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Cultured reindeer, domesticated land, and (self)-cultivated herders: Histories and structures of reindeer herding landscapes in the European part of Russia

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Abstract

This paper attempts to analyse diverse forms of reindeer pastoralism that exist in the European part of Russia from the viewpoint of landscape approach, that is as unique localized and historically developed interaction between people, reindeer and the natural landscape. The analysis starts with a short overview of the history of reindeer herding in the two reindeer herding regions of European Russia: the Archangelsk tundras and the Kola Peninsula. The developments of the last 300 years related to the transition from pre-pastoralist reindeer herding to reindeer pastoralism and the development of reindeer pastoralism during the late Imperial and Soviet periods are shown as particularly important. During this period, the particular form of reindeer-animal interaction developed in the Archangelsk tundras and characterized by intensive control over the herds and long linear interzonal migrations became dominant throughout European Russia before disintegrating again into a set of more localized forms by the late Soviet to early Post-Soviet periods. The discussion proceeds by analysing interactions between herders, reindeer and environment in the two main forms of reindeer pastoralism present in European Russia now in the most part of the Kola Peninsula and the most part of the Archangelsk tundras respectively. It is demonstrated that these two forms essentially depend on the interactions between reindeer, people and environment that existed in previous periods and have left traces in the physical landscape as well as in reindeer behaviour. The current modes of interaction between the elements of reindeer landscape build on them in different ways. Besides the two main forms, there are three small localities in European Russia where other forms of landscape interactions can be found.

Keywords Reindeer pastoralism, Human-animal interaction, Landscape approach, European Russia, Kola Peninsula, Nenets, Saami, Komi

Introduction

In this paper, I wish to explore how the landscape approach can improve our ability to describe and, more importantly, understand reindeer pastoralism in all its diversity. In one of his most famous articles, Tim Ingold

(1993) pointed to two views of the landscape that existed in the Western scientific tradition: “the naturalistic view of the landscape as a neutral, external backdrop to human activities, and the culturalist view that every landscape is a particular cognitive or symbolic ordering of space” (Ingold 1993, 152). Ingold rejected both of the views in favour of a more holistic and interactionist understanding of landscape as “an enduring record of – and testimony to – the lives and works of past generations who have dwelt within it, and in so doing, have left there something of themselves” (Ingold 1993, 152).

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Without going into details about the concept of “dwelling” (which is one of the central concepts in Ingold’s thinking—see Ingold 2000 for details), one can summarize Ingold’s understanding of landscape as being the localized dynamic cumulative product of activities of and interactions between human and non-human, living and non-living actors, the product, which can be used, given the appropriate methods of interpretation, as an evidence of these activities and interactions and a source for their historical reconstruction. It is the approach based on this understanding of the landscape that I have in mind when I speak of landscape approach.

Published initially in “*World Archaeology*” journal, the paper by Ingold became a “waymarker milestone, landmark” of the “late 20th century archeological thought” and got reprinted in several readers and theoretical reference books (Hicks 2016, 6). It contributed significantly to the development of the so-called Historical Ecology, a sub-discipline on the edge between archaeology and social Anthropology studying temporal and spatial dimensions in the relationships of human societies to local environments; the notion of landscape as a cumulative product of this relationship is central in this sub-discipline (Balée 2006). Several notable attempts to apply landscape thinking in archaeological and anthropological research were made also outside this sub-discipline (Hicks 2016). All these attempts, however, used a landscape approach to analyse relations and interactions between human collectives and their environments and, by so doing, retained and stressed the distinction between the two, which, ironically, was explicitly rejected by Ingold. An important recent contribution to the landscape approach, which addresses somehow this problem, was made by Anna Tsing in her famous ethnography of matsutake mushroom (Tsing 2015). A significant part of this work is devoted to criticizing attempts by modern science to explain all phenomena as manifestations of general principles and laws. Tsing argues that many if not most observable phenomena emerge from more or less accident encounters and interactions between objects and forces, including humans, living organisms, non-living matter, etc., which, most importantly, can have a cumulative effect over time. She names these cumulative encounters and interactions “entanglements” and their products “assemblages”. From this point of view, landscape represents a localized assemblage, which has emerged as a result of entanglement over time of a set of “actors”, living and non-living, including in most cases human collectives (Tsing 2015, 151–63). This understanding of landscape has epistemological implications: being a cumulative result of occasional encounters, landscape cannot be explained away by a reference to general principles; its understanding is possible only in the

form of history, that is a narrative about the succession of encounters that give rise to it (Tsing 2015, 167–76). Although this narrative can and often should include humans and their collectives as one class of actors involved, it cannot be limited to the encounters between these actors and all the rest collapsed together under the label of “environment”.

The refusal to treat the local and concrete as just a manifestation of the global and abstract is in the heart of the landscape approach as developed by Tsing. This differentiates it, for example, from the coupled system (including the coupled human-animal system) model. Instead, a landscape can be understood as a local constellation of global and regional phenomena and forces (natural as well as social), a product of interaction between them. To make it short, the notion of landscape refers to a particular local set of interactions between phenomena, which by itself exceed this particular locality and partly are of global magnitude. Some of these interactions are quite regular and general enough to be described by universal abstract models. Others are occasional and idiosyncratic to this particular locality; no general laws can be employed to describe and/or make sense of them. The whole set is in any case unique and bound to the locality.

