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## From Hunter to Herder? Investigating the Spread of Transport Innovations in Northwest Siberia

### Introduction

Scholars studying the life-ways and traditions of northern hunting and gathering communities have long excelled in plotting distributions and typologies of various ‘peoples’, their cultural traits, subsistence practices and religious beliefs. Likewise, archaeologists working within the traditions of the culture-history approach have explored how distributions of material culture have shifted over time, linking these ‘archaeological cultures’ to the changing fortunes of different ‘ethno-linguistic’ groups. In circumpolar research, however, much less attention has been directed at developing a more detailed sense of the local social dynamics and household strategies that generate these cultural patterns and transformations.

This paper focuses on the spread of innovations in northern hunter-gatherer social networks, and draws on archaeological and ethnographic evidence to examine how and why domestic transport reindeer were being adopted into the taiga hunting and fishing communities of Northwest Siberia during the 19th C and early 20th C. The exceptional detail and coverage of the region’s ethno-historic record enables variability in household-scale economic and mobility strategies to be reconstructed across large areas of the Middle Ob’ region, generating rich insights into the tremendous attractions associated with adopting transport reindeer into the commercial fur-hunting economy. At the same time, a focus on understanding the factors that generate variability in household mobility strategies also sheds light on the costs, challenges and the wider scheduling conflicts associated with adopting and successfully integrating these new transport technologies into an older hunter-fisher adaptation already under considerable pressure from external economic demands and local environmental problems.

The paper concludes that the varying adoption of transport reindeer across local households generates a more general set of insights into some of the common social dynamics associated with the successful – or failed – spread of innovations in northern networks. In this way, the paper also explores how new

strategies stimulated and facilitated by exposure to a wide range of novel technologies can feed into long-term historical transformations. Areas for further work on these general themes are outlined in the conclusion, but lay beyond the scope of the current paper.

## Research Context: Diversity in Northern Reindeer Economies

Human beings have a rich and complex history of interaction with wild reindeer in Northern Eurasia, shifting from predation, through to taming and full domestication. By the start of the historic period, these fluid relationships had evolved into a number of over-lapping strategies that were closely attuned to local ecological, economic and culture-historical contexts (Krupnik 1993; Vitebsky 2005). At one extreme, the large-scale reindeer breeding of the open tundra typically involved the tending of immense herds that required intensive management; this reduced time left over for other economic activities and so the herd eventually came to form the bulk of the herders' diet (Ingold 1980), as well as providing materials for tent coverings, clothes, harnesses and other equipment (Khomich 2003). In contrast, smaller-scale free-range herding was more typical of the boreal forest zone, and there was often an intensive bond of tameness linking human masters and individual reindeer. Small herds of animals were generally kept for transport rather than meat, and their main attraction lay in their capacity to rapidly increase the mobility of hunters, who could more efficiently exploit the fish and game in larger and more distant territories (Ingold 1980).

The Lower Ob' region in Northwest Siberia appears to have been a key centre of early reindeer management (Golovnev 1993; Federovo 2004), though there also appear to have been other domestication 'hearths' in Southern and Eastern Siberia (see: Vitebsky 2005). In the Lower Ob' (Figure 1) human relations with reindeer started with seasonal interception and predation – a continuation of the big game Palaeolithic hunting economy – followed by the taming of small herds for transport. Definite evidence for the keeping of transport reindeer appears as early as early as the Ust' Puloi cultures of the early Iron Age, with finds of reindeer bridles (Fedorova 2004, 343–4; Golovnev 2004, 73; Golovnev and Osherenko 1999, 16). At this time, we also start to see evidence that hunters were building larger reindeer sledges, enabling them to travel long distances with their children and families in pursuit of the mobile wild herds (Vitebsky 2005). However, the emergence of the large-scale nomadic pastoral economy was a much more recent and relatively rapid development, which took place over only four or five human generations, sometime around the late 18th century (Golovnev and Osherenko 1999).

The relative roles of various social, economic and environmental factors in this 'Reindeer Revolution' has been intensively debated (Golovnev 2004, 71–94;

Golovnev and Osherenko 1999, 15–30, 87–94; Krupnik 1993), with some arguing that the adoption of full-scale reindeer pastoralism was essentially a political strategy enabling indigenous communities to live and travel well beyond Russian colonial settlements that were sited on the main rivers (Golovnev and Osherenko 1999, 15).

The story of reindeer domestication further to the south, in the boreal forest zone of Northwest Siberia, is more complex, and there was never a full transition to large scale pastoralism. Instead, local communities chose to integrate reindeer herding into an underlying hunting and fishing economy, which continued to provide the bulk of resources for subsistence and also commercial trade. In the forest zone, domestic reindeer provided an attractive new form of winter transport and haulage technology that had many advantages over older forms of ski and dog traction. Pulling larger and faster sledges, the new transport reindeer facilitated rapid access to remoter hunting and fishing areas, could pack supplies between distant camps, and thereby played a major role in transforming seasonal patterns of household mobility. However, the advantages of the new transport reindeer were also offset by a new set of challenges.

In the dense taiga forests and expansive lakes, rivers and wetlands of the Middle Ob' (Figure 1), however, keeping reindeer through the long summers was far from easy. The swarms of mosquitoes, black-flies and other insects make the taiga hot season extremely difficult for both humans and animals, and while the large-scale reindeer pastoralism characteristic of Northwest Siberia involved long transhumances out onto the windswept tundra and/or the higher ground of the Polar Urals (Perevalova 2004: 274; Golovnev 1993: 75–106), this option was not available to forest groups, who had to limit their seasonal movements within their more limited fur-hunting territories, leaving no opportunities escape either to the cooler north, or to the breezy higher ground of the Urals (Golovnev 1993: 80).

As a result, local hunter-fisher communities began to develop their own unique reindeer management methods, protecting their small herds by lighting smudge fires and building special shelters to protect animals from the sun and insects (Vizgalov 2000: 127; Dunin-Gorkavich 1995: 164–165; Martynova 1998: 150–152). In the worst weeks of 'mosquito time' animals would voluntarily come into the deer huts seeking relief in cool smoke-filled interiors, moving out only at night to feed in the forests.

In this way, the new transport animals imposed a new cost on households – the summer in particular required constant tending and vigilance by their human masters, severely limiting time that could be devoted to other activities, including travel to distant fishing or hunting grounds (Vizgalov 2000: 126). Keeping transport reindeer also required modification of older settlement patterns. For example, in summer the optimal reindeer herding locations are higher river banks where there is mixed feed and an open aspect where the steady breezes reduce the insects; in winter the animals require pasture out in the forests, in some areas, requiring a second base camp to be built for these periods (Vizgalov 2000: 125–126).

As a result of these factors, the rise of reindeer husbandry proceeded according to different trajectories in the tundra and in the taiga. In the far north, full-scale reindeer pastoralism emerged as a specialist new adaptation and provided a viable alternative to older hunting and fishing economies. In the forests further to the south, reindeer husbandry had to be successfully integrated into the economic and mobility strategies of the older hunter-fisher economy for it to retain any utility. This generated new challenges in indigenous societies already undergoing rapid colonial transformations as a result of the increased commercialisation of the fur-hunting economy (Golovnev 1993).

