Gollevarre Revisited – Reindeer, Domestication and Pastoral Transformation

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Abstract

The Gollevarre complex near the River Tana in Finnmark, Norway, consists of 2,685 pitfalls and a campsite with the remains of 16 turf dwellings, all dated to the period 1200–1650 CE. The enormous amount of reindeer bones at the campsite testifies to both large-scale hunting and production of bone artefacts for a market. Why did this activity end and did its termination have any connection with pastoral development which took place at the same time? These questions were addressed through an expedition to Gollevarre by the archaeologists Sven Donald Hedman and Bjørnar Olsen, the biologist Knut Røed and the anthropologist Ivar Bjørklund. With the aid of 281 DNA samples from Gollevarre and other sites in Finnmark, we concluded that a) the emergence of pastoralism did not depend on the domestication of wild reindeer, since b) there were no genetic relations between the old stock of wild reindeer and the current stock of domesticated reindeer. Thus, the emergence of pastoralism in the 17th century seemed to be the result of the import of domesticated animals. Alternatively, but so far without DNA-proven facts, the current stock might reflect an old, but small, population of domesticated reindeer kept for transport purposes.

1 Introduction

In August 2014 Sven-Donald Hedman, Knut Røed, Bjørnar Olsen and the present author took off in a helicopter heading for a Sámi archaeological site called Gollevarre known for its old dwelling sites and numerous pitfalls for hunting wild reindeer (Fig.1). Being the archaeological part of our expedition, Sven-Donald and Bjørnar knew the site well. Knut has his background in DNA analyses of reindeer among other species, and as a social anthropologist I have myself an interest in reindeer pastoralism. With this background, we thought the four of us would provide a potent approach to understanding more of the story behind the Gollevarre site and the questions that it poses.

2 The Gollevarre site

The Gollevarre complex lies on the isthmus between the Tana River in the west and the Varanger Fiord in the east (Fig. 2). It consists of no less than 2,685 pitfalls organized in 14 different systems and a camp site with the remains of 16 turf dwellings, all of which are dated to the period from 1200 to 1650 CE. The pitfalls have been described by Vorren (1998) and some excavations of the dwellings took place in 1965 and 1966 (Munch & Munch 1998). The excavations revealed quite a few items related to the hunting of wild reindeer which must have taken place by means of the pitfall systems in the vicinity. Most important, there was an enormous amount of bones close to the dwellings, mainly skulls with the lower part of the ant-

Figure 1. Off to Gollevarre: From the left, Knut Røed, Sven Donald Hedman, Ivar Bjørklund. Photo: Ivar Bjørklund.

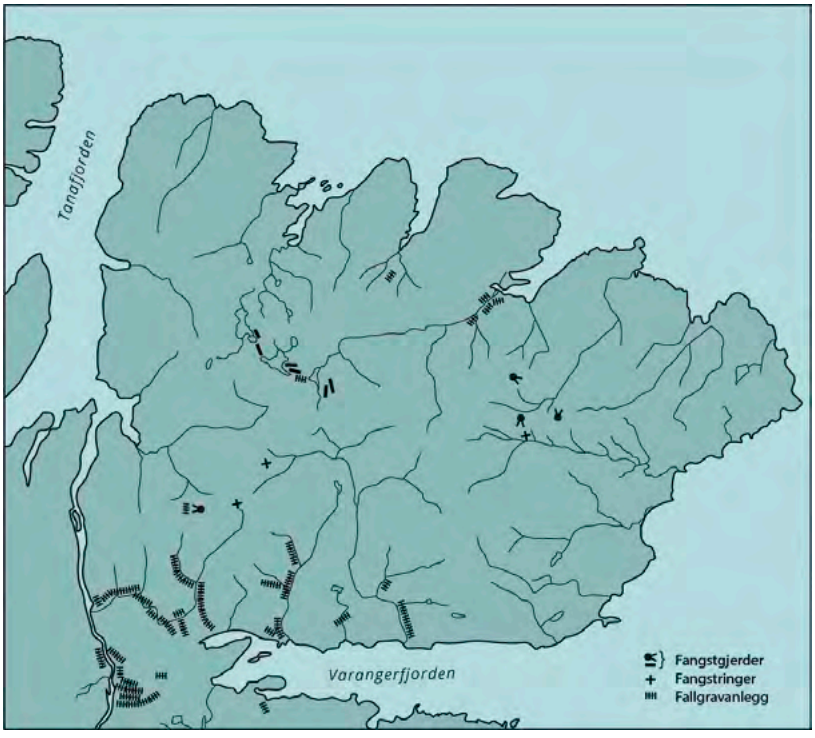

Figure 2. Map of the Gollevarre area. Drawing: Ernst Høgtun, Tromsø Museum - Universitetsmuseet.

