

Reindeer, Fish and Game – Transitions in Early Modern Sami Natural Resource Management

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Prepared for delivery at the Workshop on the Ostrom Workshop (WOW6) conference, Indiana University Bloomington, June 19–21, 2019. © Copyright 2019 by author

Abstract

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The paper will discuss how long-term changes in socioecological systems and property rights are connected and how these rights are negotiated in a self-governing context. It will be done by investigating changes in natural resource governance in early modern Sami communities in interior northern Scandinavia. The empirical material is from Lule lappmark in Northern Sweden. Earlier research has mainly focused on the government's role in property rights changes in a Sami context.

The sixteenth and seventeenth century saw new trading patterns and Sami households became more involved in trade. This spurred the development of large-scale reindeer herding. By examining how users used different ecological settings, from 1550 to 1780, it is possible to show how an older property-rights system dissolved due to the emergence of large-scale reindeer nomadism. The paper will discuss property rights to three main resources within interior Sami economy: reindeer, freshwater fish and game. While all these three are considering common-pool resource the property regime differed among them. Fresh water fish and hunting were private rights rather than collective rights and these rights were more important for Sami using the boreal forests as their main habitat. When large-scale reindeer herding emerged, it required collective rights for grazing. The Sami that had access to summer grazing in the alpine region developed collective land-use regimes when the herds enlarged and they gradually gained formal rights to graze on private land in the boreal forests during winter. The change was largely a consequence of Sami self-governance.

Key words: Self-Governance, Property rights, Reindeer, Fresh water fish, Hunting

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Management

Introduction

The main historic trajectory in property rights to land was the development of more exclusive rights through the dissolution of common property. However, the trajectory was opposite in northern Sweden. At the end of the nineteenth century, only Sami who were members of a Sami village (*sameby*) had lawful common user rights to graze reindeer, hunt, and fish on extensive lands formally owned by the Swedish state. At the same time, Sami's individual rights to land were finally abolished in a process that had begun centuries earlier—the Swedish state slowly depriving them of their right to land (Lantto 2012; Lundmark 2006). However, to fully understand the process one must consider changes in the early modern Sami economy and its consequences for access to land.

As a consequence of intense studies of the development and function of common-pool resources (CPRs) during the last three decades, our understanding of users' abilities to build institutions for governance has improved (Acheson 2003; Agrawal and Gibson 1999; Haller 2012; Ostrom 1990). In a European context, a complex grid of property rights was necessary for the development of early modern farming, and commons were a vital part of peasant economy (de Moor 2015; Netting 1976). This economy disappeared in many parts of Europe in the eighteenth and nineteenth centuries when commons were either privatized or came under government control (de Moor 2009). Despite the increase in knowledge about the use of CPRs and the importance of commons, discussion about them has been almost absent in analyses of changes in early modern Sami society. Sami economy and organization has been discussed as individual or collective, but research has to some extent embraced the intense discussion about CPRs since the 1990s. We endeavor to fill some of this void, by asking the

following overarching question: How did property rights and user rights change when large-scale reindeer herding became the main occupation for a large group of users? We set out from the reciprocal and complex nature of human-environment interaction (Moran and Brondizio 2013) and how it affected the users' economy. While earlier research has focused on the role of the state, we bring together three previously rather neglected perspectives—self-governance, ecology, and the functionality of large-scale reindeer pastoralism—to explain changes in property rights.

We analyse how two different types of Sami villages in Lule lappmark, Sweden, who belonged to the same ethnic group but were member of different Sami villages, i.e. Forest Sami villages and Mountain Sami villages, responded to changes between 1550 and 1780. To address this, we have analyzed how and why some users in Lule lappmark changed their livelihood in the period 1550 to 1780 and ask what consequences did these changes had on the development of the users' property rights to land use?

Part 1. introduces property rights and self-governing of natural resources in a Sami context. Part 2. introduces the Sami villages and the investigation area. Moreover, it describes prevailing views on the organization of pre-modern Sami society and our starting points with regard to this. Part 3. describes methods and sources. Parts 4.–6. present empirical results. In part 7., observed changes are synthesized and shifts in property rights concluded.

1. Self-governing, pastoralists and property rights

A fundamental concept in the discussion about the origin of CPRs in mediaeval Europe is the transition from an economy based on family and kinship to an economy in which neighbour relations grew in importance. In this emerging economy, people started to make alliances with others who had a similar lifestyle (de Moor 2015). Accordingly, the changes in early modern Sami economy towards more intense use of CPRs would have required more collaboration

between neighbours. Hypothetically, households that developed large scale reindeer pastoralism would thus have developed more elaborate collaborations with actors outside their kinship group.

Research about management of CPRs has focused on local users' ability to build their own institution for governance (Gibson, Williams, and Ostrom 2005). However, when it comes to Sami land use, self-governing has mostly been discussed in relation to present-day reindeer husbandry (Marin and Bjørklund 2015; Riseth 2004), and not so much in an early modern Sami context. The exceptions are two early contributions by Bjørklund (1990; 1991) regarding pastoralism and fishing in Northern Norway. In the discussion about development in Finnmark, Norway, a "bottom-up" perspective has been applied, where the basis for the discussion is a Sami and local perspective in relation to present day land use rights (Hågvar 2006, 2014; Jebens 1999). In a Swedish context, Päiviö (2011) has pointed to the fact that internal changes in the Sami economy had implications for property rights. However, they do not consider a self-governing perspective or connect to the extensive research about CPRs. Previous research seems to have focused mainly on two other perspectives: first, the encounter between Sami society and the state, where scholars have emphasized the significance of government policies as part of the period's colonial project aimed at depriving Sami of their rights to their land and culture (Hood 2015; Kvist 1989; Lundmark 2006); second, an emphasis on Sami agency and claims that it was the Sami's interaction with other institutions, i.e. national and international trade networks, that were crucial for generating and maintaining a number of features considered integral to Sami society. However, these scholars also emphasized the role of external driving forces in changes in Sami society with the argument that the state "considerably undermined the foundation for autonomous Sámi social systems" (Hansen and Olsen 2014, 229). A self-governing perspective, which illuminates how early modern Sami built their own institutions for governance of natural resources, is mostly

lacking, although it is an important part in analyses of how and why Sami rights to land changed.

In the sixteenth and early seventeenth centuries, the Swedish government's interest in northern Scandinavia increased. Initially, it was driven by geopolitical motives, such as the power struggle over international maritime trade in the Arctic Ocean, and by the state's desire to control Sami fur trade and taxation (Lantto 2010). The latter was both a means of getting revenues and an attempt to legitimize the borders of the Swedish realm. Moreover, in the seventeenth and eighteenth centuries, the government started to promote mining enterprises and agrarian colonization in interior northern Sweden. It was not until the nineteenth century that the political ambitions gained pace as the agricultural colonization grew and started to have a heavy impact on the landscape (Brännlund and Axelsson 2011; Bylund 1956). In this process, the Sami population was steadily pushed aside and their rights to land and culture diminished gradually. Nonetheless, until the nineteenth century, Sami's decisions about land use were very much governed through internal processes. We argue, that this meant that Sami in the early modern period, by and large, created their own institutions for governance and developed their own property rights connected to resource use, such as fishing, hunting, and reindeer herding. External factors, such as changing trade patterns and new government policies, certainly played a role in the Sami economy, but they could be interpreted as pieces in an internal decision-making puzzle rather than as the main driving forces for change of property rights.