In this sense, a reindeer herding landscape in its “minimum definition” is one, where the abovementioned set of interactions includes the multifaceted triple interactions between the three core elements: reindeer population, human population and grazing resources (see Holand et al. 2022, 10–11 for the most recent discussion). In reality, any reindeer herding landscape would also include interactions between these three elements and a potentially unlimited number of other actors and phenomena such as predators, mosquitoes, temperature, and snow cover. Some of these interactions are regular and general enough to be abstracted from a particular locality; they constitute reindeer pastoralism as a general phenomenon. I believe that at least some of them can be described in the form of abstract models, which can greatly contribute to our understanding of the phenomenon. However, I also believe that if our aim is to achieve a complete understanding of how reindeer pastoralism works, then we have to consider these interactions in the context of other interactions, natural and social, in the given locality; we have to do this also in order to understand and account for the diversity of interactions between reindeer and people. In other words, we certainly can learn something important about reindeer pastoralism in general, but it is only a particular reindeer pastoralism (or a number of reindeer pastoralisms) that we can meaningfully describe, investigate and wish to understand. The landscape approach can help us to do exactly that.

The aim of this paper, therefore, is to utilize the landscape approach to describe and analyse reindeer pastoralisms that exist in one particular geographic region: the European part of Russia. The choice of this geographic region can be explained first of all by the scope of my scientific expertise: this is the region where I did most of my fieldworks during my academic career. Besides that, other regions of Russia are going to be covered by other papers from the special issue this paper belongs to. In order to achieve this aim, the following research questions need to be answered: (1) which reindeer herding landscapes can be found in the region and how these landscapes differ to each other?; (2) which entanglements (in the sense of Tsing, that is historically and cumulatively emerged interrelations) of people, reindeer and pasturelands constitute these landscapes?; (3) what explains the existence of these landscapes?

Following the methodological suggestions by Tsing described above, replying to these questions, particularly the first and the third ones, involves, first of all, compiling a historical narrative. Therefore, the argument of this paper starts with an account of the history of reindeer herding in European Russia constructed on the basis of existing historical sources and studies and, for the period of the late twentieth to early twenty-first centuries, partly on the basis of fieldwork interviews. Two clarifications about this account should be made. First of all, in the framework of this paper, this account by no means represents an aim in itself: its purpose is to divide the region of the western Russian reindeer herding into historical areas and establish their peculiarities and their relations to each other. Since historical sources tend to focus on humans rather than on reindeer or pasturelands, the human element of the triad necessarily occupies more space in the account. Still, taking into account its purpose, the account ignores details about social and political aspects of the history presented in favour of aspects that directly relate to the human-reindeer-pastureland interactions, such as herding technology. The second, since history of the Russian Arctic and particularly the details on reindeer herding relevant to our topic are relatively poorly documented, many important aspects have to be reconstructed on the basis of just one or two sources.

The historical account is followed by an analysis of the assemblages of herders, reindeer and pasturelands that make up the modern reindeer herding landscapes. This analysis is performed mostly on the basis of fieldwork observations and interviews collected in the context of different research projects during my repeated trips to the Bolshezemelskaya tundra between 1998 and 2021 and to Kola Peninsula in 2014, 2015, and 2017. During these trips, which lasted from 1 to 3 months, I accompanied

reindeer herders of several reindeer herding enterprises¹ in their migrations and reindeer pasturing operations as well as performed ethnographic interviews with them. I also rely on previous studies on the interaction between elements of reindeer herding landscapes, particularly on the studies of the interaction between reindeer herders and reindeer (most notably Dwyer and Istomin 2008; Istomin and Dwyer 2010; Stépanoff 2012; Stépanoff et al. 2017).

Origin and history of reindeer herding in the European part of Russia

The European part of Russia has two geographically separate reindeer herding regions (Fig. 1.). One is the Kola Peninsula in the north-west, on the border with Finland and Norway; administratively, it represents the Murmansk oblast (province) of Russia. The second is the tundra belt and the adjacent northern taiga in the north-east of the European part of Russia. It stretches from the Kanin peninsula all the way to the Ural Mountains and administratively represents the Nenets Autonomous Area, the northern part of the Komi Republic and the north-eastern corner of the Archangelsk oblast (province). This region has many names in literature: North-eastern European Tundras, Pechora Tundras, Pechora Country, European Nenets Tundras, etc. In this paper, I use the name “Archangelsk tundras”, which, despite being somewhat outdated,² is probably the most usual in historical literature. The two regions are separated by the White Sea, a huge gulf penetrating from the arctic Barents sea southwards into the landmass. No reindeer herding exists or, as far as we know, has ever existed on its southern shores.

Historically, the two reindeer herding regions developed separately and did not influence each other till the late nineteenth century. Thus, the Archangelsk tundras are clearly related to the Tarns-Ural areas (western Siberia) as far as reindeer herding is concerned. In accordance with the mainstream hypothesis, both (semi)domestic reindeer themselves and practices of their breeding were brought to these areas in the late 1st or the early 2nd millennium AD by Samoyedic speakers, the predecessors of modern Nenets, Enets and Nganasan; these people migrated from their historic homeland in the Southern Siberia (Sayan region) along both sides of Urals until they reached the tundra zone (Dolgikh 1970; Khomich

¹ Siziabsk, Inta and Vorkuta enterprises of Bolshezemelskaya tundra and Krasnoshelye and up to some degree Lovozero enterprises of the Kola Peninsula.

² This name reflects the pre-Soviet and Soviet reality of this region being a part of the Arkhangelsk province. Nowadays, however, the Nenets Autonomous Area is an independent federal unit of Russia.