Figure 3. One of the 2,685 pitfalls in the Gollevarre complex. Photo: Ivar Bjørklund.

lers – the upper part being chopped off. In the actual dwellings, finds consisted of the remains of knives, spears, arrow heads and honing stones. In particular, semi-finished spoons of antler were found, which together with quite a few knives indicated a local production of spoons and other items of antler. Due to the large number of processed skulls in the area, this was probably important production meant for a market (Vorren 1998: 127).

Vorren dated a handful of samples by ^{14}C and we dated a few more. Our results confirmed his assumption that this particular site had been in use for at least four hundred years, from 1200 to 1650 CE. The excavations suggested that it had been in more or less continuous use and the context made it obvious that hunting for wild reindeer was the sole reason for the camp. The pitfalls and the finds were indications of how the reindeer were caught and to some extent of how they were processed (Fig. 3). The ^{14}C dating indicated when these activities ended. In other words, we were facing the end of a very old type of resource extraction which had been of the uttermost importance for thousands of years as for instance documented by the rock carvings at Alta (Helskog 2012). The obvious questions then, became a) why did it end and b) is there any connection between this termination and the incipient pastoral development which took place in the greater area? The ultimate issue then, is the quest for the societal and economic context of the activities at Gollevarre and the kind of transformation which brought about its end, not only at Gollevarre but in the whole region of Finnmark.

As we know, the time of the youngest dated samples from this hunting site, 1600–1650 CE, is also the time when the first written sources tell about a new kind of activity, namely herds of domesticated reindeer being moved from the inland to the coast. The first reports are complaints in 1625 from Norwe-

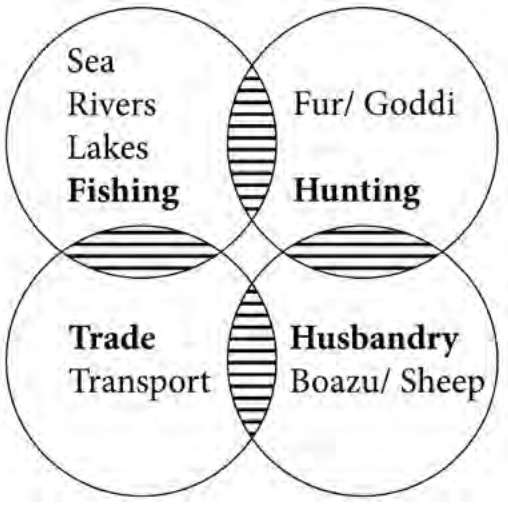

Figure 4. Multifaceted household adaption. Drawing: Ernst Høgtun, Tromsø Museum – Universitetsmuseet.

gians living in the coastal area of Varanger, claiming that "Sámi from the mountains" move their herds across the hay fields belonging to settlers and thus damaging their income (Niemi 1983: 186). Similar complaints multiplied all over Finnmark towards the end of the century and into the next and bear witness to the fact that reindeer pastoralism was becoming an important adaptation in the region.

3 The development of reindeer husbandry

Questions like those above bring us straight into the old debate regarding the development of reindeer husbandry in northern Fennoscandia. This debate unfortunately, has not always made a distinction between 'husbandry' and 'pastoralism', the latter being used synonymously for any kind of reindeer husbandry (Andersen 2008; Hedman 2005; Storli 1993). These authors have dated the emergence of pastoralism to the Viking Age, i.e. 800–1000 CE, referring to the information given by the Norwegian chieftain Ottar, pollen analyses or excavations of the so-called Stallo dwellings. Others have pinpointed pastoral development to the sixteenth or seventeenth centuries (Hansen & Olsen 2004; Mulk 1994; Vorren 1973). Common to both theories – whether reindeer husbandry is dated to 1000 CE or 1600 CE – is the idea that the development of pastoralism marked a profound change in Sámi culture and became a main strategy in their economic adaptation.