In a self-governing context, rules about how resources should be harvested and consumed, as well as rules about their monitoring and enforcement, are usually developed by the users themselves (Ostrom 2005). During the eighteenth century the decisions regarding the right to use grazing land was many times negotiated in the local court and by studying transcripts it is possible to understand how users were involved in creating policy for land use.

We will return to this in part 3. when methods and sources are discussed. The early modern Swedish government was relatively unfamiliar with Sami land-use practices, and even less familiar with the details of Sami decision making. It could not accurately steer Sami economy in a desired direction. The asymmetry of information between government and local users is why a self-governance perspective could deepen the understanding of early modern Sami economy. Scott (2009, 3–4) argues, on a global level, that a number of difficulties “placed sharp limits on the reach of even the most ambitious states” until the early nineteenth century.

Much of the previous research on Sami’s land rights has centered on the institution of *lappskatteland* (Korpijaakko-Labba 1994; Lundmark 2006; Päiviö 2011), a term known since the mid-seventeenth century as the land equivalent a Sami paid tax for. Earlier research has assumed that these lands represented an older organization, predating their first appearance in the sources, and that they made up the land that a household (or a small group of households) had exclusive rights to use (Holmbäck 1922). Other scholars do not perceive *lappskatteland* as originally Sami, but rather as the result of the Swedish government’s desire to organize taxing by connecting all Sami to specific places (Hansen and Olsen 2014). Regardless, in the mid-seventeenth century, they represented a resource area that was used by individual Sami households. Furthermore, legal scholars have argued that the Swedish government gave the same rights to the holders of *lappskatteland* as it gave to freeholding peasants (*skattebönder*) in the rest of Sweden during the seventeenth and eighteenth centuries (Korpijaakko-Labba 1994; Päiviö 2011). But while freeholding peasants gained stronger property rights in the nineteenth century, holders of *lappskatteland* gradually lost their rights and came closer to holding the same rights as Swedish crown tenants (*kronobönder*).

However, the focus on the development of the *lappskatteland* has to a large degree shadowed the larger context of how Sami property rights developed in the seventeenth and eighteenth centuries. Property rights has rarely been recognized as being intricately connected

to customary practices that often differentiated between natural resources. Also, early modern peasants, both freeholders and crown tenants, had different property rights to different resources, implicating how and when a specific resource could be used (Dahlman 1980). When analyzing early modern Sami's property rights, it is therefore reasonable to assume that their rights had also developed in accordance with their use of natural resources. Previous research has moreover mostly not studied the role self-governance of natural resources played in the development of common property. Scholars have interpreted most of the changes in *lappskatteländ* as the result of the government's attempt to erode Sami property rights (Lundmark 2006). Although it probably is an accurate interpretation in the nineteenth century, it is an only part of the explanation of why and how Sami land use changed in the preceding centuries.

Robert Netting identified five key variables that he considered most important in differentiating common-property rights from individual rights to land, based on land use: common property is more likely to develop and be sustained if (1) the value of production per unit area is low, (2) the frequency and dependability of use or yield is low, (3) the possibility of improvement or intensification is low, (4) the area required for effective use is large, and (5) the labor- and capital-investment group is large (Netting 1976). Although these variables were developed in an agricultural context, we argue that they are applicable to large scale reindeer herding as well.

Property systems are usually divided into four basic regimes: state, private, common, and non-property (Bromley 1991). In theoretical models, pastoralist systems are usually defined as *common-property regimes*, but many pastoralists have practically no restriction on access to grazing land, making it similar to a non-property regime. This implies that pastoralists have open access to land which would automatically equate pastoralism with the "tragedy of the commons" (Hardin 1968). However, studies of pastoralists suggest that open

access in that context does not mean absence of rules, nor leads to depletion of grazing resources (Moritz 2016; Robinson 2019). Moritz (2016) has instead proposed a property regime for pastoral systems called an *open-property regime*, with characteristics of mobility, flexibility, and reciprocity. The paradox of pastoralism is that animal holders need both secure user rights and spatial and social flexibility due to the often large natural variations in resource access in the landscapes where their animals graze (Fernández-Giménez 2002, 52). Berge (2001) has shown how Tuareg in Mali returned to the same grazing land each year, and even if they had established a customary right to the land they had no exclusive right, but for man-made wells, used during the dry season, property rights were clearly defined and exclusive. The debate about pastoral tenure system and how well common property theory can explain indigenous pastoral tenure systems has continued. A few things that distinguish common property from sovereign pastoral commons, according to Behnke (2018), is that in the former case, resources are small size with well-defined boundaries and the ownership group is small with clearly defined membership. The latter group uses extensive areas with contested boundaries and the users are in networks of relationships and membership is often contested. Hence, indigenous pastoral tenure system does not fit the ‘design principles’ and are unlikely to be effective common property. Robinson (2019), like Behnke and Moritz, acknowledge that pastoralist governance systems do not conform to the assumption of mainstream scholarship on common property. Robinson argues that the *open-property regime* Moritz (2016) has proposed describes some pastoralists systems well, but many pastoralist systems are neither conventional commons nor open-property regimes. In what Robinson calls *complex mosaic regimes*, different types of property rights do not need to be allocated on an all-or-nothing basis and tenure and property rights is only one type of governance institutions. To explain how land tenure regimes works one need to add the social processes and governance mechanisms. The discussion above is based on studies of pastoral societies in

Africa and Asia and has not included pastoralists in the circumpolar region that lived under quite different ecological settings.

Defined property rights made it possible for users to engage in reindeer herding, fishing, and hunting, and to use other natural resources, such as plants and berries. In that sense, property rights determined the group's economic performance and development trajectories, and different parties are likely to control different attributes of a resource because of their respective comparative advantages (Lueck 1989). Allen (1999, 898) describes an economic property right as “the ability to freely exercise a choice over a good or service”. This right could be de jure or de facto, based on customary relationships, and exist with or without government enforcements (Ellickson 1991). De facto property rights can overlap with de jure property rights, and a non–state-based property system recognized by all parties involved is de jure (Cole 2015). Property rights cannot completely be specified and strictly defined, there will always be some ambiguity (Penner 1996). We mostly deal with the right to graze, but touch on the rights to fish and hunt, leaving other rights aside, such as inheritance and selling land.

2. Study area and organization

Sami lived in Scandinavia, Finland and on the Kola peninsula in Northern Russia during the early modern period. The natural environment in the vast territory included boreal forest, mountains, and sea coast, and people had developed different economic-ecological niches depending on where they lived. In adapting to seasonal variations in access to natural resources, most Sami had a mobile lifestyle, for example, in search of lakes where fish spawn or suitable grazing land for their reindeer (Norstedt, Axelsson, and Östlund 2014).