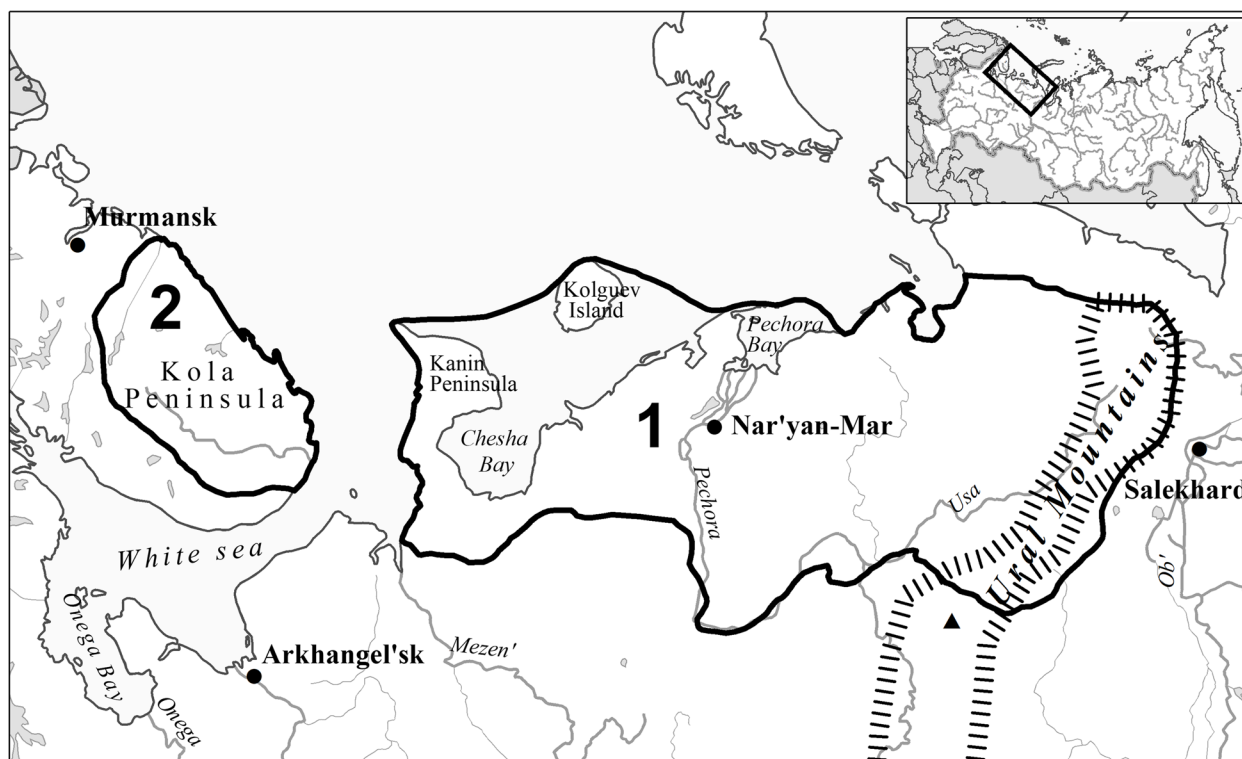


Fig. 1 Reindeer herding areas of the European part of Russia: (1) Archangelsk tundras and (2) the modern Kola Peninsula reindeer herding area

1995). Alternative hypotheses suggesting the local origin of both the Samoyedic-speaking peoples and their reindeer herding do also exist (e.g. Golovnev 1995). However, the mainstream hypothesis, which was originally built mainly on linguistic and ethnographic evidence, has recently gained support from genetic studies, which demonstrated the local (semi)domestic reindeer's genetic connections to wild reindeer populations of the southern Siberia and a lack of the similar connections to the local wild reindeer (Røed et al. 2008; 2020; see also Losey et al. 2021 for an attempt to accommodate this evidence inside the local origin hypothesis). In any case, there can hardly be any doubt that the local reindeer herding practices and equipment including the conical nomadic tent (chum), reindeer sledges and harness, reindeer fur clothes, herding tools such as lasso (*tynzian*) and steering stick (*khorei*), etc., were first introduced in the region by the Samoyedic-speaking Nenets and then adopted by other local peoples on both sides of the Urals (Komi, Khanty, Mansi, Selkup).

At the same time, up till the early modern period (eighteenth century AD), local reindeer herding remained in the pre-pastoralist stage of its development: reindeer herds were small—they usually reached only several dozens of reindeer—and used mostly for transport, while the local people based their livelihood mainly on hunting

and fishing. Thus, in the encyclopaedic work of Johann Gottlieb Georgi, which was first published in German in the middle of the eighteenth century but most probably relied on unpublished reports from the late seventeenth to early eighteenth centuries, Samoyeds (Nenets) were described as “hunters and fishermen”, while “almost everyone of them possesses 20, or 50 and some even 100 or 500 tamed reindeer... They ride them and harness them in their sledges, but eat only those of them who fall dead or get insured, but sometimes kill also healthy reindeer as a sacrifice to their gods” (Georgi 1799, 7–8). This pre-pastoralist form of reindeer herding still can be found among some groups of Khanty, Selkups and forest Nenets as well as among poor tundra Nenets families in the adjacent Western Siberia as well as among many groups of southern Siberia. Families belonging to these groups usually exploit restricted territories inside one ecological zone (taiga, forest-tundra, or tundra), where they make several migrations annually between a few (two to six) established localities related to certain seasonal activities (e.g. between a summer fishing place and a winter hunting place; between summer fishing, autumn berry and cedar nut picking and winter trapping places, etc.) Only rarely if at all these migrations are determined solely or mainly by the needs of their reindeer herds, although these needs are usually also considered while choosing

the locality. While people stay at the localities, reindeer are allowed to graze freely, without any observation by humans, most of the time and often regularly come to herders' camps on their own accord. Tim Ingold (1988) described this kind of relationship between people and reindeer as those "based on trust" and contrasted them with the "domination-based" relations of the pastoralist phase.