But instead of accepting a priori the idea of paradigmatic changes, it is better to take a closer look at the sources and see what information they can give us regarding the relations between humans and reindeer through time. The earliest references are given by the Norwegian chieftain Ottar when he visited King Alfred the Great in England in 890. Ottar gave the court a description of his travels in the northern parts of Fennoscandia and explained that he was in the possession of 600 'unsold' and 6 'tame' reindeer (Bately & Englert 2007). The first 600 were probably his food and trade supply, but the remaining 6 are now understood as draught animals kept at the farm all year around (Sámi: *hearggit*). In other words, domesticated reindeer were a fact at the time and had probably been so for a long time due to their necessity for trade and communication in the north.

According to Ottar, these domesticated animals, *boazu* as they are called in the Sámi language, made it possible to hunt *goddi*, the wild reindeer. These two nouns are proto-Sámi words, thus reflecting the coexistence of domestic and wild reindeer back to 1000–1500 BCE (Aikio 2006). The two terms refer to differences both in appearance and behaviour (Turi 2011 [1910]: 63). As documented in rock carvings, ancient pitfalls (e.g. Gollevarre), and written sources, hunting for the wild reindeer, *goddi*, was an important part of the Sámi means of livelihood up to the last couple of centuries (Bær 1926; Leem 1975 (1767)). Boazu, on the other hand, is the domesticated animal, the one used for domestic purposes such as transportation. Accordingly, domesticated reindeer were probably part of human adaptation in Northern Fennoscandia at least as far back as 1500 BCE, as documented by the archaeological remains

Figure 5. At the Gollevarre camp site. From the left, Sven Donald Hedman, Bjørnar Olsen and Knut Røed. Photo: Ivar Bjørklund.

of a Sámi type of sledge (*geris*) found at Ostrov Bolshoi Olenii in the Murmansk Fiord (Murashkin et al. 2016).

4 Hunting for a market

Ottar refers to the Sámi as hunters and fishermen along the coast who live and hunt in the mountains and fish in the sea in the summer. This is similar to the first descriptions which appear in written sources seven hundred years later (Anonymous 1895 [c.1580]; Schefferus 1956 [1673]). We are faced with household-based adaptions depending on multiple resources over a large area, in which reindeer hunting, fishing and husbandry alike played important roles (Bjørklund 2013; Hedman & Olsen 2009) (Fig. 4). In some areas like Varanger, sheep and goats were also part of this multitude of resource adaptations (Odner 1992). People were embedded in a network of markets and tax and barter relations where fur, reindeer skin, bone products, fish, meat etc. were exchanged for cloth, pewter, iron and copper kettles, knives, axes, rope and many other household necessities (Hansen 1984). Most important, their need for food and clothing could not be sustained by means of a domestic herd of draught animals alone, which probably never exceeded 20–30 reindeer (Bjørklund 2013). They had to rely on hunting wild reindeer to survive. First and foremost the outcome gave them food and reindeer skins needed for domestic purposes. But the large number of pitfalls, antlers and bone products at the camp site of Gollevarre, are evidence of the fact that they were also involved in markets and trade. Given the large herds of wild reindeer, they must have caught more animals than were needed for local consumption. It is this market opportunity which gives us the explanation behind the large pitfall complexes in Finnmark and elsewhere. Fur, processed meat (smoked or salted), clothing of hides, tools, combs and spoons, and glue made of bones were all-important trade items (Hansen 1984; Vorren 1998).

This multitude of economic relations cannot be defined as pastoralism in any way. The latter implies a group of people being dependent on a herd of domesticated animals for their main subsistence and this was not the case as long as this multifaceted adaption existed. But the dating of the artefacts from Gollevarre and the statement by Chancellor Niels Knag in 1694 about the termination of trapping activities[1], make it clear that this adaptation had come to an end around 1650. Most authors have explained this termination with a reduced number of wild reindeer, pointing to taxation, intensive hunting and the introduction of firearms (Vorren 1973). Others have argued that the development of local hierarchies led to the ownership of reindeer and corrals and thus favoured a pastoral economy (Hansen & Olsen 2004: 212-214).

5 The emergence of pastoralism and the genetic paradox

What we do know from contemporary sources is that reindeer pastoralism was now becoming important among the Sámi all over Finnmark. Obviously, this transformation reflects existing biological and topographic knowledge among the Sámi involved, but was this such a paradigmatic and profound change as some authors have argued? We have to bear in mind the deep experience-based knowledge which the Sámi had accumulated regarding reindeer over a very long time, both due to the keeping of the tame *boazu* for domestic purposes and the hunting of the wild *goddi*.