Lule lappmark, in interior northern Sweden, is the area of this study (Figures 1 and 2). From the early seventeenth century, virtually all Sami in Lule lappmark went to the same winter market in Jokkmokk each year. There they traded goods, took part in church services,

and solved conflicts in the local court. Lule lappmark's topography was heterogeneous and determined the livelihoods of its inhabitants. The first known division of the population into Forest Sami (*skogslappar* or *granlappar*) and Mountain Sami (*fjällappar*) is found in a tax record from 1553 (see part 5.3.) and was later used to characterize Sami villages (Hultblad 1968).

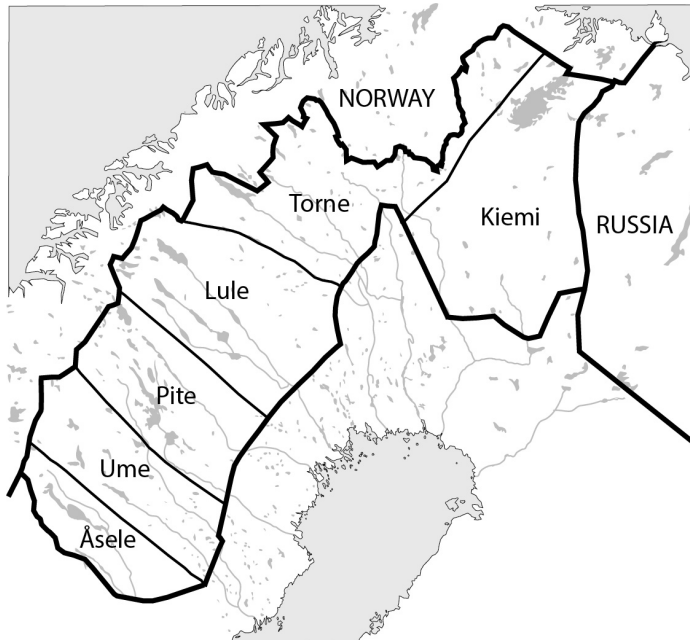


Figure 1. The Swedish lappmarks in the eighteenth century (adapted from *Charta öfver Västerbotten och Svenske Lappmarcken*, https://commons.wikimedia.org/wiki/File:Västerbottens_län_och_svenska_lappmarken_1796.svg).

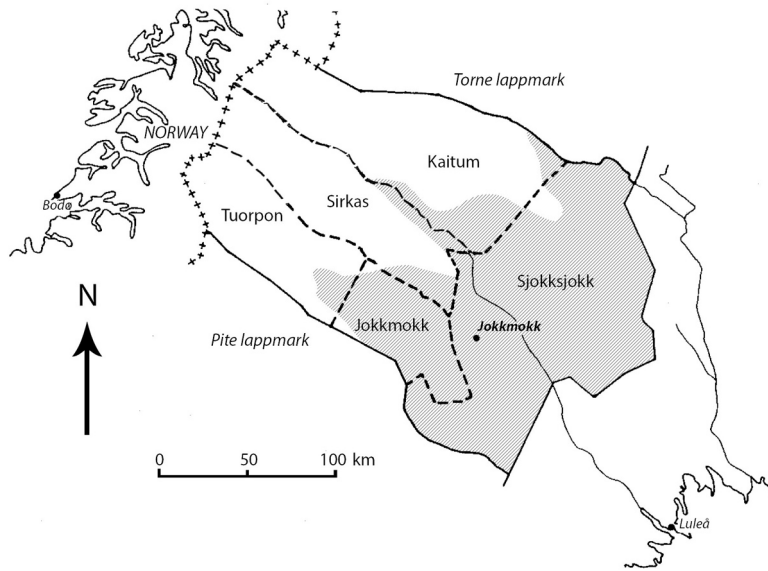


Figure 2. Map of Lule lappmark circa 1760, showing borders between Sami villages Sjukksjokk, Jokkmokk, Tuorpon, Sirkas, and Kaitum. Shaded and white areas represent the boreal forest and mountain regions, respectively. Adapted from Kvist (1989, 16) and Sveriges National Atlas (2011, 34–5).

In early modern records, all Sami belonged to Sami villages. Lule lappmark consisted of four villages: Sjukksjokk, Jokkmokk, Tuorpon, and Sirkas. In 1647, Sirkas split into Sirkas and Kaitum. Sjukksjokk and Jokkmokk were Forest Sami villages (*skogssamebyar*), while Tuorpon, Sirkas, and Kaitum were Mountain Sami villages (*fjällsamebyar*) (Hultblad 1968). Our overarching idea is that the institutional changes that the members of these villages faced in the sixteenth and seventeenth centuries put users in Forest Sami villages and users in Mountain Sami villages on different economic trajectories, primarily due to differences in their resource uses.

Few sources can tell us how Sami organized their society before they encountered the early modern state. Based on field studies in the 1920s among Skolt Sami in Petsamo on the Kola Peninsula, Finnish geographer Väinö Tanner argued that their society represented an ancestral, pristine Sami organization (Tanner 1929). Large groups had gathered in permanent winter sites (*Siida*) where they held village meetings, had local courts, and elected

representatives. Tanner claimed that these *Siida* groups were original Sami institutions that had been preserved into the early twentieth century through the region's isolation from Tsarist Russia. According to him, equivalent institutions also had existed among Sami in northwestern Sweden and Norway but were destroyed in the seventeenth century when Sami society in Scandinavia encountered the state. Tanner's model of pre-modern Sami society with an overarching Sami organization and gatherings of large groups in winter villages gained many disciples over the years.

However, scholars have started to question Tanner's model. Ethnologist Kerstin Kuoljok has convincingly showed that the Skolt Sami society of Tanner's study period did not represent a pristine Sami organization but was the result of changes in Russian society after 1861, when serfdom was abandoned (Kuoljok 2011). Kuoljok found that the institutions Tanner had thought were originally Sami were modeled after Russian village ordinances and governed under Russian laws. In addition, she argues that Skolt Sami were integrated in the Russian realm in many ways; for example, they lived under the same laws as Russian peasants, participated in Russian and international trade, and were forced to give up major parts of their land to monasteries belonging to the Russian Orthodox Church. This research refuted Tanner's theory that Skolt Sami society had developed in isolation from the Russian government and that it could be used as a blueprint for understanding pre-modern organization in other Sami districts. Furthermore, archeologists have reinterpreted ancient remains of groups of hearths in the boreal forest in Lule lappmark, which previously were interpreted, based on Tanner's model, as evidence of large Sami winter settlements (Aronsson 2009; Karlsson 2006). They are now understood as overlaid remains of dwelling places that have been used by small groups of Sami from different time periods. Wallerström (2018) has lately systematically tested the arguments for winter villages in the Swedish lappmark, and concludes that the theory must be rejected.