The transition to the pastoralist phase, that is to the reindeer pastoralism proper, occurred in the Archangelsk tundras during the eighteenth century AD (Krupnik 1976, 1993). It can be suggested (Krupnik 1976; Istomin 2004) that an important role in this transition was played by the Izhma Komi, a group of commercial trappers and small-scale agriculturalists who settled on Izhma river, a left tributary of Pechora in the late sixteenth century (Konakov and Kotov 1991; Konakov 1993). They adopted reindeer transport from Nenets (Konakov and Kotov 1991) mainly to use it in trapping expeditions (Istomin 2004) but the fall of fur-bearing animals' population, which occurred in the region in the late seventeenth century forced them to look for a new source of income (Konakov and Kotov 1991). It looks like rising large reindeer herds and systematic slaughtering reindeer was, for this group, a way to compensate for the falling trapping revenues and to keep the commercial ties, on which the Komi were already very much dependent, by replacing pelts with other export products. As a result, Izhma Komi reindeer pastoralism emerged in the eighteenth century already as a commercial branch of economy aimed at producing goods for sale (Krupnik 1976) and, over the nineteenth century, caused a similar transition to pastoralism among European Nenets (Kertselli 1911; Krupnik 1976).

The transition to reindeer pastoralism changed the relations between people and reindeer. The migrations inside restricted territories between several seasonal habitats gave way to long linear migrations between ecological zones, from winter grounds in the northern taiga across the tundra zone to the arctic seacoast and back (Islavin 1847; Schrenck 1848; Kertselli 1911). Fieldwork observations show that in comparison to a reindeer-owning mobile hunter, a reindeer pastoralist is almost always on move migrating every day or every second day in the warm period of the year and from one to three times per month after the snow falls. Thus in Archangelsk tundras, Komi and Nenets reindeer herders follow established permanent migration paths called *vorga* (komi). These paths are visible on the tundra surface as tracks left by caravans of sledges that travel there twice each year, on the way to the seacoast and back. Nowadays, each *vorga* is used by one or two herding teams (brigades), which camp near it and pasture their herds along it. Among

Komi, the herds are permanently controlled by duty herders during the warm period of the year; the duty herders control and direct their movement. Among Nenets, the control over herds can be more relaxed, but the animals are still rounded up at least once (usually twice) per day. In winter, particularly during the polar night, permanent observation, of course, makes little sense. Still, the herds are checked and rounded up every day or at least a few times per week (see Istomin et al. 2017 for further details).

By the late nineteenth century, the lack of free pastures in the Archangelsk tundras and, more importantly, frequent epizootics of Siberian anthrax, which caused mass death of herds and contaminated huge territories rendering them impossible or dangerous to use for herding (see Dwyer and Istomin 2006 for further analysis), caused several waves of outmigration of local reindeer herders directed primarily to the east, that is to Western Siberia. However, in 1884, several Komi and Nenets families escaped the anthrax epizootic by migrating to the west, that is to the second region of reindeer herding of European Russia, the Kola Peninsula (Konakov and Kotov 1989; Konakov et al. 1982; Took 2004). More reindeer herders followed them in the next decades.

The Kola Peninsula represents the eastern outskirts of the Sapmi (the land of Saami). Its aboriginal population, the Russian Saami, has strong cultural ties with the Scandinavian Saami and shares a common ethnic identity with them despite speaking a little bit different dialects and professing a different (orthodox) faith. The two groups also share a long history of using domesticated reindeer. Both archaeological (Salmi et al. 2021) and genetic (Røed et al. 2008) evidence strongly suggests an independent origin of the Saami reindeer herding tradition and points to the local domestication of its reindeer. Saami have developed their own unique types of dwellings, reindeer sledge and harness, and other material equipment associated with reindeer nomadism. Furthermore, some groups of Scandinavian Saami reindeer herders made a transition to reindeer pastoralism quite early, in the late sixteenth to early seventeenth centuries AD (see, e.g. Larsson and Sjanuja 2022), which makes them probably the oldest full-scale reindeer pastoralists in the world (see also Krupnik 1993). Russian Saami, however, despite knowing reindeer herding for centuries if not millennia, failed to make this transition up till the arrival of the Komi and Nenets pastoralists in the late nineteenth century. Their economy was based on fishing and, up to a lesser degree, hunting, while their small reindeer herds (on average 17 animals per household) were used mainly for transportation during winter hunting as well as during annual migrations from winter *pogost* (settlement) to summer fishing places and back (Charnoluskiy 1930;

Kiselyov and Kiseleva 1987). In summer, reindeer were let to pasture completely unattended during the whole season as their masters had only very vague idea about the whereabouts of their animals (Charnoluskiy 1930; Konakov et al. 1982; Kiselyov and Kiseleva 1987; Konakov and Kotov 1989). This failure to perform the transition to pastoralism could be explained by the territorial and administrative isolation of the Russian Saami from the rest of Sapmi as well as by the relative underdevelopment of the local market (which was the main factor of the pastoralist transition in Scandinavia in accordance to Larsson and Sjanuja 2022).

As a result, full-scale reindeer pastoralism was imported to the Kola Peninsula from the east rather than developed on the basis of the local reindeer herding tradition: the local Saami simply adopted new herding practices, modes of migration and relations between people and the herd from the newcomers (Konakov et al. 1982; Konstantinov 2015). By the early 1920s, the time the communist power was established in the region, the number of Komi and Nenets living there was approximately similar to that of Saami (Kiselyov and Kiseleva 1987). Furthermore, the newcomers were more prosperous economically and, together with the local Russians, exercised cultural hegemony over the local indigenous people. Therefore, the local Saami adopted not only their pasturing practices and reindeer management, but also the Nenets-style dwelling, sledges, harness and even clothes (Konakov et al. 1982). By the time of collectivization, the absolute majority of reindeer in the region was pastured in a way very similar to that of the Archangelsk tundras: reindeer herders migrated with their herds in a linear manner along established *vorgas* from winter pasturelands in the forest-tundra to summer pasturelands on the north shore of the peninsula and reindeer were closely observed and controlled throughout the year (Konstantinov 2015).