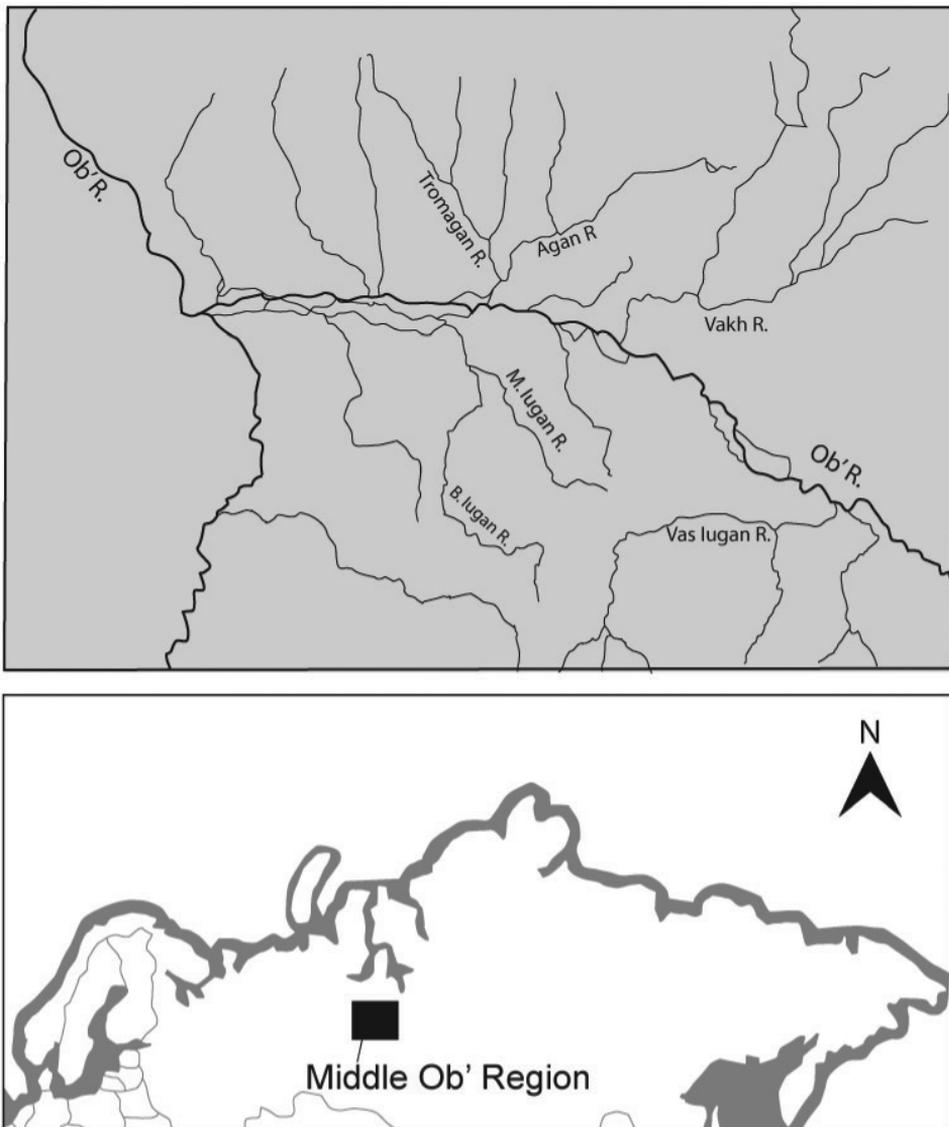


Figure 1. Middle Ob' Region (Western Siberia).

## Dispersal of Domestic Transport Reindeer into the Middle Ob' Region

From a balanced reading of the archaeological, ethno-historic and folklore materials it would appear that there was a gradual southerly dispersal of transport reindeer husbandry (Ru. *транспортное оленоводство*) between the 15th–19th century from the early centres of taming and domestication on the Lower Ob', down into indigenous hunter-fisher communities living along the tributaries of the Middle Ob' (Golovnev 1993: 100; Martynova 1998: 152; see: Figure 1). By the end of the 19th century, the indigenous Khanty communities living in the Iugan River basin appear to have been the southernmost exemplars of this 'intrusive' form of reindeer pastoralism (Dunin-Gorkavich 1995: 164; Kulemzin and Lukina 1992: 67). The material culture associated with Iugan Khanty reindeer herding is somewhat unusual, and some Russian scholars have gone so far as to argue for localised domestication of reindeer, citing the fact that Iugan Khanty reindeer sleds are enlarged versions of a dog sled, rather than the characteristic 'Nenets' or 'tundra' style sled used by other reindeer-herding Khanty groups to the North (Lukina 1985: 336; Dunin-Gorkavich 1996: 141).

Whatever the ultimate geographic origin of Iugan reindeer husbandry (i.e. adopted from the north *versus* local invention under external influences), it was certainly a new and relatively rare innovation in this area in the 1820s. Herd numbers fell away sharply in the 1840s (Golovnev 1993: 100), followed by more widespread adoption, though only 79 out of 123 recorded households on the upper Iugan rivers were listed as keeping reindeer at the end of the 19th century (that is, 23 base camps out of 30) (Dunin-Gorkavich 1996: 144).

Writing at the end of the 19th century, Dunin-Gorkavich explains how reindeer herding was an extremely challenging and expensive transport technology for local Iugan Khanty households: most were buying in individual domestic reindeer for cash via indigenous trade links that stretched away to the north. In addition, the small local herds were not sustainable – a few imported animals were able to survive in the dense forests, but many others died, some were lost or reverted to the wild, while others tried to escape back to the north. Most importantly, none of these imported reindeer could be encouraged to *breed* locally, ensuring local reliance on supplies of new animals from the large-scale reindeer pastoralists living far to the north (ibid. 1996: 144–145).

Further statistics illustrate the 'fragility' of reindeer husbandry within the Iugan household economy. Average 'herd' sizes can be calculated to around 3 animals per household, but that obscures the fact that 36% of households had no deer at all, suggesting either that households were actively choosing not to use reindeer, preferring to haul sleds by hand and with dogs, or that they were not able to marshal the skills, material resources and social relationships that were essential to maintaining a viable herd of transport-reindeer (Dunin-Gorkavich 1996: appendix 26).

Further data from the 1926–7 Soviet Polar Census (Note 1) indicate that reindeer had still not been fully adopted in all areas of the Iugan in the 1920's, raising a number of questions about:

- (a) the underlying motivations for adopting reindeer transport technology in such a difficult setting that was far away from the 'optimal' reindeer herding locations that lay further to the north in the Ural foothills;
- (b) the ways in which reindeer herding was actively integrated with other branches of the economy;
- (c) the household dynamics that led to adoption and integration of herding in only some base-camp communities, and its rejection or abandonment in others.