Like Kuoljok, we interpret the society in pre-seventeenth century Lule lappmark as basically lacking its own overarching institutions. Decisions regarding use of natural resources were most likely made within small, self-organized, and functional user groups, also called *Siida*, but different from Tanner's interpretation. Our definition is based on kinship relations and describes small groups of two to four Sami families that gathered primarily to facilitate hunting, fishing, and reindeer herding, much like modern *Siida* groups (Kuoljok 2011). However, these kinship *Siidas* were not isolated. In interior northern Sweden, a system for justice, tax collection, and trade connected to non-Sami tradesmen (*birkarlar*) from the Gulf of Bothnia had been in place since mediaeval times. Although initially considered subordinates in this trade arrangement, Sami are now thought to have been more equal partners in interdependent, bilateral agreements with the *birkarlar* (Bergman and Edlund 2016).

3. Methods and sources

When users in the mountains developed large-scale reindeer pastoralism, it led to customs and practices different from those in the boreal forest, and thus different property regimes. The institutional analysis and development (IAD) framework developed by Elinor Ostrom which is used in this research focuses on local users' ability to create policy when they manage natural resources (Ostrom 2010; McGinnis 2011). These policy decisions are in turn dependent on three exogenous variables: natural resources, attributes of the community, and rules in use. The basic idea of the framework is that all decisions in policy processes have outcomes and the outcomes lead to changes in the exogenous variables, which in turn make it necessary for the users to re-evaluate their policies. The re-evaluation will thus result in new policy decisions, new outcomes, and new re-evaluations in a continuous process. When the IAD framework is applied in a historical context, it is often more difficult to find details about

the users' actions and decisions due to scarcity of sources. We have relied on general descriptions of the exogenous variables and on interpretations of the outcomes of policy processes in our analyses of the evolution of changes in property rights in Lule lappmark. The Sami village has been used as a proxy, although all people in a village did not follow the same development trajectory. In the early modern period, all users in Tuorpon, Sirkas, Kaitum, Sjokksjokk, and Jokkmokk, more or less, shared the same language, ethnicity, and cultural background. People could move between the villages and marriages between members from different villages were probably common. Users from different villages also shared institutional frames, i.e. went to the same market, church, and court, which made it easier to elucidate which role natural resources played in the development of property regimes.

How policy making regarding land use and grazing rights were shaped is hard to fully understand in an early modern setting where the users themselves have left no written evidence of how the process evolved. Natural resource governance was complex and we can assume that users routinely interacted with each other for policy decisions. These interactions are hard for us today to reach, but from the late seventeenth and early eighteenth century the local courts became a trusted arena for policy discussion and decision regarding policy regarding natural resource management, especially the right to graze. During the eighteenth century around 275 court cases discussed different aspect of property rights connected to grazing rights between Sami village members in Lule lappmark. To these cases one can add other cases regarding natural resource management, i.e. fishing, hunting, both between Sami and between Sami and settlers. The large number of court cases in a quite small population (section 5.3.) is an argument that reindeer herders used the court to develop policy about grazing rights. The court was a collective choice arena where policy decisions about rules that defined and constrained the operational activities often were taken (McGinnis 2011). In the court decisions about the right to use grazing land was discussed in detail. The court rulings

make it possible to study the gradual change of the institutions that regulated grazing rights (Streeck and Thelen 2005).

Since the head judge in the court was appointed by the state, one cannot neglect the fact that the government played a part in these proceedings. However, since the local courts treated local conflicts over natural resources in view of customary practices, in the absence of a detailed written law, and local lay-judges participated one can argue that it mostly was a bottom-up process. The judge ruled together with 12 local lay-judges, and up to the second half of the eighteenth century almost all of them were Sami (Arell 1977). These lay-judges contributed with local context and knowledge about customary rules that surely must have played an important role in the court's conflict resolution. Second, it has been showed that the courts in Sweden were inclined to accept the economic reality in the local community and strived to maintain social stability (Larsson 2016; Österberg and Sogner 2000). The Swedish lappmark is likely no exception from this. However, it is important to stress a few things to put the local court in perspective. The lay-judges were not randomly selected. They represented established taxpaying people. They all had a stake in natural resource management, i.e. reindeer herding, fishing, hunting. An eighteenth century source described the position as a lay-judge in the court districts in the Lappmark as desired and that they were viewed honorable, not different from the same position in an agriculture setting (Högström [1747]1980). A lay-judge was a trusted man and was often appointed to resolve conflicts and suggest solution to the court regarding disputes among users usually after he had met the parties involved in the field. While the court decision in the eighteenth century was a bottom up process regarding land use were Sami customary rights were taken into consideration, not all cases brought to the court was. In criminal cases and religious matters, it was the Swedish states view that prevailed. For the sixteenth and seventeenth centuries, when the court

protocols are lacking, we used cadastral records (*jordböcker*) and tax records as a proxy for Sami land use.

In part 4., we provide a more detailed description of which role the exogenous variable “natural resources” played in early modern resource management in Lule lappmark. Part 5. outlines the role of the exogenous variable “attributes of community” in 1550–1780. This analysis relies mostly on secondary sources, but primary sources from the period, such as tax records, legal investigations, and descriptions of Sami society provided to the state by priests, were used as complements. In part 6., we analyze the exogenous variable “rules in use”, mainly based on transcripts from the local court (*Häradsrätten*) of Lule lappmark from 1700 to 1780. The court transcripts have been compiled and published by Hultblad (1968) mostly as summaries of court cases, not full transcripts. One particular advantage with these transcripts is that they tie each court case to a specific individual; and, maybe more important for us, to his or her place of residence, i.e. a specific Sami village. It is thereby feasible to connect the variable “rules in use” to our Sami village proxy. The preserved records of these disputes present a unique window into early modern Sami land use. The most common conflicts dealt with trespassing, border issues, or fishing, but one court case could also touch upon several different aspects of property rights.

4. Natural resources

Using the IAD framework, we analyzed which role the exogenous variable “natural resources” played in how Sami organized reindeer herding between 1550 and 1780. People’s livelihoods in early modern Europe were determined mostly by the ecological settings they lived in. For Sami, this primarily meant possibilities to use pastures for reindeer (*Rangifer tarandus*), lakes, rivers, and streams for fishing, and different terrestrial habitats for hunting and gathering. Western Lule lappmark was situated in the mountain range along the Swedish-

Norwegian border, while the eastern part was situated in the boreal forest. In Lule lappmark, the mountains are 700–900 m in the eastern part and over 2,000 m farther west. A prerequisite for all forms of reindeer herding is access to grazing in summer, when fresh vegetation sets the herd's condition for winter, and in winter, when they primarily feed on lichens. High-quality summer grazing is especially abundant on heaths and grass lands, and in willow thickets and birch forests in the alpine zone (Skarin et al. 2010). In the northern boreal forest, summer vegetation for grazing mainly grows on open mires, on shores of lakes and rivers, and in areas with deciduous trees (Axelsson Linkowski 2015). In winter, reindeer are able to dig out ground lichens in soft snow cover. In general, the northern boreal forest, especially areas with Scots pine (*Pinus sylvestris*), offers more favorable winter grazing than the mountain region with its openness and frequent winds which make the snow too hard. Access to good winter grazing is essential to keep the reindeer alive, but summer grazing is key for enlarging a herd.

