; Fondahl, 1989, p. 53).

Zootekhniia in Russia is a branch of agricultural science that studies the keeping, feeding, and use of domestic animals. It provides knowledge about animal breeding as part of the agricultural economy, combining knowledge from such fields as biology, zoology, anatomy, histology, physiology, biochemistry, genetics, cytology, immunology, etc. with veterinary science, agronomy, and agricultural economics. Zootekhniia mostly looks for ways to increase production through the application of mechanisation and automatisation of processes.

It is the wider development of veterinary science and zootekhniia in Russia and its centralised state management in the early Soviet era that led to its application in reindeer husbandry (Donchenko & Samolovova, 2017 a and b). What perhaps distinguishes Russia from other countries is its claim for more intensive application of scientific methods, particularly in reindeer husbandry (Borozdin et al., 1979). I here use “reindeer science” to designate both veterinary science and zootecnia that focuses on reindeer and husbandry.

Scientific work included concerns about increased efficiency of labour organisation and capital investment, organisation of land use and pastures, feed and diet, immunisations and guarding of herds from predators, improved herd structure, and the application of modern transport and technology. Soviet science has been particularly praised for its success in the exploration of the assessment of breeds and individual animals’ breeding quality, methods of selection and selective breeding, which accordingly is said to have allowed for large-scale selective work in this agricultural sector (Borozdin et al., 1979, p. 15). The Soviet Union ideologically constructed a belief that agriculture, including reindeer herding, is a production economy, and most problems that occur in its process are amenable to technical-scientific solutions.

In 1931, the Scientific Research Institute of Reindeer Husbandry (NIISKh KS) was established as a powerful materialisation of science and its asserted role. At a local level, reindeer science was represented by at least one veterinary doctor and three to four
zoo-technicians employed by a middle-range sovkhoz (of 8 to 10 herding teams and 30,000 reindeer). The job of vets seems more or less obvious: to monitor the health of animals and conduct all required preventive measures, such as vaccinations. Zoo-technicians’ role has been more complex, as anthropological accounts show (Ssorin-Chaikov, 2003; Vladimirova, 2009). They have been responsible for the application of the organisational and technical methods of reindeer breeding. Most importantly, zoo-technicians occupied a middle position in the hierarchy of reindeer breeding enterprises, between its administration (usually situated in the village) and the herding brigades operating in the “wild” (tundra or taiga) (Habeck, 2005; Konstantinov & Vladimirova, 2006). They are thus key figures in monitoring reindeer herders’ practices and have the power to report on them to the administration. Ethnographic accounts show that no matter how complex and variable relations between herders and zoo-technicians were, they were always hierarchical and asymmetrical in terms of power. The context of agricultural science provided the ground for this asymmetry and power, and zoo-technicians were important mediators in the constitution of subjectivities in reindeer breeding.

Another institution that became important in transforming subjectivities with the pedagogical means of science was the establishment of professional reindeer herding schools in villages where Soviet breeding methods have been taught to indigenous youth with the help of written textbooks. Such textbooks contain knowledge on reindeer biology, veterinary science, pasture management, selective breeding, innovative technology, etc. In addition, a minute reindeer herd has been sometimes located in the proximity of the village where students can practise the theoretical knowledge acquired in class and reading.

One of the most obvious results of reindeer science is the increasing complexity of the reindeer herding method and procedures described in the specialised literature (Vladimirova, 2006). Such prescriptions are not easy or even possible to follow, as many reindeer herders have commented during my long-term research in the Russian Arctic. Their disciplinary role seems beyond doubt (Ssorin-Chaikov, 2003).

The basics of selective breeding of animals has been established through a sustained long-term effort and the transfer of practical knowledge, scientific curiosity and experimentation that began in many countries in the 17th century (Derry, 2015). In Russia this occurred later, but in the early 19th and early 20th centuries, Russia actively imported know-how and purebred animals for the improvement of local breeds of cattle and horses (Kulikov, 2000). Long before this, Russian agricultural scholars and practitioners had been receiving their education in Germany and Sweden, actively experimenting and trying to adapt knowledge acquired to the local needs and concerns of animal breeders and politicians who were trying to improve local practices. In this way, Russian debates over methods of selection had similarities with discussions in other parts of the world (Dankvert & Dankvert, 2002), debates related to Darwinism being intensely discussed in Russia (Derry, 2015; Trapezov, 2009).