## Middle Ob' Historical Context

The Khanty are one of the northern indigenous peoples of Russia, and numbered 15,611 in 1897, rising to 22,283 in 1989 (Glavatskaia 2002: 103). Along with Mansi, Nenets, Sel'kup and other native groups, Khanty groups reside in the vast lowlands of Northwest Siberia (Figure 1). The Khanty are traditionally divided into three groupings – northern Khants, who live around the Lower Ob' and practice a mixture of hunting, fishing and large-scale reindeer husbandry (Perevalova 2004; Martynova 1998: 80–137); southern Khants – now largely assimilated – who lived along the Irtysh river, and practised hunting, fishing and also agriculture and cattle-breeding, which they adopted from the South Siberian Tatars and later Russians (Fedorova 2000; Martynova 1998: 12–79); and approximately 5000 Eastern Khants, who live in the forests and wetlands of the Middle Ob and its main tributaries, traditionally practising hunting, fishing and the limited small-scale reindeer herding that is the focus of the current study (Fedorova 2000, Golovnev 1993, Jordan 2003, Martynova 1995, 1998: 138–202; Wiget 2002).

Russians conquered Western Siberia in the late 16th century, and gradually subjugated native populations into a fur tax regime 'iasak' (*ясак*), their initial methods, such as hostage taking, building on an earlier tribute system that had bound native groups into the medieval Tatar Khanate (Forsyth 1992). It is possible to trace a cumulative historical transformation in indigenous economy and social organisation as a result of the Russian presence, starting with an initial emphasis on local subsistence, limited production for trade, and small centres of power based on local Khant 'principalities'. Gradually, we can trace the break up of the principalities and the dispersal of the population into smaller settlements in remoter areas, partly in response to the emergence of a more rigid state-led and state-monitored tax system for the extraction of the region's valuable fur resources (Glavatskaia 2002). By the middle of the 17th century the entire aboriginal population along the middle Ob' was registered into tax books, with every adult male obliged to pay between 5–12 sable furs per year (ibid 2002: 83) – for the next 300 years Khants became 'state iasak people' akin in legal terms to being 'hunting serfs' of the taiga (2002: 113; Martynova 1995: 88).

As part of the on-going intensification in fur-hunting and commercialised fishing several distinctive indigenous adaptations had emerged along the Middle Ob' by the end of the 19th century (Dunin-Gorkavich 1996; Martyona 1995; Golovnev 1993; Wiget 2002). On the main Ob' River Khanty communities practiced what Golovnev (1993: 202) described as a 'river-edge subsistence complex', defined by adaptation to aquatic resources and sedentary settlement. In contrast, communities living on the remote upper tributary rivers (like the Upper Iugan River) developed a 'deep-taiga economic complex', which integrated mobile hunting and fishing (Golovnev 1993: 202) – it was into this latter adaptation that the new technology of reindeer husbandry was being 'embedded' throughout the 19th and early 20th century.

A rich constellation of ethno-historic sources (for full details of this archive see: Jordan 2011a and Anderson 2011, for the 1926/7 Soviet Polar Census) generates unique opportunities to reconstruct the life-ways and household strategies of the Iugan Khanty as they were gradually taking up transport reindeer. The Iugan river has two branches, the 'Great-' (Bol'shoi) Iugan river, over 1000 km in length, and the 'Small' (Malyi) Iugan river, which runs for 550 km (Figure 1, 2). These rivers converge and flow into the Iuganskaia Ob' and then the main Ob' river, close to the city of Surgut, which was founded in 1594 AD as part of the Russian conquest. To the West of the Iugan drainage are the Balyk and Salym rivers; to the East is the Kul'egan', with the Demianaka river to the Southwest and the Vasiugan to the Southeast. In the areas between these low-lying drainages are extensive tracts of uninhabited wetland.

The Iugan river is located between 59 and 61 degrees north (Dunin-Gorkavich 1995: 138) with a strongly seasonal climate, marked by long dry summers and bitterly cold winters, with lasting snow cover. The terrain is low-lying, with few areas of higher elevation, and the spring snow melt brings widespread flooding. There are four distinct ecosystems (Wiget 2002: 189): extensive bog-lands occupy the poorly-drained areas between watersheds; pine forests cover sandy hills and ridges; cedar forests run along the better-drained river margins, and a unique water edge ecosystem of willows, and taller grasses and wild rose.

The earliest Russian records of iasak fur tax payers living in highly dispersed settlements on the Iugan, Iuganskaia Ob' and Balyk river document the male population as 116 in 1629, rising to 125 in 1645, followed by 133 in 1680 and 148 in 1706. This might indicate either a steady growth in local households, or reflect the improved reach of the tax system into remoter areas (Martynova 1998: 140). Later sources record the entire population and indicate that the Iuganskaia Ob' population hovered around 350 from 1782 and 1897, but that populations on the Malyi Iugan went through a major decline, from 352 down to 141, and populations along the Bol'shoi Iugan showing a steady rise, from 493 in 1792, to 554 in 1897 (Martynova 1998: 140–1).

Earlier debates about the origins of the highly dispersed Khanty settlement strategies have tended to conclude that it was a direct result of the new colonial fur tax politics imposed by the Russian State (Martynova 1998), with many indigenous households forced to seek out new and remoter hunting territories in

order to pay their annual fur tax. Recent archaeological surveys of the Bolshoi Iugan basin (Karacharov 1999) now suggest that the indigenous hunter-gatherer economy was already undergoing transformation prior to the Russian conquest (1999: 233); the trend towards dispersed settlements actually began in the earlier Medieval period (12–16th century), as part of the wider rise in the Eurasia fur trade which Russia sought to control with its conquest of Siberia in the late 16th century (Forsyth 1992).

These transformations encouraged indigenous colonisation of ecological zones ideal for fur hunting but not for subsistence hunting or fishing, for example, along the upper stretches of the Bol'shoi Iugan river, where there are insufficient subsistence resources even for small and mobile populations (Karacharov 1999: 232–233). The intensification of the fur trade continued after the Russian conquest (Lukina 1985: 17), producing a general switch in emphasis from meat to fur hunting in the 17th century (Glavatskaia 2002: 115), and contributing to a wider raft of economic changes that affected native subsistence strategies across Northwest Siberia between the 16th and 19th centuries (Golovnev 1993: 160).

It is possible to trace these developments as they play out along the Iugan river basin (Wiget 2002; Dunin-Gorkavich 1995). In the 16th century Iugan emerged as an area extremely rich in fur resources. When sable was quickly over-hunted, attention then switched to procurement of local squirrel, whose fur was in demand in Chinese markets due to its exceptional quality and unusual colours. Even at the start of the 17th century Iuganskoe was holding one of the largest trade fairs in the region, enabling merchants to meet with hunters from across the wider Middle Ob' region (Wiget 2002: 189).