Reindeer must have as much undisturbed grazing as possible in summer to be able to grow and to put on fat to survive the long winter. Several factors can negatively affect the reindeer's physical condition in summer, but unlike popular belief, mosquitoes nor heat have any substantial, negative effects. However, parasitic oestrid flies active in warm and hot weather can severely compromise the reindeer's physical condition before winter (Hagemoen and Reimers 2002). Consequently, the best summer grazing conditions occur when it is cold and windy and the oestrids cannot fly, like summers on the mountain ridge. In the boreal forest, Sami used smoky fires to protect the reindeer from flies (Hultblad 1968).

Open mountain terrain offers other advantages to the management of reindeer because gathering of large herds is easier in a treeless landscape where the herders can see and follow them more easily. This practical aspect was likely an important criterion in the introduction of large-scale pastoralism where they had to gather and milk the reindeer twice daily. The

mountains offered both ecological and practical advantages for reindeer husbandry, at least during summer and early autumn.

A common feature for production systems based on low-producing grazing animals is the extensive grazing area needed (Fernández-Giménez 2002). Logically, increasing the number of reindeer led to an increased need for larger grazing territories. The question is if the development of large-scale reindeer pastorism in Lule lappmark evoked collective organization of pasture lands and if that in turn led to increased cooperation among larger groups of users?

Users in the northern boreal forest, on the other hand, lacked the most important ecological settings required to enlarge their reindeer herds and instead continued to use family territories for fishing, hunting, and small-scale reindeer herding. Users here moved between seasonal settlements by different lakes and streams within large, well-defined areas. They were much like fishing nomads, taking advantage of different spawning periods for different fish species. The relatively nutrient-rich, high-yielding waters in the boreal forest had a great variety of fish species, which made it easier for forest users to subsist as fishers than it was for those who only had access to nutrient-poor lakes and streams in the alpine region (Norstedt, Axelsson, and Östlund 2014). In the second half of the seventeenth century, users had adapted their subsistence first and foremost to the rich resources prevalent in their local environments.

5. Attributes of the communities

In this part, we analyze the role of the external variable “attributes of community” of the IAD framework for the development of new property regimes in early modern Sami society. Since it is impossible to analyze all attributes of a community, we were compelled to focus on analyses of trade, taxation, population size, and number of reindeer, which are attributes that we consider most important for this development. These attributes are the most common to

use in research regarding change in early modern Sami economy (Hansen and Olsen 2014; Kvist 1989; Lundmark 1982; Hultblad 1968). Moreover, trade, taxation and population size are standard variables often used when changed is discussed in early modern societies.

5.1. Trade

Trade has been an important part of Sami livelihood since prehistoric time. Until the seventeenth century, furs from wild game were the main commodity in Lule lappmark, and trade was managed through *birkarlar* who traveled around the inland in winter to trade with groups of six to nine Sami households at different sites (Bergman and Edlund 2016). Sami exchanged furs for a great variety of commodities, such as flour, butter, frieze, silver jewelry, and coins. Sami also traded and bartered with locals and merchants along the Norwegian coast in summer. There was a great demand for furs on the European market in the sixteenth century, but problems in interior northern Sweden—a shortage of Norwegian furs, which Sami were selling to the Swedish Crown, and a harsh climate in 1614–18 (Lundmark 1982)—and changes in the international fur market led to a diminished fur trade in the early seventeenth century. This was also a time for fundamental changes in how the organization of trade in interior northern Sweden was organized as the government decided that all trade had to be centralized to official marketplaces in each lappmark. For Lule lappmark, the official marketplace was henceforth located in Jokkmokk.

This institutional change happened simultaneously with the decisions to erect permanent church buildings belonging to the Christian Lutheran state church near the marketplace and to establish local courts (*Häradsrätter*) with a state-appointed judge. At market time, Sami could thus do business, attend church services, and take part in court sessions during the course of a few weeks (Högström 1747[1980]). Henceforth, the marketplace was also where the government collected the yearly tax from Sami. The

introduction of all these new institutional elements constituted a vital part of the government's reinforced ambition to gain control over interior northern Sweden and its inhabitants (Lantto 2010).

Sami trade with reindeer products grew in importance in the seventeenth century. By this time many Sami had enlarged their reindeer herds and thereby had increased surpluses, for example, cheese, meat, and furs. These products could either be sold at market or bartered with neighbouring groups (Hansen and Olsen 2014; Päiviö 2017). The revenues were often used to buy a wide range of products, such as tobacco, alcohol, copper, steel, iron, fishing gear, needles, wool blankets, clay tobacco pipes, tar, hides from cows and oxen, and silver objects. In the seventeenth century, Mountain Sami played an important role as middlemen in the transit trade between the Norwegian coast and the Gulf of Bothnia, as well as in transport of goods to and from markets in the Swedish lappmarks. The government put great value on Sami trade, because it both contributed to the state's stretched economy, and helped to sustain the burghers in the towns that had been established along the coast of the Gulf of Bothnia in the 1620s (Arell 1977). All in all, we have interpreted the changing trade patterns in interior northern Sweden in the seventeenth century as the most important attribute for explaining the development of large-scale reindeer herding that spurred the new property regimes that developed in Lule lappmark during this time.

5.2. Taxation

The second attribute is taxation. In the sixteenth century, all Sami men 17 years and older had to be registered to pay tax on an individual basis. In Lule lappmark, the most frequent tax commodity was furs, but also dried fish. In the tax records, Sami were registered as belonging to either Mountain Sami or Forest Sami villages, but at the beginning, these categorizations did not reveal any substantial differences in their respective taxation, with the exception of

Arctic char (*Salvelinus alpinus*). It was a species that mainly lived in alpine lakes, and therefore was a taxed good only for Mountain Sami. In the tax records, reindeer was an unusual taxed good for members of both types of Sami villages in the sixteenth century, and reindeer appear for the first time in tax records in the 1570s but in low numbers (Lundmark 1982).

In the early seventeenth century, the government changed the tax code for the Sami so reindeer and dried fish became primary tax commodities instead of furs. This alteration of the tax base has usually been interpreted as a response to the state's increased demand for food supplies for soldiers in Swedish military campaigns (Lundmark 1982). Post-reform tax records from Lule lappmark indicate that the differences in economies of the two types of Sami villages were still rather small in the first decade of the seventeenth century (Lundmark 1982). Both groups paid tax in dried fish and the same number of reindeer per taxpayer, although members of Mountain Sami villages had more reindeer than members of Forest Sami villages. From the 1670s, users in Mountain Sami villages (with a few exceptions) ceased to pay their tax in dried fish while users in the Forest Sami villages continued to do so (Lundmark 1982). Estimates of how access to resources corresponded to tax show that in the late seventeenth century only fishing waters correlated with tax levels, and there was no correlation to reindeer grazing resources (Norstedt, Axelsson, and Östlund 2014).