Selective Reindeer Breeding

Soviet scholars and authorities praised themselves for the successful application of selective breeding in reindeer husbandry. Artificial selection was organised at different levels: a
chain of “experimental stations” (eksperimental’naja stanciia) located at key reindeer herding regions, such as Chukotka, Murmansk Region, and others conducted research on reindeer biology and breeding techniques. Selective breeding enterprises (plemzavod) practised selective breeding in bigger herds with the purpose of exporting high-quality animals to other regions. Finally, each reindeer herding enterprise conducted careful selective work annually by slaughtering lower quality or old animals, and introducing superior quality individuals for reproduction. This hierarchical organisation of selective breeding institutions largely repeated the social hierarchy of Soviet society. Legitimate knowledge was produced at specially created institutions and then disseminated to localities, to be applied there in everyday practice. These levels were responsible for monitoring and reporting how the centrally created knowledge of selective reindeer breeding was conveyed and implemented locally.

Selective breeding research and experimentation started in the 1930s, its main occupation being the evaluation of animals according to size and weight. The spectrum of interests expanded in the following decades through attempts to find dependencies between more features, such as appearance, constitution, and productivity (Borozdin, 1974). Detailed descriptions of the technology of such measurement and selection were provided in Soviet reindeer herding books and booklets. The preoccupation of prescribed selective work with measuring, and the careful recording of measurements, created a particular conception of the reindeer, marking a transition to a different mode of spatial perception and representation of animal bodies, which would consequently find mathematical expression in numbers, tables and graphs. This enhances what Anderson (2014b) has defined as a reindeer herding culture of control that differs from indigenous Evenki relations with reindeer, which formed a culture of reciprocity.

The value of size
Soviet scholars claimed that the main purpose of selective breeding was the increase in meat production, since other reindeer products had only secondary economic value. This reinforced the Soviet ambition to transform what it described as primitive and backward subsistence into modern, intensive agricultural production. Reindeer came to be considered as a food product that entered a chain in the socialist market: a slaughterhouse, a meat processing shop, a food store. The stores were often at a huge distance from the animals’ habitat. According to many informants, reindeer meat was not even mentioned on labels, since the meat was stereotypically perceived as having a strong smell that Russians dislike. Larger size became the most desirable feature and the main objective of selective work. The scientific intervention in achieving this provides a moral justification for a maximisation rationality. And, as seen, maximal body mass and increased meat production are not in harmony with older Evenki ideas.

In order to maximise, great attention was attributed to fodder quality and environmental conditions, and to ensure inheritance of the best characteristics, zoo-technicians recommended the creation of selective breeding herds within enterprises, containing only higher class reindeer (Borozdin, 1974). The extreme elaboration of a natural process such as reproduction can also be interpreted as a disciplinary practice that ensures increased monitoring and learning (Vladimirova, 2006).

Artificial selection should take into consideration features such as body mass and fat, correlated to age, and finally sperm qualities. Calves born in such selective breeding herds can have 8.3% higher mass at birth than other calves. Further advice that has been broadly discussed in the specialised literature is the regulation of herd structure, where productive
females ought to constitute a greater number (Borozdin, 1974). Finally, the idea of “rational” exploitation of male producers has been introduced, with consideration for their age, as sperm quantity and quality varies with age.

According to ethnographic accounts, Evenki traditionally have more or less strict control over reindeer breeding and animal selection. They carefully assess the qualities of animals on the basis of continuous observation and experience of animal behaviour in different situations and settings (Anderson et al., 2017). Contrary to this, scientific assessment is based on correlations of measurements and descriptions of an animal taken at fixed periods of time and documented graphically, capturing quantitatively measurable characteristics of the animal body that are calculated into a coefficient or class designation which represents the long-term process of development, the life of a reindeer. It informs human decisions on the life of the animal and the future of its genes: are they of a quality that is worth transferring to future generations of desired reindeer, or not?

More recent scientific accounts strive to bring the trait of body mass to a genomic level, genetic research of reindeer in Russia being in the dawn of its development. No reliable genetic markers for the economically useful features in reindeer have yet been found, while in Fennoscandia scholars have been more successful in revealing connections between micro-satellite sequences and the reproductive ability in male reindeer. Such research shows continuities with Soviet ideology and ideas of reindeer breeding while striving to strengthen the international position and prestige of contemporary Russian science.