Iuganskoe was located on the lower Iugan meadows, enabling the population to keep cattle and horses, and also grow crops. Further upstream, the riverbanks were occupied by the widely-dispersed 'iurt' (*юрт*) base-camps inhabited by Khanty hunters and their nuclear families. The term 'iurt' (sl.; plural = 'iurty') is used in many historical sources to describe the household base camps found along the Iugan and other rivers (see: Jordan 2011a, for a discussion, and see: Martynova 1995) – these are made up of clustered tents or cabins occupied by individual autonomous households. These 'iurt' communities consisted of on average about 2–4 households, and 'broke up' at key points in the seasonal round. For example, these households spent their winters hunting in the remoter forest, and migrated downstream in summer, engaging in fishing the products of which they either sold on to local merchants or dried and used as winter supplies to subsidize their diet. Across the region, flour had also come into widespread usage to supplement diet and enable a fuller focus on winter fur hunting (Glavatskaia 2002: 116).

Interestingly on the Iugan, there is remarkable continuity in the settlement patterns from e.g. Dunin-Gorkavich's base map of late 19th century, through to the 1920s Polar Census (with a community diary taken at each base settlement), through to the present-day (see: Bakhlykov map 1996: 164; Jordan 2003: 58). These enable insights from the different sources to be closely integrated, gen-

erating detailed and dynamic insights into local historical transformations at a unique household scale of enquiry.

## Why Adopt Transport Reindeer?

What triggered the adoption of transport reindeer into the Iugan basin? In addition to the changing long-term historical dynamics noted above, which created a sustained demand for local furs, a series of significant ecological changes affected the basin throughout the 19th century. Devastating forest fires swept through the taiga destroying hundreds of thousands of hectares of mature woodland – forests along the entire western side and of the Bol'shoi Iugan were destroyed in the 1840s; a further fire in the 1860s wiped out the forest above and below the confluence of the Malyi and Bol'shoi Iugan rivers. Regular fires continued in these areas into the 1860s; also, in the 1870s and 1880s the entire forest either side of the Negus Iakh (a major tributary to the Bol'shoi Iugan) also burned (Wiget 2002: 190; Dunin-Gorkavich 1995: 143).

As a result, there was very little mature woodland left, by the end of the 19th century and these environmental problems exerted major pressures on local Iugan hunters. For example, following the fires, good hunting areas became in short supply and sable largely disappeared from the Bol'shoi Iugan basin. Shortage of game and hunting territory emerged as a major problem in the 19th century (Martynova 1998: 150) and remained a challenge well into the early 20th century (Vizgalov 2000: 80). In addition, the population on the Bolshoi Iugan had risen from 493 to 554 in 1798–1887, further exacerbating the problem (Martynova 1998: 140–1) – for example, there are numerous records of conflicts over subsistence territories in the Polar Census Diaries (see: Jordan 2011a).

As a result of these pressures, seasonal hunting activities began to expand outwards into the surrounding forests of the adjacent Salym, Balyk and Demianka rivers to the West and South, demanding much higher levels of annual household mobility (Figure 2). It is estimated that 60% of the population eventually began to hunt outside the Iugan basin. Importantly, this increase in long-range hunting does appear to have been a successful strategy, allowing Iugan hunters to procure up to 100,000 squirrels per year (Dunin-Gorkavich 1996: 148–149) and up to 600 sables in a good year (*ibid.*, 1996: 156).

However, as noted above, the growing emphasis on long-range commercialised fur hunting also generated tensions in household economies, especially in their seasonal patterns of mobility. Since fish resources were not as plentiful in the upper headwaters, Upper Iugan river groups began to rely on moose and diminishing numbers of wild deer for their fall, winter and spring food supplies (Wiget 2002: 191), generating a diverse array of new subsistence and mobility strategies, all of which had to be successfully scheduled in terms of labour, equipment and seasonal travel plans.

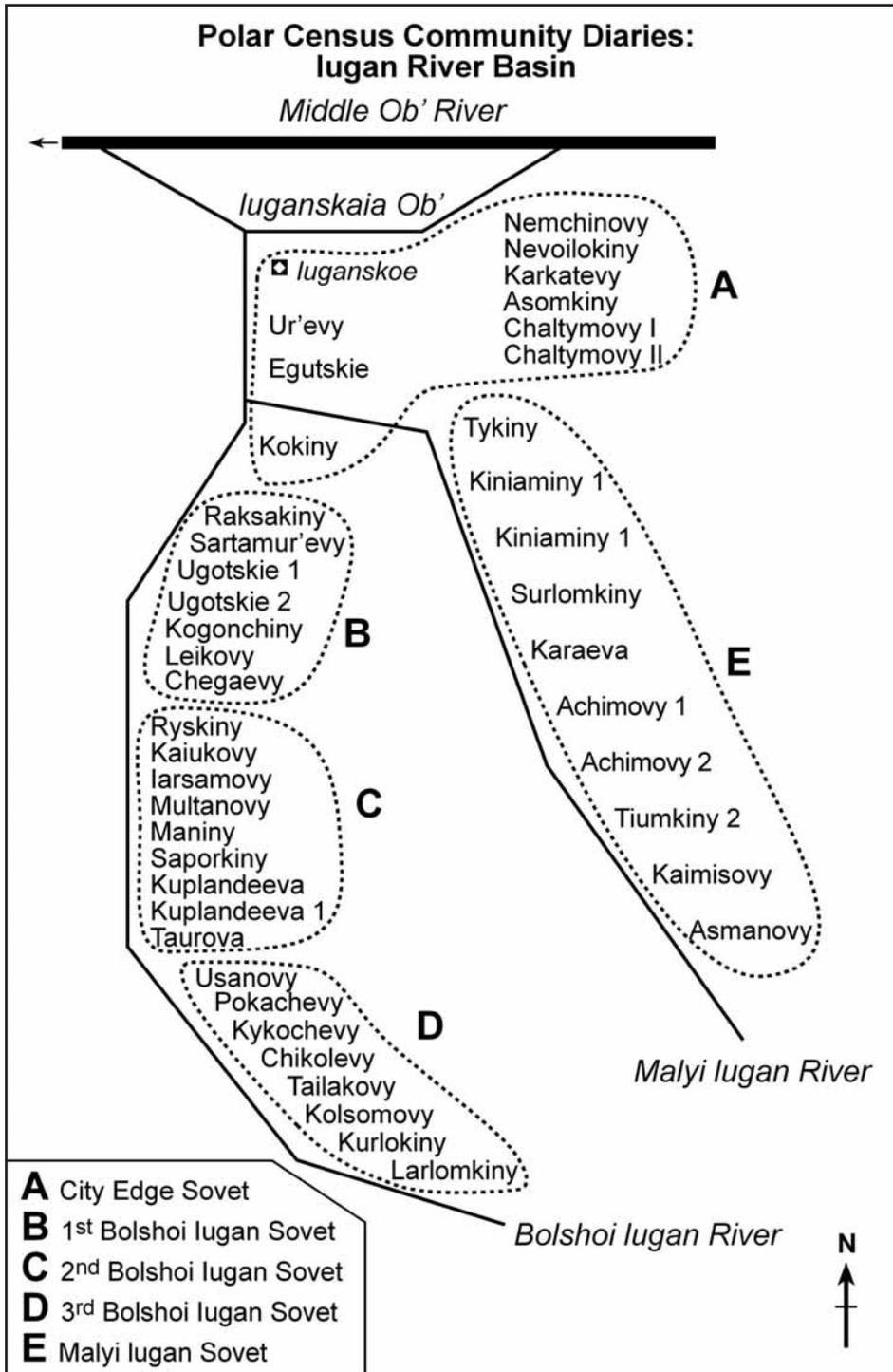


Figure 2. Schematic map showing location of settlements on the Iugan River. Each location was recorded in a Polar Census community diary. Iuganskoe is the main Russian village where settled populations practise agriculture; other Khanty settlements on the lower reaches of the river tend to be settled fishing communities who engage in some localised hunting. Settlements on the upper rivers are the seasonal base camps of Khanty households who practise a highly mobile hunting-fishing-reindeer herding strategy (for further details: see text).