The Soviet Collectivization significantly altered social relations among reindeer herders (including those in regard to reindeer and land) as well as between the herders and the wider society. The former private nomads and masters of reindeer have been effectively turned into hired workers, who pastured, for a small payment, the animals they did not own on the land they did not possess. However, the impact of collectivization on the herding technology itself, that is on the techniques of reindeer pasturing and, through them, on the relations between people, reindeer and the pasturelands, was, as it seems, rather limited till the late 1950s. Since the late 1950s to early 1960s, in the course of the so-called amalgamation policy,³ the state started to introduce organizational and

technical innovations into reindeer herding (Jernsletten and Klokov 2002; Golovnev 1999), although their number and nature differed significantly across the Russian Arctic. Thus, fieldwork data suggests that in Archangelsk tundras, these were rather insignificant. So-called shift herding was introduced in some *sovkhoses* of the western part of the Region: the herders were to make 2-month-long shifts near the herds and then be replaced (with a helicopter) by another team of herders and spend another 2 months enjoying the settled life in the settlement. This changed the route and schedule of migrations a little bit, but this effect was local and relatively unimportant. Furthermore, once the helicopters ceased to fly after the breakdown of the *sovkhos* system, most of the herders managed, although not without problems, to return to the previous techniques. The innovations introduced on the Kola Peninsula were much more significant. As it has been repeatedly described in the literature (Konstantinov 2015; Vladimirova 2006; Istomin 2017), the state here decided to get rid of both nomadic tents and transport reindeer in order to make the life of the herders more comfortable and civilized. In order to do that, several stationary houses with storehouses and saunas (so-called intermediate bases) were built along each *vorga* on equal distance from each other. The teams of herders were expected to move from one base to another as the reindeer herding year progressed. The movements were to be made using all-terrain vehicles (*vezdekhody*) belonging to the *sovkhos*. Most of the transport reindeer previously used for migrating were slaughtered; those kept alive were expected to be used exclusively by duty herders to control the herds. Unfortunately, the system, as it seems, never worked quite as expected: the all-terrain vehicles often got broken, stacked or could not get to the brigades due to the bad weather (Istomin 2017). This broke the rhythm of migrations and often led to the herders losing their control over their herds, which went too far away from the bases in search of pasturage. The delays of migrations progressively increased until the vehicles finally stopped completely due to the lack of fuel and spare parts after the collapse of the Soviet Union (Konstantinov 2015). This made the herders unable to control their herds during the summer and led to the system of herding, which resembles, at least on the surface of it, the practices of Saami herders before the arrival of Komi and Nenets: nowadays, reindeer on the Kola Peninsula are

³ Amalgamation (rus. *Ukrupnenie*) is the Soviet state policy of joining small collective enterprises (*kolkhozes*) together to produce large agricultural enterprises relying in their work on modern agricultural technologies. In the north, these large agricultural enterprises were typically transferred from collective to state property and became *sovkhoses*—“Soviet enterprises” (Vakhtin 1994; Fondahl 1998).

left unattended and graze freely without any control during the warm months (Konstantinov 2015; Vladimirova 2006). In late October or in November, after the snow cover gets established, the herders collect the animals using personal snowmobiles and drive them to corrals in order to divide them back into brigade herds. Those then get pastured under some control by herders on snowmobiles in the forest-tundra zone. During this period, herders live on the “intermediate bases” built in the Soviet period and can even change them once or, rarely, twice during the season. Once the snow starts to melt and snowmobiles become difficult to use, the reindeer get left unattended again till the next autumn (Konstantinov 2015; Vladimirova 2006; Istomin 2017).

Generally, however, reindeer herding in the European part of Russia survived the collapse of the Soviet Union much better in comparison to the north-eastern part of the country, where the population of domesticated reindeer fell down four to seven times (Klokov 2013; Istomin 2020). Although the decrease of herds did take place, it was relatively small: 10 to 15% in the Archangelsk tundras and approx. 30% on the Kola Peninsula. More importantly, the Soviet forms of organizing reindeer herding generally survived: most of the reindeer still belong to former Soviet *sovkhoses*, which have re-registered as agricultural cooperatives, municipal enterprises or, more rarely, stock-share companies without significantly altering their internal organization (Istomin 2020). The absolute majority of reindeer herders are employed by these enterprises. Most of the herders do have herds of private reindeer, which are pastured together with the animals belonging to the enterprises and can be distinguished from them by earmarks: the practice, which existed also in the Soviet period despite the sizes of the private herds have significantly increased by now (Konstantinov 2015; Istomin 2020). However, they still depend on enterprises in a variety of ways, most importantly for the entitlement to pasture their animals on the enterprises’ land. Completely private reindeer herders exist in the eastern part of the Archangelsk tundras (Istomin 2022), but their number is small. On the other hand, the region is currently experiencing an influx of private reindeer herders from western Siberia, where a shortage of pasturelands currently exists (see Terekhina and Volkovitsky, this special issue).