Body mass has been one of the most desired traits of artificial selection in many economically important species, such as cattle, sheep and goat (Derry, 2015). Its emphasis in reindeer herding is perhaps a direct transfer from other, older branches of selective breeding. Judging by the little available information, fixation on body mass as a meat production indicator was not a concern of Evenki selective practices. The literature on reindeer breeding transformation in Fennoscandia discusses reindeer body mass maximisation in the context of the so-called state rationalisation ideology and policy. Such policies, designed and promoted by politicians and scientists in the Nordic countries in the late 1960s and early 1970s, aimed to increase the productivity of Sami reindeer breeding in order to make it compatible with the market economy and thus increase the economic prosperity of Sami communities at the margins of the state (Beach, 1981; Paine, 1994). As past and present research on the long-term results of the encounter between rationalisation and indigenous reindeer herding knowledge and practice shows, it mostly created negative outcomes for Sami communities whose subsistence base is reindeer (Forbes et al., 2007). The “positivist-reductionist approach” of scientific ideas and research that inform such policies contradict Sami reindeer knowledge and skills, which emphasise balance that is “constantly challenged by spatial and temporal variations in weather and predators... Therefore, any herder’s understanding of a rational and sustainable reindeer number and herd structure would depend on the local climate, landscape, grazing conditions, predators, and other types of disturbances.” Sami reindeer herders come with such challenges by maintaining flexibility. “Flexibility is sustained through observing the herd, the landscape, and the climate; by moving the herd; and by keeping buffers” (Johnsen, Mathiesen, & Eira, 2017, p. 41).

Similarly, in Evenki reindeer husbandry, the fixation on body mass can cause other useful qualities to deteriorate and undesirable ones to develop, which may be harmful for the species in the long run. Practices in the tundra did not necessarily and always follow scientific and political rationales and prescriptions (Anderson, 2000). In many cases, indigenous values, ideas, skills and practices live alongside state-imposed ideologies, rules, and procedures.
Assisted Reproduction

Control over reproduction is a primary requirement of selective breeding, and the ultimate method to achieve it is artificial insemination (AI). AI revolutionised selective breeding, especially in the domain of dairy cattle. As Derry (2015, p. 96) explains, AI as an industry evolved in direct relation to purebred breeding. Its roots are early cases of state attempts to consolidate control over the service of stallions in 17th century France and Prussia, while later, British authorities encouraged research on the hereditary transmission of defects. By the early 20th century, the dominant idea was to connect genetic improvement to pure breeding. State control over males through certification became a common practice in promoting the spread of purebred influence on domestic animals.

Russian scholars and practitioners took up interest in AI by the turn of the 19th century. From 1909, special theoretical and practical courses on AI were taught at the Laboratory of the Veterinary Department in Askania-Nova. The advantage that prompted this interest was the potential for cattle breeding by maximising the use of progenitors while cutting the cost of breeding and transport.

AI technology constitutes a direct appropriation of living animal bodies by humans. Its implications in terms of reindeer welfare, subjectivity, and emotions need further empirical research. An interesting question is the proportionately large amount of research and publications in Soviet and contemporary reindeer science on the topic. AI has not found wide application in practice because of the difficulties and costs involved. The earliest attempts to obtain reindeer sperm are from the late 1950s and early 1960s for the purposes of assessment of male reindeer qualities (Deriazhencev, 1970). Sperm evaluation is another numerical expression of a capacity that is evolving and developing. In the broader context of a herd and selective breeding, it excerpts the reproductive qualities of a whole group of animals and their reproduction through transmission of qualities to the next generations. Thus, sperm numerical expressions have accumulated meaning with temporal and social characteristics that overcome the bounds of the individual body. I think that this symbolic meaning associated with semen makes it a tempting object for research and control. The Soviet and contemporary reindeer science’s obsession with reindeer sperm collection, preservation and use by humans can perhaps be connected to its semiotics, rather than merely the economic efficiency of AI.

All suggested scientific solutions revolve around a notion of a rational method as one that is quick and requires as little manual operations as possible; this is in contrast to the natural reproductive cycle, which has a specific temporal framework and incorporates a complex of related processes and material features. Selective breeding rationality can thus be associated with a particular view of reindeer bodies and physiology as segmentary and self-contained. Scientific technology’s attempt to imitate parts of natural biological processes has a segmentary character in which processes are seen as a chain of episodes and relations are imagined as interactions between bounded entities. In addition, an animal’s involvement with other animals and natural objects is reduced, i.e. in AI reindeer have no agency independent of the human will.