Most Khanty living on the upper rivers made a summer migration downstream to rich fishing sites on the Iuganskaia Ob (Figure 2), returning at the end of the season with dried fish or else selling the summer fish to local merchants and returning upriver with supplies of flour and other products to sustain them over the long winter. The mobility of almost all up-river communities was extremely high: for example, in summer, some households on the top of the Bolshoi Iugan, were undertaking annual round trips of 2000 km for fishing and trade; in winter they were also journeying 400 km out to camps in their hunting lands. These figures, do not, of course, include the substantial day-to-day movements associated with the actual practice of hunting.

## Integration of Transport Reindeer into the Boreal Hunting Economy

It is into these changing subsistence practices that the Khanty somewhat hesitantly began to adopt transport reindeer (Wiget 2002: 191). The first records of Khanty reindeer holding date to the very early 19th century (Golovnev 1993: 100), but the use of reindeer was only weakly developed by the end of the 19th century (Dunin-Gorkavich 1995: 144–145; 1996: 25), and by the early 1920s, the Soviet Polar Census records that some upper river households still did not have reindeer (Jordan 2011a).

Having the ability to access a wider range of hunting areas would have had an immediate attraction to Iugan households as they sought out new hunting areas. Iugan Khanty already kept a large number of hunting dogs, which also assisted in pulling small sleds. However reindeer could pull bigger loads and travel much faster. They could also assist in packing in flour and other supplies from Iuganskoe, and also out to remote hunting camps.

In the upper headwaters, other forms of domestic animal traction would have been impossible to develop. Keeping horses, as some households did in the lower river settlements, would require putting up hay, winter stalling and daily tending. Upper Iugan families could provide neither: there were insufficient meadows and winter was the most important time for fur hunting. In contrast, reindeer were ideal ‘low maintenance’ winter transport animals for taiga hunters: they could easily be corralled and when not in use they could be hobbled to prevent them straying; they could also feed themselves by digging through the snow cover to the mosses and lichens below (Kulemzin & Lukina 1992: 67–71).

But how was reindeer husbandry integrated into the seasonal mobility strategies of a combined boreal-forest hunting and fishing economy? Working with Polar Census data (Jordan 2011a), we can note that individual households making up most iurt base-camp communities practise very complex yet integrated summer and winter mobility strategies. One good example of this complexity is the community diary for Kaiukovy iurt, summarized in Figure 3. Here 11 households are registered to summer iurty on left (west) banks of the Middle

Bol'shoi Iugan. The community's general mobility is recorded as first, moving to winter iurty located in forest 3 km to the East. Next, they journey out to the upper Malyi Balyk river, 60 km to the Northwest, spending the earlier and later part of the winter here, and the middle of winter back at the winter iurty. In summer they migrate first back to the summer iurty, then 250 km down to the fishing grounds on the lower river. In fact, only 6 households follow this 'main' strategy: 3 households make a 50 km migration to the upper Bol'shoi Balyk; 1 household goes to the Salym river 90 km to the East, and one doesn't migrate at all, spending the winter only in the (winter) base camp. In summer only 5 households migrate downstream; 6 remain in the summer iurty.

If we roll this household-scale analysis out across the Iugan region it is clear that similar patterns of mobility and interaction are largely typical for the upper river iurty (Figure 4). In this way, we can identify some of the essential fea-

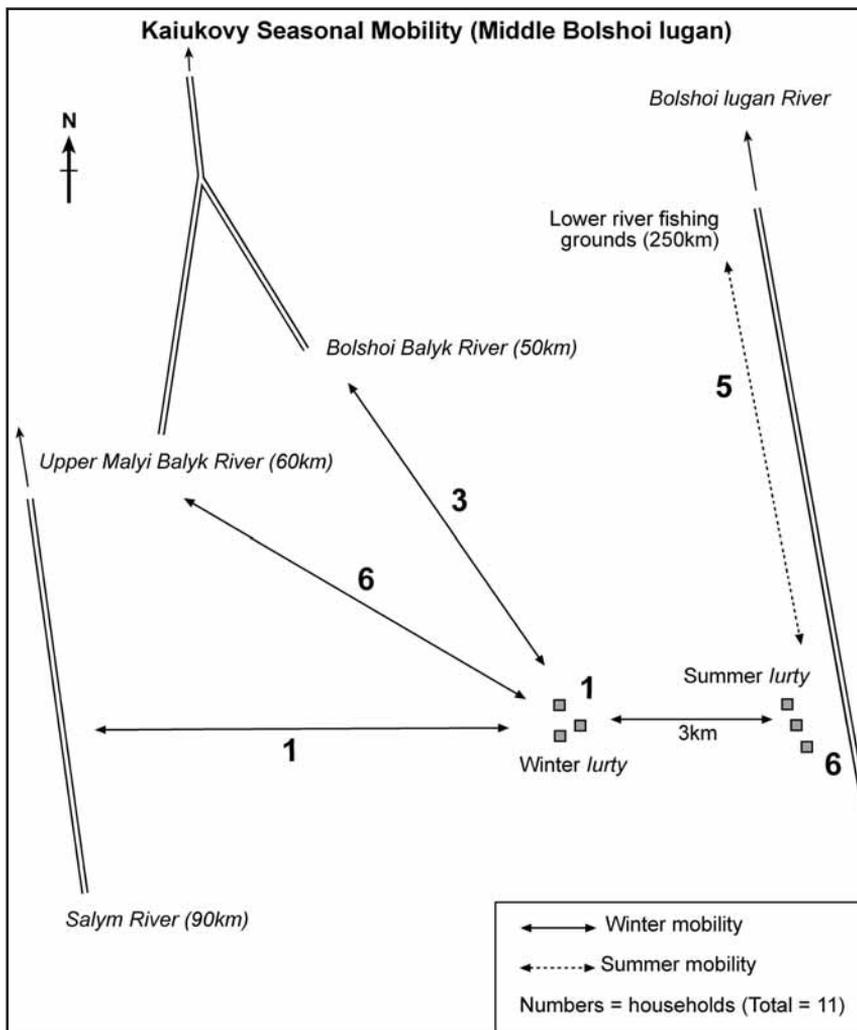


Figure 3. Kaiukovy Seasonal Mobility (Middle Bolshoi Iugan).

tures of early 1920s Khanty adaptations to the boreal wetlands: clearly, these commonly-practised mobility strategies meet the basic seasonal and logistical challenges of integrating hunting, fishing and reindeer herding. Having identified this ‘optimal mobility strategy’, we can also look more closely at how and why some of the other iurty might be deviating from this overall strategy. This provides insights into the ways in which some households might be struggling to adopt reindeer and balance different branches of the economy in their seasonal mobility strategies.