Reindeer herding landscapes of the European part of Russia: The relation between reindeer, people and land

Reindeer herding techniques used by the reindeer herders of Archangelsk Tundras have been the focus of my fieldwork research in several projects. The detailed results of this research have been published (Dwyer and

Istomin 2008; Istomin and Dwyer 2010, 2021). Despite my fieldwork in the Archangelsk Tundras having been done mostly among Komi reindeer herders, the herding techniques of the local Nenets, with two notable exceptions to be described later, do not seem to be significantly different. This is hardly surprising taking into account the close contacts between the two groups: Komi and Nenets herders often work for the same reindeer herding enterprises and even live and work together in the same herding units (*brigady*) of these enterprises.

To summarize it briefly, reindeer pasturing in Archangelsk tundras consists of skillful manoeuvring of the duty herder with the herd in such a way as to ensure that (1) the animals stay together as a coherent group (small groups of animals do not leave the herd); (2) the animals stay away from the dangerous terrain such as bogs and steep slopes, where some of them could be lost; (3) animals stay on the restricted territory near *vorga*, but “behind” their nomadic camp (that is to the south of it during the northward migration and to the north of it during the southward migration). In order to perform such manoeuvring, the duty herder relies on his knowledge of reindeer behaviour and the factors contributing to it, particularly to the speed and direction of the herds’ movement (e.g. quantity and quality of fodder in places the herd is going through, temperature, the quantity of mosquitoes, humidity of the soil, the direction of streams and slopes and some others). He also relies on specific complexes of behaviour present in reindeer and reliably activated in different circumstances; a part of these complexes are very likely to be developed in response to specific techniques applied by the herders and represent an adaptation of the animals to their masters. Using this knowledge and behaviour models, a skillful herder can manoeuvre in such a way as to compensate for the factors leading to the high speed and high dispersion of the herd (e.g. low quantity of fodder, high temperature, mosquitoes) with countering factors (e.g. high quality of the fodder, moving against the wind) and, therefore, keep the speed and the dispersion of the herd low with minimum direct influencing on the animals. However, even the most skillful manoeuvring has its limits: as the quantity and quality of the fodder drops as the result of reindeer grazing and trampling, it becomes increasingly difficult to keep the herd on the designated territory “behind” the camp. The camp then migrates forward “opening” the new untouched territory “behind” it for further manoeuvring.

Admittedly, this account describes the interactive relations between the reindeer and human population but restricts the natural environment merely to the set of factors (fodder, soil humidity, slopes) that affect reindeer behaviour and, sometimes, the herders’ response

to it. However, a closer look reveals much more interactive relations between the “coupled human-animal system” and the natural environment as well. Thus, it has been known for a long time that reindeer’s preferred diet varies throughout the year: in winter, it consists almost exclusively of lichens, but with the start of growth season reindeer preferences switch first to leaves on shrubs and then to grasses and some sedges (Baskin 1970). Interestingly, the distribution of vegetation types in most of the Archangelsk tundras closely corresponds to these dietary changes as far as the current herding systems with the long linear migrations are concerned: large store of lichen is situated in the south of the tundra zone, forest-tundra and the northern taiga, that is in the areas where reindeer are kept in late autumn, winter and early spring, while further to the north, lichens are rare, and the vegetation consists of stands of shrubby arctic willow and alder (in the middle part of the tundra), grasses and dwarf birch (Babushkin 1930; Uvarov et al. 2021). This distribution, however, can hardly be named completely natural: it can be very different in other regions (see e.g. Chernov 1980) and, most importantly, even in Archangelsk tundras, it can be relatively recent. Thus, Vladimir Islavin, who visited the region in the 1830s to study local economies, wrote that several dozen years before his visit, lichens could be found throughout the area and this enabled the local Nenets with their small herds to live in tundra all the year around and make only short migrations between their fishing and hunting places; in his opinion, the disappearance of lichen was related to herding practices, particularly those of Komi herders, whose transition to reindeer pastoralism was accomplished by that time (Islavin 1847). The damage to lichen caused by reindeer grazing and trampling, particularly those related to the practices of Komi pastoralism, was mentioned also by other authors (Schrenck 1848; Zhuravsky 1907). Trampling related to manoeuvring with large herds of reindeer seemed to be particularly important (Konakov and Kotov 1991). Indeed, as any reindeer herder and any reindeer specialist well know, in the absence of insulating snow cover, reindeer destroy much more lichen by trampling than by eating (Kitti et al. 2009; Bernes et al. 2015). It seems like the huge trampling load allowed lichens to survive in significant quantities only in those areas, which were used by pastoralists in the periods of snow cover, that is in winter, late autumn and early spring. All the researchers, including the most recent ones (Uvarov et al. 2021), describe the disappearance of lichen in the northern part of the Archangelsk Tundras in negative tones; Islavin even claimed that the destruction of lichen made the traditional (which, probably meant pre-pastoralist) Nenets reindeer herding impossible and contributed to the Nenets’ economic subordination to and

dependency on Komi (Islavin 1847). I do not wish to deny these claims, but, in my opinion, it is important to note that the destruction of lichen does not result in a barren land: lichen typically gets replaced by grass and sedges (Kumpula et al. 2012; Verdonen et al. 2020), which turns the area unusable as a winter pastureland, but, as one can suggest, increases its quality as a summer one. Therefore, blaming the local reindeer pastoralism as environmentally destructive is a certain simplification. It can be more correct to say that reindeer pastoralism, with its particular techniques of herding and modes of interaction between humans and reindeer leading to the formation of specific behavioural patterns in both, transforms the natural environment in the way which suits this interaction better, making it fit particular cycles (e.g. the migration circle) resulting from this interaction. As a result of this transformation, the natural landscape becomes domesticated in the sense that it turns into an integral part of the pastoralist system just as wild reindeer had previously become such a part. The natural landscape—or rather a set of landscapes—became a part of the reindeer herding landscape.