The predominant rhetoric of scientific accounts implies that it is insufficient research and material resources that prevent science from solving practical issues or applying existing technologies in practice. The stated need for more research and resources helps restore and preserve the status and power of science in determining human relations to reindeer. For example, one recent suggestion for solving some of these problems is the synchronisation of the oestrus cycle of female reindeer through the injection of hormones, natural cycles being radically “corrected” for human convenience and purposes.
The recent revival of AI in reindeer science is justified by its “potential” or “future” advantage to reindeer breeding. AI is represented as the main aspect to the future solution of contemporary problems in the Arctic, such as the loss of wild and domestic biodiversity and indigenous breeds, and food security in the context of rapid climate change, industrial pollution, and loss of habitat. AI is a way to “eternal preservation and rational exploitation of the genetic fund of threatened species, and to the creation of competitive selective breeding methods” (Nikitkina et al., 2017, p. 10). The temporality of scientific discourse expands by translating the future into eternity. This provides interesting correlations to Soviet conceptions of time, and is different from other current scientific accounts that relate to climate change and revolve around notions of rupture and unpredictability (Falk, 2016).

Assisted reproduction is not widespread due to the low level of domestication of reindeer and the difficulties such work faces in the remote tundra and taiga. In addition, the resistance of indigenous people to reforming their age-old ways of life is another hindrance to the modernisation of reproductive technology (Goncharov & Nikitkina, 2016). An old trope representing indigenous people standing in opposition to progress – symbolised by scientific innovation in reindeer husbandry – has been reproduced. This trope introduces yet another coexistent temporal dimension that is opposed to scientific future/eternity, i.e. eternal/past.

Pure breeds
Soviet agricultural science is thus trying to improve the productive qualities of reindeer in order to increase meat production. Crossbreeding combined with careful quality assessment of animals for slaughter and for reproduction were common methods that have been carefully described in the literature (Anderson, 2014; Borozdin et al., 1979; Iuzhakov, 2018). The question of different reindeer breeds, even though taken up already in the early 1930s, became more relevant in the 1980s. Breeds have been distinguished following earlier classification of reindeer breeding in the Russian North based on a number of criteria: climatic region, natural environment, reindeer appearance and, most importantly, cultural practices of reindeer herding (Vasilevich, 1964; Vasilevich & Levin, 1951). Reindeer pedigrees relied upon the classification of saddling and harnessing technologies as a proxy for grouping together distinct indigenous pastoral traditions, while reindeer bodies were assumed to be standard (Anderson et al., 2017).

Here it is interesting that the Evenki breed of reindeer was officially registered only in 1985 when, following an order of the Ministry of Agriculture, a committee was called to investigate breeds (Mukhachev & Salatkin, 2007). Mukhachev describes the similar economic and biological qualities and physiological features of reindeer living in the same region, which proves their genetic unity. In his view, these distinctive qualities have been formed by the long-term influence of the natural environment and human economic adaptation in exploiting reindeer. Scientists recommend pure breeding as the best method for preservation and further development of the breed (Mukhachev, 1992). According to Anderson (2014), the preoccupation with pure breeds and their conservation since the late 1980s corresponds to a number of social, political and economic processes. Licensing of distinctive breeds adds status to reindeer science and also promotes new research and selective work. Sharing the name of the ethnic group, the breed connects the indigenous group to the state-organised reindeer economy and science, thus integrating it further. The pres-

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4. Here I take inspiration from Nikolai Ssorin-Chaikov’s study of multiple relational temporalities in Russia that are constitutive of meanings and interpretations (Ssorin-Chaikov, 2017)
ent symbolic dominance of the breed subjects indigenous people to state-supported science after divorcing them from reindeer as scientific objects through the opposition of temporal modalities. Science thus appropriates the justified role of a mediator between indigenous reindeer herding (past/eternity) and the conservation of reindeer herding (future/eternity). This semiotic framework provides the rationale for regional selective breeding enterprises, such as Surindinskii.

The Evenki breed of reindeer became integrated in the struggle for indigenous rights that started in early 1990s. Its scientific status brought symbolic capital to a variety of stakeholders. It became the essence of original indigenous culture, whose antiquity and aboriginality found proof in the eternal genetic transmission of its features. Such associations have been circulated by indigenous activists and politicians within discursive and political fields of empowerment. Regional authorities and politicians emphasise the Evenki breed and present it as a proof of political will and patronage over indigenous populations. The engagement of science, in cooperation with local reindeer herding enterprises, provides one of the few available resources that assist its survival.