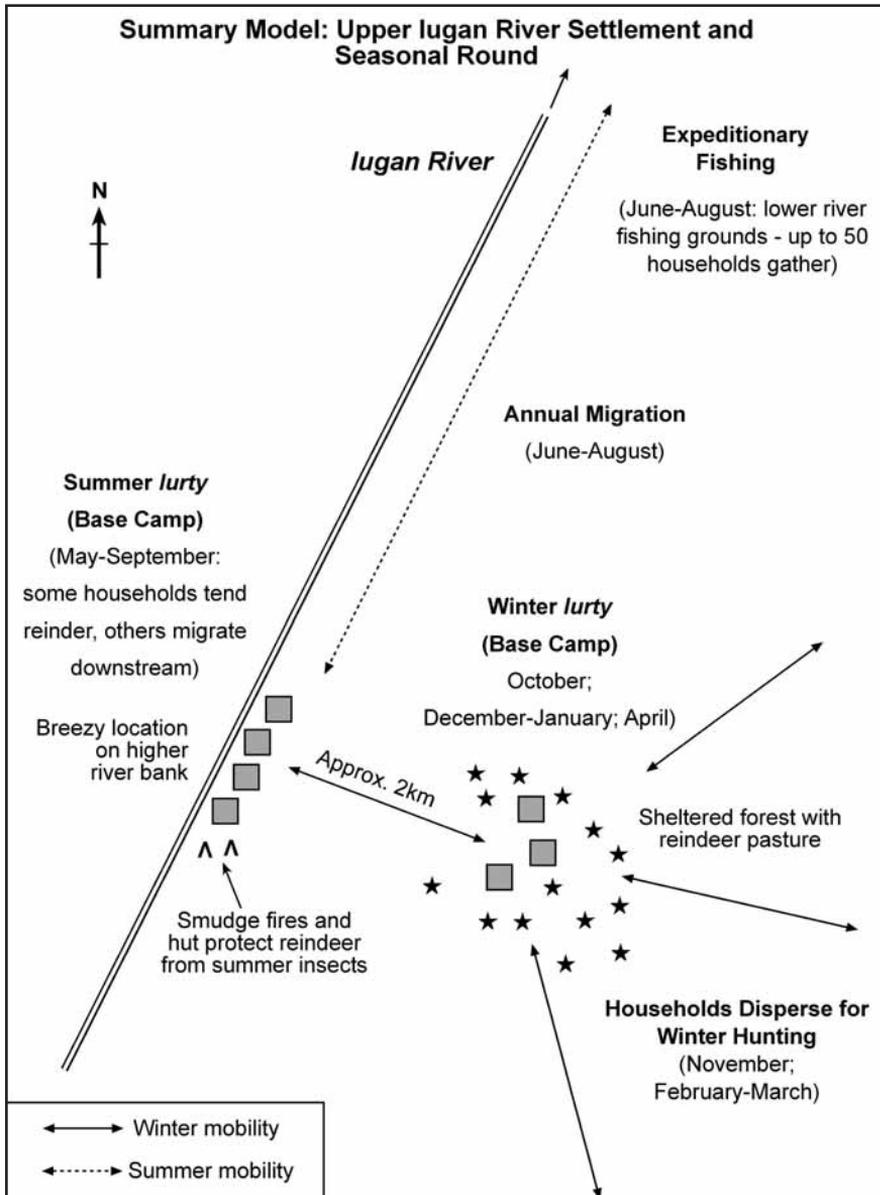


Figure 4. Summary Model: Upper Iugan River Settlement and Seasonal Round.

## Mapping Diversity in Household Strategies

Working closely through the details of the Polar Census community diaries, we can see the practice of the ‘optimal’ hunter-fisher-herder model in Figure 4 among almost all Iugan communities – these base-camp communities do appear to be succeeding in combining long-range hunting with summer-winter base camps and summer fishing migrations, for example, Kogonchiny, Iarsomovy, Kolsomovy and others on the Bol’shoi Iugan.

Insights from these iurt communities all point to a smooth integration of reindeer herding into the mobile economy. For example, the common presence of two base camps – one summer and one winter – appears to relate to the need for breezy river bank locations in summer for the reindeer herds, and also sufficient winter pasture for the animals in winter. The systematic ‘manning’ of these base camps over the summers also appears to relate to the need to tend the reindeer and keep the smudge fires going to protect them from insects. The communities are meeting these challenges by complex patterns of task-sharing among the households that make up each iurt community; most take part in summer expeditionary fishing but some remain behind to tend the transport reindeer in preparation for the winter hunting season.

Some minor local deviations from this ‘optimal’ settlement and mobility strategy are easy to explain: long-range hunters like the Kaimisovy on the Malyi Iugan, and many upper Bol’shoi Iugan river iurt communities, may not actually require second (winter) base camps if there are sufficient reindeer pastures nearby, but all are clearly manning their summer base camps over the summer.

In some other interesting cases, however, the keeping of the reindeer appears to be exerting significant labour costs on the local iurt community. For example, some of the smaller iurt communities, composed of only two households like Karaeva and Achimovy 2, are being forced to split up, resulting in one household travelling alone to the fishing grounds – and there meeting scores of other families – while the other household remains alone throughout the long and probably lonesome summer months.

Interestingly, some other iurt communities appear to deviate much more significantly from the ‘optimal’ model. Across all iurt communities, full summer abandonment is very rare, but it is being practised, for example, at Tykiny, Kiniaminy 1 and Tiunkiny 2 on the Malyi Iugan, and at Chikolevy on the higher reaches of the Bol’shoi Iugan, suggesting that they have no transport reindeer to tend. In addition, there is definite confirmation in the Soviet Polar Census diaries (see: Jordan 2011a) that Chikolevy have no transport reindeer, and that they can only bring in winter flour supplies by boat.

These insights signal that there are always challenges inherent in the adoption of new technologies, and perhaps that in the Iugan basin, some households or iurt communities are coping better than others. Many of the larger iurt communities (with larger numbers of households) are successfully integrating commercialised hunting, migratory fishing and reindeer herding. In contrast, it is the

smaller iurt communities (with few households), who appear to be struggling the most – they have smaller pools of labour to meet the enormous challenges of balancing complex seasonal mobility patterns. These smaller iurt communities may eventually have had fewer practical options, and been forced to make difficult economic compromises due to their reduced capacity for balancing different long-range seasonal mobility strategies (Jordan 2011a).