During most of the seventeenth century, the taxation of Sami was complicated, especially since the tax consisted of no less than five parts, not including *corvée*. A government investigation in 1695 showed a lack of basic data concerning Sami taxation, which made it hard for the state to know if they had received the right amount of tax (Douglas 1695). In 1689, a progressive tax had been proposed that was to be based on the number of reindeer (Arell 1977). There were, however, numerous problems connected with this proposal. The investigation showed that the number of reindeer often fluctuated greatly

between years; a rich Sami one year could be poor the next year, which would make reindeer a far too uncertain base for taxation (Douglas 1695).¹ In addition, it would have been hard for the government to keep track of the number of reindeer. In the end, after 1695, the previous five taxes were reduced to one tax based on the resource territory which each Sami household used for reindeer herding, hunting, and fishing (Arell 1977). The tax rate for these territories was supposed to be fixed “for all eternity” (Hultblad 1968, 79) and correspond to the territories listed in cadastral books. However, some Mountain Sami were assessed fixed taxes although they were not assigned to specific territories (Holmbäck 1922). Since land henceforth was the base for taxation, the new tax code for Sami had similarities with how Swedish peasants were taxed during that time. However, in contrast to peasants’ lands, the exact ranges for Sami tax lands were never measured. The investigation concluded that these kinds of measurements would have been impossible, particularly for the users in Mountain Sami villages since the boundaries of their territories were too diffuse (Douglas 1695).

The new 1695 tax code was a break from the old tax code in another important aspect. From then on, the taxpaying unit was the Sami village, not the household. The tax had thus become collective for the members of the village. Each household’s share of the total tax was defined in the cadastral book, but it was the Sami villages’ responsibility to deliver the right amount of tax to the state. This made it possible for them to adjust the tax levels in view of the households’ incomes, but they could also make some households pay more if others did not contribute enough, or if some households moved out of the Sami village. Another big change was that the tax was not paid in kind anymore, but in money. All in all, the reforms in 1695 made the tax more predictable and lower, and *corvée* had been restricted. This tax relief

¹ In the early 1690s, there were reports about large losses of reindeer and the poverty that followed (Korpijaakko-Labba 1994, 400).

surely had a positive effect on Sami households' standard of living, which probably contributed to the increase in Sami population from the late seventeenth century to circa 1780.

5.3. Population size

It is difficult to estimate the population size in the Swedish lappmarks in the early modern period. The most reliable estimates are based on the number of Sami listed in tax records (*skattelappar*), where each Sami represented one household. However, the number of Sami in the records fluctuated between years partly because almost all Sami were non-sedentary and could move either to other Sami villages or to Norway, making them hard to keep track of. Between 1553 and 1570, there were on average 105 Sami registered in the tax records in Lule lappmark. However, after 1570 the number started to increase, and around the turn of the century there were on average 169. The numbers peaked in the 1610s with an average of 186 in the tax records. Between 1621 and 1660 relatively few Lule lappmark tax records were preserved, but fragmentary records show that the number of Sami probably was similar to the number in the preceding decades. In the 1660s, the state initiated mining activities in several places in Lule lappmark and tried to force Sami to do *corvée* in these mines, mostly in transport. To avoid forced labour, many Sami moved away, and when the government's tax collector came to Kaitum in 1667, he wrote that "all had escaped" (Mantalslängd 1667) and that there was no tax to collect. At the same time, in neighbouring Sirkas, there were only nine Sami taxpayers left. Compared to 1643, Sirkas and Kaitum, which by that time were treated as one unit in the tax records, had had about 70 registered taxpayers (Mantalslängd 1643).

In 1667, the Sami population in the whole of Lule lappmark had decreased drastically and only 55 Sami were registered in the tax record (Mantalslängd 1667), compared to about 200 taxpayers a few years earlier (Hultblad 1968, 79, Figure 15). The stress that the mines

evidently brought on the Sami population was not in line with the government's intention to populate the Swedish lappmarks and they had to rethink their policies. From 1670, the number of Sami registered in the tax records slowly but steadily increased again, but it was not until after the tax reform in 1695 that the increase gathered real momentum. In 1750, there were 295 Sami registered as taxpayers in Lule lappmark, and the number peaked in the 1780s with more than 360.²

At the same time, the government tried to attract non-Sami farmers to settle in the Swedish lappmarks. Despite Royal Ordinances in 1673 and 1695 that offered a non-Sami exemption from taxes and military service for 15 years if they settled there, the result was disappointing for the state. At the end of the seventeenth century, less than ten farms had been established in Lule lappmark, and colonization continued to be a slow process until the end of the eighteenth century. In 1760, there were still only 13 settlers, and in 1780 they had increased to 22 (Hultblad 1968). The Sami population dominated until the nineteenth century.

5.4. Number of reindeer

In the seventeenth century, the number of reindeer was officially counted only in 1605 and 1609. The survey from 1609 is the most thorough, giving the number of reindeer for each of the 177 taxpaying Sami in the four Sami villages in Lule Lappmark and the distribution of male and female reindeer and calves. It showed that users in Mountain Sami villages Tuorpon and Sirkas on average had 27 and 28 reindeer, respectively, including calves, while users in Forest Sami villages Sjukksjokk and Jokkmokk had on average 13 and 15 respectively, including calves (Lundmark 1982). Only five of the users registered in the tax records had 60 or more reindeer, and the user with the most reindeer had 70.

² Hultblad gives a higher number for Lule Lappmark, but one needs to subtract the Sami in Jukkasjärvi who were added to Kaitum in 1742 (Hultblad 1968, 79, figure 15).

There are unfortunately no quantitative surveys of reindeer available from the second half of the seventeenth century. There are, however, several contemporary descriptions from the late seventeenth century and the eighteenth century that describe how the Mountain Sami by then were heavily dependent on reindeer (Ehrenmalm 1743; Graan 1899; Linneus 2003; Lundius 1905; Rheen 1897). According to Rheen (1897), a priest in Lule lappmark in the 1660s, many Sami owned a hundred or a thousand reindeer, and some even more. He also wrote that they needed to take care of these reindeer “night and day, winter and summer” (Rheen 1897, 23). Around 1675, another priest, Lundius (1905), wrote that a rich Mountain Sami could have more than a thousand reindeer. In 1732, Linnaeus (2003, 100) traveled in the Swedish lappmarks at the behest of the Royal Academy of Sciences in Uppsala and saw “some thousand reindeer” coming back from the pastures to be milked when he awoke on July 7 in a Sami camp. In 1747, yet another priest, Högström ([1747]1980), described that a Sami’s fortune was in reindeer and that some of them owned a few thousand and that one single Sami village could have 30,000 reindeer.³ These reindeer were distributed among 100 households, an average of 300 reindeer per household. In 1741, Ehrenmalm (1743) traveled to the southernmost part of the Swedish lappmarks and described that a medium-sized herd for Mountain Sami was 150 to 200 reindeer. The Mountain Sami’s focus on reindeer herding was contrasted to the Forest Sami’s focus on fishing and hunting in all of the descriptive sources from that time. The descriptions emphasized that the use of different resources influenced these users’ economic possibilities, and Mountain Sami were described as wealthier than Forest Sami (Graan 1899). According to the investigator of the tax reform in 1695, the number of Mountain Sami was larger than the number of Forest Sami at that time (Douglas 1695).