**Selective Breeding in Contemporary Practice**

“It is not profitable to use skins from our reindeer… because our enterprise is a selective breeding factory (plemzavod), we make profit of reindeer when they are alive… our task is to preserve the breed, the Evenki breed of reindeer” (an interview with an employee in the Surinda plemzavod, September 2010)

In connection with the withdrawal of state support for and management of reindeer in the 1990s, veterinary services declined sharply and most breeding stations closed. The history of Surinda plemzavod is thus not an exception. In 2007, the slow recovery of selective reindeer breeding enterprises started, restoring their number from 2 to 27 (Iuzhakov, 2018). The revival has political roots and is part of an ongoing process of boosting Russian state identity in which science is given a role. Following a global model, scientific and technological innovation is an important idiom in re-building the legitimacy of the government.

The selective breeding profile of the Surinda enterprise is of special pride to the director, who stresses that they have a federal licence confirming their right and role in preserving and improving the Evenki breed of reindeer. The selective breeding project is in cooperation with the Ministry of Agriculture and the program receives financial support directly from Moscow.

The enterprise had four herds in 2010, (against eight in Soviet time) with some 5000 reindeer (against 15,000 before privatisation), gathered through private owners who receive a monthly salary and social security payments. Reindeer herders also graze their private reindeer within the enterprise herd. In addition, in 2003, the municipality purchased 500 reindeer from Yamal (of the Nenets breed), the year after joined by another 535 reindeer. Since then, new reindeer are bought annually from Yakutia, and recently from Taymyr. The diversity of breeds included in the herd does not contradict the selective breeding objectives, according to the director and the scientists. The majority of imported males are castrated, thus “we mix some selected blood with ours, and they are being absorbed by the Evenki breed.” During the first round of selection they help increase vitality, being more energetic and mobile, and better adapted to dig in deep snow and find lichen. They also help the herd grow faster. The Evenki breed has decreased and is hard to find on the market. Artificial selection is conducted only in two of the enterprise herds. This involves full
control over the mating, with all reindeer kept behind fences. In addition, careful year-round selection of animals to be preserved and used for reproduction is conducted.

As indicated by the quoted excerpt, employees state that prioritisation of selective breeding limits the possibilities for other production, for example of meat or hides. Only about 100 reindeer are slaughtered each winter. This seems to contradict other objectives of selective breeding, such as body mass and productivity. It is, however, in line with some ideas raised in relation to pure breeding and selection of the Evenki breed, such as its intrinsic value as an allegedly aboriginal breed. At the level of the enterprise and the village of Surinda, such values have acquired a significant role: “It is like horse breeding, every local breed should be valued, should be preserved.” Local residents stress the primary role of the Evenki breed in maintaining ethnic culture and identity. The rationale behind such reindeer herding is the support of traditional indigenous economy, culture, and identity through traditional clothing, dwelling (*chum*), and skins.

The aspect of ethnic identity symbolised by the Evenki breed contrasts with meat production reindeer breeding, which symbolises Soviet rationality, and is subject to resistance in the local population. The enterprise is exclusively financed through governmental programs for the support of agricultural production, indigenous people, and scientific research and innovation. According to the director, the municipal authorities implicitly prefer not to support his business initiatives to develop larger scale reindeer economy. They preserve the status quo, i.e. maintain reindeer herding in Surinda in the form of social security. They thus reproduce an attitude to local Evenki as being marginal, i.e. “criminals and alcoholics.”

In an interesting way, the Evenki breed of reindeer is an arena for the constitution of indigenous subjectivities that link economic and social marginality in a complex way with ethnic and cultural pride. Another expression of this ambivalent situation is the statement of an Evenki from another community, that Surinda is the “Siberian Texas.” It is a place that embodies marginality and trouble together with adventure, courage, and pride.

Local people claim that “the authorities do not understand Evenki people” and their existential need for reindeer. It is difficult to reach them or to explain. The original Evenki system of breeding and herd structure may not correspond with scientific prescriptions. Employees of the Surindinskii Enterprise, referring to Evenki exceptionality, mentioned their important role in the Soviet era in selling high-quality pure breed animals for the reproduction and improvement of other sovkhoz herds in Siberia. Their present ambition is to accumulate the necessary number of reindeer so that the selective breeding herd can reproduce and keep in balance. This is only possible if slaughter is strictly limited to the minimum possible to satisfy the village’s consumption needs.