For example, Figure 5 explores how some of this variability is played out on the the Upper Bol'shoi Iugan. The members of Chikolevy have no reindeer, perhaps forcing them to hunt just around their iurt, reducing their income from furs. For them, their well-being would depend on the success of the summer fishing. Therefore, both households abandon their winter iurt for the three summer months and focus entirely on this activity, preventing them from keeping reindeer, which thereby limits their winter mobility. However, at the larger iurt of Tailakovy just upstream, the situation is very different. Here, the members have much higher mobility, probably facilitated by reindeer, with the community dividing into half over the summer, some remaining to look after the precious transport reindeer, others undertaking migratory fishing. In this way, they can bring in both fish, flour and other supplies either at the end of the summer when they return from migratory fishing, or in winter, via the 'reindeer roads' which link up all the communities.

Higher upstream, Kolsomovy is also a small iurt with only two households. One household is not very mobile while the other travels very long distances, almost certainly aided by transport reindeer. However, in summer they can't migrate as the reindeer need tending, and so as a smaller iurt they are forced – as Chikolevy – to make a strategic choice between undertaking *either* long-range summer fishing *or* keeping reindeer to support long-range winter fur hunting. Faced with this choice, Kolsomovy appear to have opted for being specialised hunter-herders, and not fisher-hunters, as at Chikolevy.

Figure 6 illustrates a very similar set of household dynamics on the Upper Malyi Iugan – local households also appear to be struggling in their attempts to integrate different branches of the economy within their seasonal round, especially in the smaller iurt communities. For example, the households of Tiumkiny 2 also appear to favour summer fishing, but they have two base iurty (summer and winter) suggesting that they do have reindeer. This may force them to give care of their animals to other adjacent iurt communities over the summer (as documented by Martynova 1998: 151), perhaps at Achimovy 2. This may hint at the smaller iurt communities 'doubling up' tasks and sharing favours with others – in winter both Tiumkiny 2 households will probably need transport reindeer as both households migrate right out to the Kul'-egan' river, 100 km to the east, but to do this they may be reliant on bringing enough dried fish or flour back to the iurty at the end of the summer.

In stark contrast, the 9 households at Kaimisovy appear to be balancing tasks more effectively within their community – six households undertake summer fishing migrations, leaving three households behind to tend reindeer; in

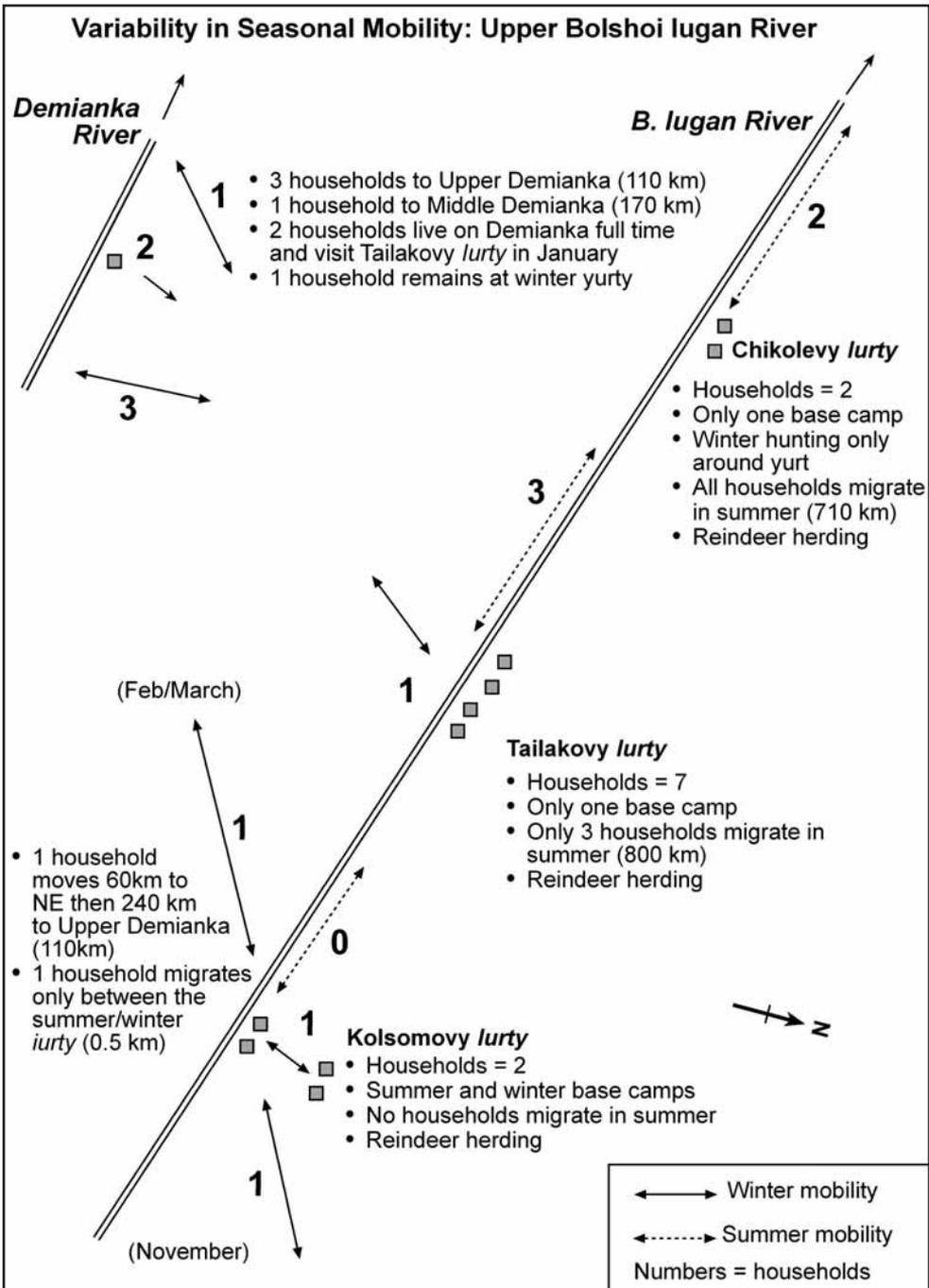


Figure 5. Variability in Seasonal Mobility: Upper Bolshoi Iugan River.

winter these reindeer enable them to access a vast hunting range, spanning the left bank and Upper Malyi Iugan river, out east to the Kul'-egan' (150 km) and also south as far as the Vasiugan river (220 km). The size of the Asmanovy yurt community is intermediate – three households – but they do appear to be effectively balancing hunting, herding and summer fishing.