This can be further seen in the example of those areas in the Archangelsk tundras, where pastoralism with long linear migrations did not become dominant. There are two such areas: one is the region of Polar Urals and the other is the area in the lower part of the Pechora River. Both areas stand out for their ecological specifics: along Pechora, a belt of forest grows all the way to the mouth, while in the Urals the lowland tundra gives way to mountain tundra, which opens up possibilities for different herding techniques. Besides that, these areas have a specific cultural history: the local herders, who are almost exclusively Nenets in both of the cases, kept close cultural relations to Pustozersk Russians and the Siberian Nenets and Khanty respectively, while the influence of Komi and their herding technology was weak. Therefore, the reindeer herders in these areas migrate in circular rather than linear way inside more restricted territories and employ a less intensive regime of herd control, which is not dissimilar to that I and my co-author once described in the example of Siberian Taz Nenets (Dwyer and Istomin 2008; Istomin and Dwyer 2010). Under this regime, reindeer are allowed to graze freely most of the time and the herd gets rounded up and driven to the campsite once or twice per day in order to change transport animals in nomads’ sledges and occasionally to slaughter one of the animals for food. Not surprisingly, these are exactly those areas where lichen has survived in the tundra, the fact which is likely on the one hand to result from the more dispersed regime of herding and on the other hand to make the restricted intra-zonal migrations based on this regime possible.

However, the best example of the possible structure of a reindeer herding landscape comes from the second region of reindeer herding in European Russia, the Kola Peninsula. As it has been said in the previous section, reindeer pastoralism in this region has experienced a transition from relatively intensive and quite similar to that of Archangelsk tundras to relatively extensive, with a relatively low control of herders over their herds. In modern Kola reindeer herding, seasonal migrations are absent and reindeer are left to migrate and graze unobserved since late May till November (Konstantinov 2015). This turns the autumn search for animals and their collecting into the central reindeer herding operations of the whole year (Vladimirova 2006). The period of search for reindeer starts immediately after the snow cover gets established and the fast movement in tundra with a snowmobile becomes possible; usually, this happens in November, although sometimes the herders can start searching already in late October. The search is performed by the most experienced herders locally known as “seamen” (*moriaki*), because they have to travel all the way to the Barenz sea coast to search for reindeer (Abramov 2015). During my fieldwork in Kola Peninsula, I was told by the herders that the autumn search for reindeer is essentially based on the curious fact that most of the domestic reindeer on the peninsula still migrate along the *vorgas* (nomadic paths) once used by reindeer herders during the period of the Archangelsk tundras-style intensive herding (Istomin 2017). Imprinted into the landscape by the tracks of nomadic sledges that travelled on them till the late 1970s to early 1980s and later occasionally renewed by the all-terrain vehicles that transported reindeer herders between the stationary bases before the final collapse of the system in the 1990s, these migration paths are still visible on the surface in some places and recognizable by different vegetation growing in them in some others in the snowless period of a year. After the first snow falls, however, the paths become completely unrecognizable from sight. Furthermore, five to seven generations of reindeer have passed since the herders led their animals along these paths for the last time. The fact that modern reindeer still use them on their own accord probably reflects a so-called behavioural tradition: the behaviour transmitted from one generation to the other not by the means of genetic inheritance⁴ but by social or individual learning. In other words, this behaviour is likely to be learned by each new generation of reindeer through imitating the behaviour of the older generation or, maybe, simply by following the herd they happened to be born to and by individually internalizing the migration route. Behavioural traditions of that sort are well-known

in many species from the Koshima islet monkeys (Kawai 1965) to black rats (Aisner and Terkel 1992; Terkel 1996). They can remain as long as each generation engages in the behaviour and, therefore, the younger generation can learn it. The “seamen” herders of the Kola Peninsula rely on this behavioural tradition as well as on their knowledge of where the *vorgas* were. Usually, one or two “seamen” travel along the *vorga* they know best from the seacoast southwards and check specific places (so-called *karmany* (pockets)) where small groups of reindeer (so-called *kuski* (chunks, fragments [of the herd])) are known to stay during their migration. These groups are then driven back to the *vorga* and pushed southwards to travel further on their own accord to the hands of the rest of the reindeer herds waiting for them on the border of the forest to take them through the corral. Meanwhile, the “seamen” search for other “chunks”. In other words, the presence of *vorgas* in the landscape and the “tradition” of reindeer to migrate along them turn the procedure of collecting reindeer after the period of summer free grazing into “searching one’s pockets for chunks (*poisk kuskov po karmanam*)” as reindeer herders would have it. Admittedly, this is still not a trivial task, because one still must know where the pockets are. However, this procedure is still superior to the random search.

We can conclude about its superiority with some confidence, because, as the herders report, there is a group of domestic reindeer on the peninsula, which does not follow *vorgas* and, therefore, cannot be collected by searching through “pockets” along them. These are reindeer living on the border between the two reindeer herding enterprises (former Soviet *sovkhoses*) of the region, “Tundra” (with its centre in the town of Lovozero) and “Olenevod” (with its centre in the town of Krasnoshelie). Reindeer herders explain that the predecessors of these reindeer used to belong to two separate herds: the herd of the Lovozero brigade (herding unit) nr. 8 of and the herd of the Krasnoshelye brigade nr. 4. These brigades had a rather specific model of migration: the *vorga* of the brigade nr.4 was situated to the south of that of the brigade nr. 8, which means that the summer pasturelands of the former were situated close to the late autumn and winter pasturelands of the later. After the herders from both of the brigades ceased to migrate, however, their herds mixed and the resulting competition between the southern and northern reindeer’s behavioural traditions

⁴ Genetic inheritance is difficult to suggest here not only because the period of domination of the Archangelsk-tundras-style reindeer herding could be too short to cause genetic adaptations, but also because such rigid genetically transmitted behavioural complexes are believed to be absent in reindeer (Baskin 1968; 1970). Indeed, in the variable and rapidly changing Arctic environment, rigid genetically given behavioural programmes are very likely maladaptive.