³ Högström’s description is mostly based on evidence from Kaitum.

In summary, early seventeenth-century trade was especially favourable for members of Mountain Sami villages who were involved in transit trade. Institutional changes in trade spurred changes in reindeer husbandry that led to large-scale reindeer pastoralism. Users in western Lule lappmark could relatively easily increase the number of reindeer by using grazing in the mountains and the northern boreal forest more efficiently. After the tax reform in 1695, the pressure eased for many Sami, tax levels became steady and predictable, and the Sami population increased rapidly in the eighteenth century, especially for the users in the Mountain Sami villages that were involved in large-scale reindeer herding.

6. Rules in use

As we have seen the Sami population in Lule lappmark increased in the eighteenth century, and many households shifted from fishing and hunting and small scale reindeer herding to large-scale reindeer pastoralism. It was a shift that led to an increased need for pasture lands, which in turn led to a growing number of conflicts among users over winter grazing in the boreal forest, trespassing during migration during autumn and spring, but also summer grazing in the mountain.

Several sources indicate that users in Mountain Sami villages in Lule lappmark had developed a common-property regime in the mid-eighteenth century, which means that they collectively organized summer grazing. Based on a cadastral record for Lule lappmark from 1695, as many as 18 out of 43 users in Sirkas could not be connected to specific lands (Holmbäck 1922, 18). Because those 18 users did not have access to individual territories, they probably had collective access, at least to grazing, within the Sami village. A similar interpretation is possible for Tuorpon, where the tax record from 1695 does not tie any of the users to specific land. Although some court records from the eighteenth century show that taxed lands in Tuorpon were tied to individual users, Holmbäck (1922) concludes that the

division in Tuorpon could not have been very strict. There also seems to have been diffuse borders between Sirkas and Tuorpon. In 1745, two Tuorpon Sami told engineers doing preparatory work for the demarcation of the Swedish-Norwegian border that the village borders overlapped “since Sami belonging to both of these villages mostly lay on each other [*ligga om varandra*] as good friends” (Holmbäck 1922, 19). This was moreover confirmed by a court ruling from Jokkmokk in 1751 which described how grazing lands in the mountains were used alternately by users from Sirkas and Tuorpon (Hultblad 1968, evidence no. 213a). Another court ruling from 1770 described that they shared grazing lands in the mountains (*var om annan*) (Hultblad 1968, evidence no. 270a). In the mid-eighteenth century when the number of users and reindeer increased an intense discussion in the court took place about who had the right to use certain grazing lands in the mountains.

To obtain access to suitable winter grazing, which largely was lacking within the boundaries of the mountain Sami villages, users had to move their reindeer to the boreal forest. However, grazing rights in the forest were tied to individual territories, so-called tax lands, which were relatively large territories that individual users had exclusive rights to use and that they paid tax for. In the seventeenth century, it was common for users in Mountain Sami villages to lease winter grazing land from users in Forest Sami villages (Hultblad 1968). The relationship between members of Mountain and Forest Sami villages was most likely informal and based on reciprocity, but more formal relationships gradually evolved in the winter grazing area. The number of conflicts over grazing in the boreal forest increased in the first half of the eighteenth century, which can be linked to the expansion of large-scale reindeer herding when especially users in Mountain Sami villages had an increased need for winter grazing (Arell 1977; Holmbäck 1922).

Mobility on the landscape also increased with the expansion of large-scale reindeer herding, which is visible in eighteenth-century court records where many cases dealt with the

unauthorized intrusion on tax lands in connection with migrations between seasonal grazing lands (Hultblad 1968). In most of these cases, the court gave the intruding users the right to stay on another user's tax land for one or two days during migration. This means that the court system had adjusted to a concept of legality that focused more on grazing rights.

The court cases show that in order to access winter grazing, a user from a Mountain Sami village could co-own tax land in the boreal forest with a user in the Forest Sami village to share grazing rights. This sometimes led to disputes if the user in the Forest Sami village allowed other users to graze on the same land. One example of this occurred when Tuorpon Sami Anders Persson Mauna sued Jokkmokk Sami Pål Jonsson Tjedda for having allowed a Sirkas Sami to graze on their shared tax land without sharing the rent received (Hultblad 1968, evidence no. 178). For the Tuorpon Sami, this intrusion in the winter grazing by the Sirkas Sami meant production losses due to increased competition, but for the Jokkmokk Sami, who most likely owned relatively few reindeer, it probably meant a welcomed income from a resource he had in abundance.

By the late eighteenth century, generations of users from Mountain Sami villages had acquired more formal grazing rights to tax lands that belonged to users from Forest Sami villages. When two Tuorpon Sami accused Jokkmokk Sami Lars Pålsson Pärak at the local court of 1794 for allowing Sirkas Sami on their shared tax land, the Sirkas Sami used a verdict from 1757 to show that their predecessors had owned the right to use the land together with the accused Jokkmokk Sami's father (Hultblad 1968, evidence no. 270). In another case, the court concluded that Sirkas Sami were obliged to put up with Sjukksjokk Sami in spring and summer, since Sirkas Sami stayed on Sjukksjokk Sami land for most of the winter (Hultblad 1968, evidence no. 715a). In the second half of the eighteenth century, some users in Forest Sami villages also changed their economy to large-scale reindeer pastoralism (Hultblad 1968). The increased east-west migration motivated the court in some cases to also

approve migration for users in Forest Sami villages who needed summer grazing in the mountains (Hultblad 1968, evidence nos. 1056a and 715a).

While grazing rights had become a right that required collective organization, fishing and hunting were still organized privately, at least in the boreal forest. Court records show that disputes among users in Forest Sami villages in the early eighteenth century were mostly about fishing. Users in Mountain Sami villages on the other hand, had less time for fishing, and in this group, fishing was primarily an occupation of the poor (Ehrenmalm 1743; Graan 1899; Linneus 2003; Lundius 1905; Rheen 1897; Tornaesus 1900). Most users in Forest Sami villages moved about within their tax lands, following the spawning of different fish species in different lakes and streams (Graan 1899). Usually, a family, or in some cases the extended family, had the right to fish within a tax land and that right could be passed down to the next generation. The right also gave them authority to exclude others from fishing. When fishing water was shared, users split the rights either temporally or spatially (Hultblad 1968). From the court cases that dealt with hunting, one can conclude that hunting in the boreal forest was organized privately within tax lands (Hultblad 1968, evidence nos. 966a, 767b, 797a, 968).

7. Discussion and conclusions

Based on the evidence we conclude that the introduction and development of large-scale reindeer herding among Sami in Lule lappmark led to changes in their customary practices, which in turn led to changes in the rights to use pasture land. Similar to other pastoralists, land-use strategies among reindeer herders with many animals included a high degree of mobility, flexibility, and reciprocity, and their focus on grazing for a large number of reindeer required common-property regimes. The new land-use system was based on collective organization of extensive pasture lands in place of the restricted individual territories that had characterized the old system. In that development, users in Mountain Sami villages had an

advantage with access to better conditions for summer grazing than users in Forest Sami villages. Differences in access to grazing in the mountains versus the boreal forest led to the development of different property regimes in these two regions.