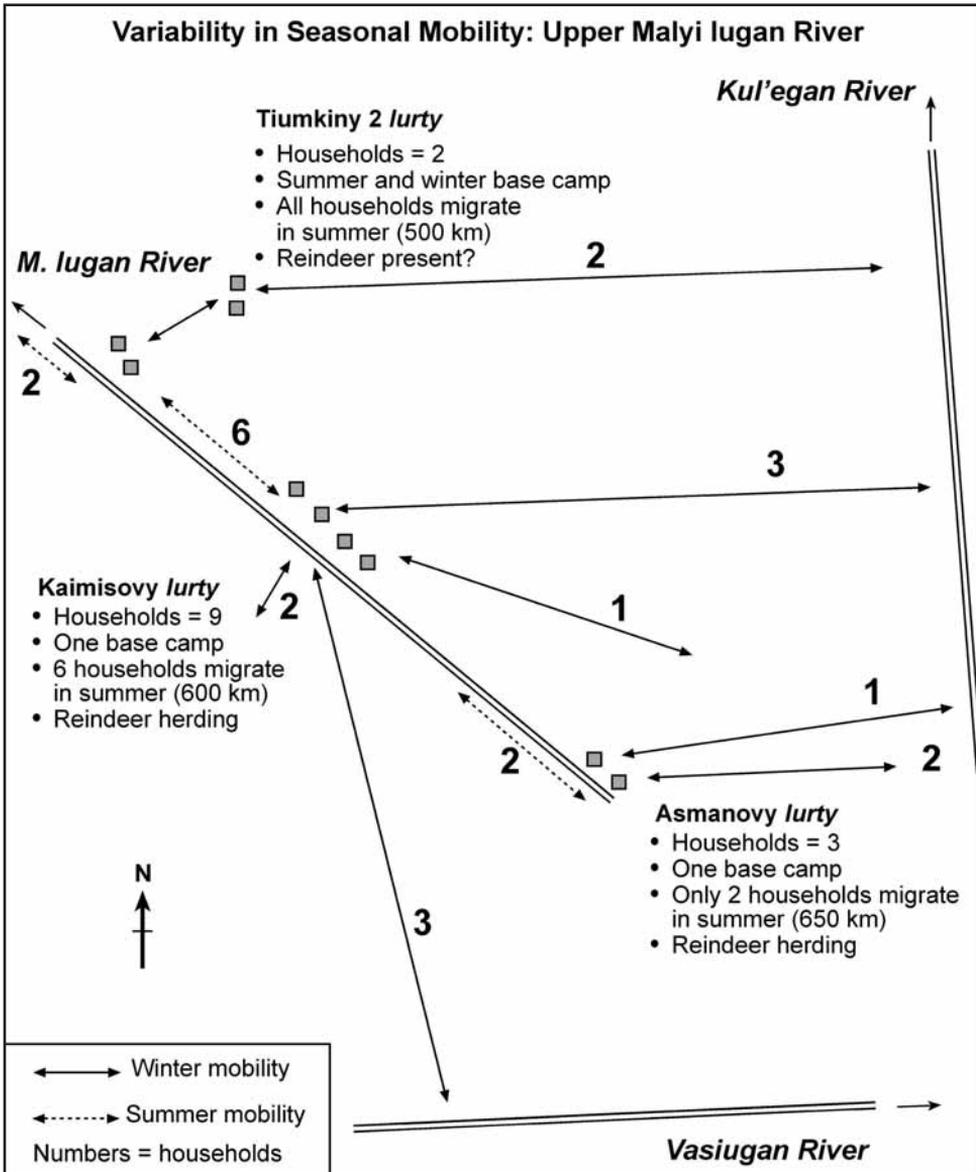


Figure 6. Variability in Seasonal Mobility: Upper Malyi Iugan River.

## Conclusion

Constraints on space mean that this case-study have been limited to exploring the advantages – and the seasonal task-scheduling challenges – that were associated with integration of transport reindeer into an older boreal hunting and fishing economy, itself undergoing long-term transformation as a result of environmental challenges and also external colonial demands for forest furs and fish. Clearly, some households and iurt communities were adopting transport reindeer and adapting their seasonal mobility patterns far more successfully than some of the smaller iurt communities. As the years passed, the increasingly constrained economic choices and mobility strategies open to the smaller and more impoverished iurt communities would have had cumulative implications for household health, status, general welfare, and perhaps also impacted on their longer-term demographic survival (see: Jordan 2011a).

More generally, and looking beyond this case-study, my overarching concern has been to draw attention to the *social dynamics* that provide the fundamental behavioural context into which new innovations must first become initially attractive, and eventually become ‘embedded’ technologies. This limited ethnographic case-study demonstrates that all new technologies, many of which may convey rather obvious economic benefits, can also generate a raft of practical problems that ensure that the innovation can only spread successfully into some social settings, and among certain groups and communities, but not others. It is these social dynamics – and the choices open to individuals, households and larger social collectives – that ultimately generate long-term transformations in the form and content of northern multi-cultural networks, which is the overarching theme of the wider volume.

Further research into the dispersal of innovations through northern multi-cultural networks, though clearly lying beyond the scope of the current chapter, could progress along several further fronts:

- Future work in Northwest Siberia could look beyond the theme of seasonal mobility and explore the introduction of transport reindeer from other interlocking perspectives. These themes might include: the social dynamics of indigenous land tenure when faced with growing shortages of hunting territories; rising social inequality generated by increasing use of reindeer; exploration of how the new patterns of long-range mobility were integrated within older systems of sacred landscape geography (see: Jordan 2011a). More work could also be done with the wider ethnographic record to examine how domestic reindeer were incorporated and ‘embedded’ both ritually and symbolically within the boreal hunting economy and its associated circumpolar ‘worldview’, for example, with use of reindeer for ritual sacrifices (Wiget and Balalaeva 2001; Jordan 2003; Jordan 2011b).

- The extensive ethno-historic and archival record for Northwest Siberia is exceptionally rich and the approach outlined in this and related ‘pilot’ case-studies (Jordan 2011a) could easily be expanded to encompass adjacent basins (e.g. the Salym, Agan, Tromagan and Vakh; see: Figure 1), generating insights into variability in indigenous household strategies (i.e. procurement, mobility, land-tenure institutions, sacred landscape geography, etc.) and the ways in which they fed into, and were caught up in, longer-term historical transformations. At the same time, the emphasis on the dynamic interplay between cumulative local strategies and longer-term historical outcomes would also transcend other studies of the region which have tended to adopt either a descriptive (Federevo 2000) or typological approach (Golovnev 1993) to the documentation of local cultural diversity and long-term change.
- Finally, the ethnography of Northern Eurasia has much to offer to hunter-gatherer studies more generally (Jordan 2011b), especially as many foundational models (e.g. Binford’s (1980) seminal ‘foragers’ versus ‘collectors’ model of settlement and mobility) tend not to address how the major changes in hunter-gather mobility associated with adoption of reindeer transport might generate new forms of hybridized adaptation that expand and enrich current understandings of the ‘foraging spectrum’ (Kelly 1995). Likewise, many studies of ‘hunters in transition’ have tended to focus on the cumulative process of settling down, intensifying production and adopting agro-pastoral farming. In contrast, much less analytical attention has been directed to understanding how hunters become pastoralists, or tracking the forms of interaction between hunter-fishers and pastoralists (see: Schweitzer 2000).

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## Note 1

For a fuller discussion and description of all the 1926/7 Soviet Polar Census materials used in the current chapter see Jordan (2011a). For a full exploration of the wider archive and associated regional case-studies, see Anderson (2011).

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