(or “habits”, as one of the herders named them) has led to their breakdown. Instead of migrating along the *vorga*, local reindeer simply disperse in small groups over the adjacent territories and the herders of the two enterprises have a very hard time working together to scan through them for the chunks. Despite a relatively large number of “seamen” annually working in this area (four to five persons), quite a few reindeer annually escape the collecting and it generally takes a very long time to accomplish the operation: it is not uncommon for the last chunks of reindeer to be found in late February or even in March.

Just as the case of Archangelsk tundras, the case of Kola Peninsula demonstrates how the interaction between people, reindeer and the environment changes these elements and binds them together to produce a reindeer herding landscape. This case, however, is particularly instructive, because we can differentiate the particular stages of interaction in time and, therefore, clearly see the limitations of the anthropocentric position ascribing the leading and managing role in creating reindeer herding landscapes to the people. Indeed, in the case of Kola Peninsula, we can see the change of the previously existing mode of interaction between people, reindeer and landscape, the mode which was imported to this region from the east and then collapsed as the result of poorly planned (to say the least) intervention by the socialist state. Before its collapse, however, this mode of intra-landscape interaction resulted in certain “domestication” of the natural landscape if only by adding new elements—the *vorgas*, that is nomadic paths—to it (unfortunately, my poor acquaintance with biological literature on this region does not allow me to say if the introduction of reindeer pastoralism has produced any other long-term effects in the natural environment such as the change in vegetation of the sort it did in the Archangelsk tundras). It has also formed particular behavioural traditions in reindeer specifically adapted to this “domesticated” landscape, the process, which I find not dissimilar to acculturation (Istomin 2017). These two products of the older mode of landscape interaction—the “domesticated” natural environment and the specific reindeer “culture”—have outlived this mode and became elements of a new mode of landscape interaction with a completely different set of herding techniques on the part of the herders. What is important, however, these techniques rely on the landscape “domesticated” and reindeer “acculturated” in the framework of the previous mode. In other words, the specifically “domesticated” landscape and the specifically “acculturated” reindeer have “cultivated” the new herders. This shows not only tight but also perfectly reciprocally interactive relations inside this particular reindeer herding landscape.

Conclusions

Summarizing the discussion presented above and taking into account the tasks of this paper as formulated in its introduction, we can conclude that there are two large reindeer herding landscapes in the North of European Russia: one covers the tundra belt and the adjacent forested areas of the north-east of European Russia excluding the area in the mouth of Pechora river and the territory of Polar Urals; the other covers the reindeer herding area of the Kola Peninsula possibly excluding the small area on the border between the two former *sovkhoses* of the region. These reindeer herding landscapes—let’s name them the Archangelsk tundra landscape and the Kola landscape—differ to each other by the particular mode of interaction between their three typical components: reindeer herders, reindeer herds and the natural environment.

In the Arkhangelsk tundra landscape, reindeer herders migrate with their herds in linear manner from winter pasturelands in the forest/forest tundra to summer pasturelands on the arctic sea coast along established migration paths (*vorgas*), which are imprinted into the natural environment. The vegetation component of the natural environment is spatially diversified in a way, which responds to the seasonal needs of the herds. The herders permanently control the herds and manoeuvre with them through the environment by making use of environmental knowledge as well as behavioural complexes developed in their animals in response to their herding techniques.

In the Kola landscape, reindeer herders do not migrate with their herds and their control over the animals is weak or even completely absent in certain seasons. However, their interaction with the herds is still maintained on the basis of particular elements of the landscape—the migration paths (*vorgas*) of the previous period—and the behavioural tradition of the animals to migrate along these paths.

In the Kola Peninsula as well as in Archangelsk tundras, these two main reindeer herding landscapes are punctuated by areas, where interaction between reindeer, environment and herders are somewhat (in the case of the central part of the Kola peninsula) or essentially (in the case of the mouth of Pechora and the Ural mountains) different to those in the main landscape. These areas can be treated as separate landscapes, in which case the total number of the reindeer herding landscapes in the area is five. The other possibility is to treat them as extra-landscape inclusions.

Both of the main landscapes as well as the three small landscapes have emerged from a long historical process, which covers the time span of more than one thousand years out of which the developments of the last 300 years

made the most important contribution. It would be particularly important to stress here that both the mentioned historical processes and the resulting reindeer herding landscapes span across ethnic borders. Thus, modern reindeer herders of the Kola Peninsula are ethnic Saami, Komi and Nenets; the herders of the Archangelsk tundras are Nenets and Komi. The two small landscapes of the Archangelsk tundras include only herders of Nenets origin, but this is rather an exception. This shows that the ethnic classification of reindeer herding, which is popular in Russia and among some scholars outside it, is not justified. I do not deny that, in some circumstances, particular ethnic culture can make a contribution to the particular mode of interaction between people, reindeer and the environment. I also do not wish to insist that a particular reindeer herding landscape cannot be labelled with ethnic terms. Thus, the catalogue of landscapes proposed by Konstantin Klokov (this value) is all right as far as the ethnic labels used there are interpreted just as labels. Otherwise, one should never forget, however, that regional historical processes, which include not only people but also animals and environments and typically span across ethnic borders, are much more important than concrete ethnic traditions.

This returns us to the productivity of the landscape concept for the analysis of reindeer herding. I can only hope that my colleagues would use it in other regions of Russia and beyond.

Authors' contributions

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