The contradiction between selective breeding objectives at the local level, and between pure breed preservation versus meat production, loses its sharp contours in the context of the reindeer economy at more general levels. In contrast to pure breed selection, where inbreeding is the dominant method, selective breeding for productive features, such as meat, is based on crossbreeding (Iuzhakov, 2018). As reindeer from the Evenki breed, according to scientists, have excellent meat and are the biggest in size after the Eveni5 breed, they are seen as a necessary component in such crossbreeding (Mukhachev, 1992).

To further understand the ways in which science plays a mediating role between the indigenous Evenki community and the state, I refer to interviews with the scientists who cooperate with the Surindinskii Enterprise. They engage with long-term research on selec-

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5. The Eveni breed of reindeer is named after another indigenous ethnic group, Eveni. Eveni reindeer are known to be the largest.
tive breeding methods, genetics, feeding, and herd organisation. In their words, they are “interested in the animal, not its economic or cultural meanings”. They do, however, agree that as far as the enterprise is concerned, all aspects are vital and inseparable. Participation in everyday herding and household work in the taiga camp marked their participation and a certain level of sharing in Evenki life. As one scientist said, being described by herders as “a real nomad” (nastroiashchii kochevnik) was a special honour. The opportunity to be involved in scientific cooperation provides further space for the resistance of Evenki. As local reindeer herders and Evenki people stressed, Evenki reindeer breeding can offer a broad field for new studies.

The will of Evenki to be included in scientific studies that are mostly led and controlled outside of their community seems to contradict contemporary indigenous efforts to decolonise Western research by increasing indigenous and local co-production and control over it (Denzin et al., 2008). In the Russian political context, however, scientific work is mostly valued for helping make Evenki reindeer herding visible and attracting funding to maintain it. I can conclude that indigenous subjectivities that are constituted in the field of science, even when they provide grounds for resistance, do not allow for radical criticism of the existing political and social status quo.

Conclusions

Soviet agricultural science provides a field of ideas and practices in which a particular kind of knowledge is created and given status. This knowledge is imbedded in rationality that consolidates the power and control of authorities over people and nature. It is part of what Anderson (2014) calls a “culture of control”. Science produces detailed accounts of reindeer biology, physiology, ethology, and methods of husbandry, i.e. an epistemology that prescribes particular relations, a specific ecology. This ecology includes all involved actors, human and non-human, the natural environment, and finally technical innovation and the material objects to which the latter gave birth. This ecology has been evolving and fluid in response to changes within other spheres of state governance, as well as transformations of its components. It has been part of the broader process of creation of human and non-human subjects in the Soviet Union and later.

Selective breeding is of particular interest in the study of subjectivities in Russia because of its symbolic and practical potential to impose human will on other natural processes and beings. Selective breeding is a field of intensive and long-term transformation and provides space for imagination and creativity. New qualities, traits, beings and species have always implicitly or explicitly existed within its imaginary field. Selective breeding knowledge and practices in reindeer herding produce a reconceptualisation of reindeer bodies and physiological processes. Through this re-conceptualisation, reindeer social patterns and processes are transformed, as well as their spatial and landscape relations. In the process, the essence of reindeer as a species is re-articulated. In the context of the Soviet history of ideas, such re-articulations often relate to the semiotic field of binary oppositions that are associated with the dichotomy wild and primitive, on the one hand, and domesticated and modern on the other. This field has been shaped within Soviet policies toward indigenous people and is constitutive of indigenous subjectivities as well.

Reindeer science built its credibility on numerical, descriptive, and graphical styles of abstract representations of reality. Such representations reduce reality to a controlled static order. The conceptual and material apparatus of reindeer science, together with its representational styles, influence the choice of observable and measurable criteria to which
biological and natural processes of reindeer herding are reduced. To a large extent, such criteria are subjected to human intentionality, embedded in political and economic priorities, and power relationships. Power is exerted over animals and over people. The knowledge about reindeer and indigenous people justifies such power relations and reproduces them. The constitution of indigenous people and animal subjectivities within science, and through the practices it produces, are part of such power relationships.

The social relations of Soviet reindeer husbandry have received much research attention as to state and bureaucratic power as well as indigenous people’s resistance. Reindeer science has been relatively seldom addressed in critical analysis and still awaits future careful study. The knowledge and herding practices that it has produced in real life herding by being mixed up with older indigenous skills, knowledge, and creativity, deserve further attention and scrutiny. The study of reindeer science is also a field where many actors in the Arctic interact; the research perspective it offers is thus more productive as it can avoid the traps of ethnic, economic, or other dichotomies that other areas more easily project – for example, indigenous political movements, tradition and economy, or culture.

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