In the eighteenth century, summer grazing in the Lule lappmark mountains developed into a common-property regime where a large number of herders shared extensive pasture lands. In Tuorpon and Sirkas, as many as 120 Sami taxpayers, shared summer grazing in the mid-eighteenth century (*Jordeböcker* 1750). When the number of reindeer and users increased conflicts between users started to grow and an intensive works started to negotiate grazing's rights in the local court. Three principal factors contributed to the development of common property. Before the expansion of large-scale reindeer herding, the users had a limited need for grazing in the mountains and access to grazing resources probably was based on open access, although users usually returned to the same seasonal grazing lands. Second, only a small number of Sami were tied to specific lands in the mountains in the early eighteenth century. Due to the transition to large-scale reindeer herding it became important to regulate more in detail who had access to which grazing land. Third, summer grazing land seems to have been an almost unlimited resource in the mountains in the first half of the eighteenth century, which meant that there was very little risk of overgrazing or a situation such as the "tragedy of the commons" (Bjørklund 1990). Given these circumstances, there could not have been much need to limiting the number of reindeer. As for other pastoralists, it was in the reindeer herders' interest to facilitate mobility, flexibility, and reciprocity (Fernández-Giménez 2002; Moritz 2016).

Mobility and flexibility were important features of reindeer herding because the grazing conditions varied both spatially and temporally throughout the vegetation season and made the herds to regularly search for new pastures. Moreover, the migration between pastures had to be flexible since it depended on weather, winds, and the availability of grazing resources,

which made it difficult to plan ahead. It was likely customary for a pastoralist to return to the same pasture land every year. Large scale reindeer pastoralism was a hazardous business due to recurrences of animal pests, predators, and starvation. The principal strategy for individual reindeer herders was to keep as many reindeer as possible as insurance in case the herd size diminished.

Reciprocity also was a vital part of the reindeer herders' lifestyle; they had to cooperate with each other, especially during migration when they formed temporary alliances that depended on grazing conditions. Large scale reindeer herding was a labour-intensive production that required the constant cycle of herding, gathering, and milking. Rich reindeer herders had employees, often young men and women, and cooperated with poor reindeer herders to obtain more manpower. For the poor, this was beneficial as insurance against famine. In Lule lappmark, the reindeer herders' property regime for summer grazing in the eighteenth century had more similarities to the complex mosaic regimes that Robinson (2019) has proposed than Moritz (2016) open-property regime. In Lule lappmark the court decided about borders between land users had the right to utilize as a mean to exclude other users. However, the right to use land was often up for negotiation which created both secure user rights and flexibility. To fully understand how the system worked it requires, as Robinson claims, including the social processes within society. Exactly how to label the property right system that developed in the Lule lappmark when reindeer herding became the main occupation for many users, requires further research. Here we stick to the concept common-property regime, acknowledging that the standard description of it not fully grasp the complexity of natural resource governance in the eighteenth century.

Winter grazing likewise developed into a common-property regime in Lule lappmark in the eighteenth century, but it had different attributes compared to the regime for summer grazing. In the second half of the eighteenth century, users in Mountain Sami villages had

rights to graze on tax lands belonging to users in Forest Sami villages in the boreal forest by two means: pay rent or obtain permanent rights to use the land without payment. The latter rights could be confirmed by the local court. To explain the development of a common-property regime in the boreal forest in winter one has to consider the region's historical background as well as its natural setting. The main difference from summer grazing in the mountains was that winter grazing took place on tax lands belonging to individual users with exclusive rights to use the natural resources (Korpijaakko-Labba 1994; Päiviö 2011). User in the boreal forest gradually lost their exclusive right to grazing within the tax lands because they generally had access to more grazing resources than they needed for their often rather small reindeer herds. At the same time, winter grazing was an essential resource for users in the Mountain Sami villages that had developed large scale reindeer herding although it was in short supply for most of them. In some cases, grazing on individual tax lands became a shared resource between a user from a Forest Sami and a user from a Mountain Sami village. Users from Mountain Sami villages, who often had more reindeer, likely used more of the winter grazing resource on these shared lands. The development towards shared lands between different users in the boreal forest was probably facilitated by the fact that some users in Forest Sami villages also had become large scale reindeer herders. They had then, at least to some extent, gained corresponding rights to summer grazing in the in the mountains on land belonging to Mountain Sami villages.

The old tax system had been based on individually managed tax lands within Sami villages with a broader form connected to the organization of private rights to fishing and hunting. The right to the old tax lands were gradually replaced by user's rights to use grazing land in both the boreal forest and in the mountain and was a collective property regime. The development of winter grazing into a common-property regime was incremental and completed with the 1886 Reindeer Grazing Act, one hundred years after our investigation

period ended. The common-property regime for grazing was thereby, and augmented by parallel colonial processes, translated by the government into east and west administrative units (*lappbyar*) that included all reindeer herders in the adjacent Mountain and Forest Sami villages.

In the eighteenth century, winter grazing was organized in more restricted pasture lands than summer grazing. However, this was not a problem since winter grazing was more efficient with smaller winter herds (due mostly to slaughter and sales), which could be moved easily between sites where there was sufficient grazing in the form of lichens. The primary challenge for herders was to move the reindeer often enough so individual animals did not stray off on their own in search of better grazing. If animals strayed, there was a greater risk of losing them to predators and it meant a lot of work for the herder to gather them again.

Similar to Netting's (1976) studies of the development of common property, we find that natural constraints were also important factors in the development of common-property regimes in Lule lappmark. The value of production per unit there was low, as was the possibility to improve the grazing resources. Hence, when large-scale reindeer herding developed, user groups and the pasture lands required for efficient production had to be large, making common property an efficient system. The common-property regime was a result of the users' ability to create policy for management of natural resources. These policies were in turn constantly reevaluated, which gave rise to new actions, decisions, and policies. Up to the late eighteenth century, changes in property rights to use grazing resources in Lule lappmark were by and large the result of user self-governing. Many of the disputes with regards to grazing during that time ended in the local court. Hence, the local users' interests and customary rights were important in the court's decision-making process. For many reindeer herders, the household economy would have been severely hampered if they had not been given the right to graze their reindeer in the boreal forest during winter. And since grazing

resources were little used by Forest Sami, their economy did not suffer when they had to give up parts of a right they did not use. They still had exclusive rights to their most important resources, fishing and hunting. The local courts did not want to hamper the household economy; their role was to facilitate it (Larsson 2016; Österberg and Sogner 2000).

Many of the observations described above are in line with a tradition of research about the development of natural resource management in Sami reindeer context (e.g. Bjørklund 2013; Päiviö 2011; Pehrson 1957). By taking a self-governing perspective in a CPR context, we identify the microlevel interactions between users through which property rights evolve. Hence, we highlight how early modern indigenous people created and negotiated property rights. On a higher level, the CPR perspective facilitates a discussion about Sami property rights in the context of property rights elsewhere, especially regarding common property.

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