Furthermore, could the particular case of Gollevarre shed light on the old debate regarding the origin and explanation behind domestication processes? One theory points to the demographic diffusion of domesticated species from certain core areas (Clutton-Brock 1999). But it is also well-known that domestication took place in different areas independent from each other (Larson et al. 2005). This again, raises the question whether the spread of domestication first and foremost involved the diffusion of husbandry techniques, making it possible for people to domesticate local stocks of wild animals (Vorren 1973).

Addressing these questions, the four of us who took part in this above-mentioned excursion to Gollevarre, had the possibility to draw on Knut Røed's capability in DNA analyses (Fig.5). By use of mitochondrial DNA (mtDNA) as a genetic marker, Knut and his team has studied the genetic impact of domestication processes and documented how a greater amount of genetic diversity had come about through the fusion of maternal lineages with different origins (Røed et al. 2008). They have furthermore studied reindeer bones from the Stone and Iron Age in Finnmark, revealing a 'complete absence of mtDNA haplotype clusters that were typical of extant domestic herds in the region' (Bjørnstad et al. 2012). The argument was that this reflected a distinct haplotype shift in late medieval times and proved that the contemporary domesticated reindeer population in Finnmark is not related to the earlier populations of wild reindeer. According to their conclusions at the time, the present population must have arrived from outside Fennoscandia.

In our approach, we presented DNA analyses of a much larger set of bone samples from archaeological sites than were available in the above studies listed above. Altogether 281 samples were used in our study, including the previously published archaeological, museum and extant samples from the Finnmark region (Røed et al. 2018). We thus had a more accurate chronology regarding the above cited haplotype shift. The DNA analyses confirmed that 'the mitochondrial genome in Finnmark reindeer underwent a massive genetic replacement since the medieval period, characterized by a significant loss of historically native haplotypes, together with the significant introduction of new ones' (Røed et al. 2018). In other words, there were no genetic relations between the old stock of wild reindeer, the *goddi*, and the current herds of domesticated reindeer, the *boazu*.

These finds invite two kinds of explanation. The first – and the one so far with the strongest support – is that non-native reindeer were introduced during a relatively brief period spanning the 16th and 17th centuries and formed the basis for a pastoral transition. We know that such massive import took place further east on the Kola Peninsula in the late 19th century, when Komi herders brought thousands of reindeer across the White Sea. However, there is no historical or folkloristic evidence of such an import to Finnmark during the period in question. It is fair to assume that such an event, which must have had profound consequences for the Sámi societies at the time, would have been memorized one way or the other. Therefore, a more gradual introduction through trade and barter in the middle ages might be a more reliable explanation for the possible origin of these non-local reindeer.

A second theory could be that these 'non-native genetic signatures' reflect an old, but small population of domesticated animals kept for transport and other domestic purposes. That would imply that this domestic stock must have been kept for a very long time under strict control to maintain their genetic integrity, not being able to mix with the maternal part of the wild reindeer population. We do know that such a controlled kind of management took place in other reindeer-dependent societies (Anderson et al. in press). As for Varanger, we should also bear in mind the statement from chancellor Hans Lillienskiold in 1698, writing that 'in the rutting season the male wild reindeer often breed with the domesticated ones (…) and their offspring represent the very best in endurance and strength'. This idea of controlled selection and culling is confirmed by Turi (2011 [1910]: 63) stating that catching wild reindeer calves was a good way to improve the breed of the domesticated herd. If these calves were male reindeer and the female calves were slaughtered, such a strategy would not leave any genetic markers in the domestic population, since the DNA markers that are used are only transmitted through maternal lineages. The same then goes for Lillienskiold's explicit mention of male wild reindeer.

So far, however, we do not have enough archaeological samples to support this explanation. Only the testing of more samples dated further back in time than those form Gollevarre, can indicate whether our current finds can be explained as an external import or a continuation of an old breed of domestic reindeer. Whatever explanation turns out to be correct, both theories bear witness to an indigenous creativity and competence which made the transition to pastoralism such a success.

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Notes

1 "The Sámi of Varanger gave the Chancellor (...) 9 live reindeer a year to be allowed to keep the pitfalls across the mountain between the Varanger Fiord and the Tana River and at Persfiord (…) These days they no longer maintain the pitfalls" (Nordnorske samlinger, bd. 1:21, my translation). In the original text, the word for "pitfalls" is "Reengarder", which could both refer to the pitfalls on the isthmus and the corrals located in the Varanger inland.