



universität  
wien

# MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

“Oil infrastructures and their affordances for  
‘traditional’ livelihoods in Eastern Siberia”

verfasst von / submitted by

Mag.<sup>a</sup> Gertraud Illmeier

angestrebter akademischer Grad / in partial fulfilment of the requirements for the  
degree of

Master of Arts (MA)

Wien, 2022 / Vienna 2022

Studienkennzahl lt. Studienblatt /  
degree programme code as it appears on  
the student record sheet:

UA 066 810

Studienrichtung lt. Studienblatt /  
degree programme as it appears on  
the student record sheet:

Masterstudium Kultur- und Sozialanthropologie

Betreut von / Supervisor:

Univ.-Prof. Dr. Peter Schweitzer

Mitbetreut von / Co-Supervisor:

Univ.-Ass. Dr. Gertrude Saxinger



## **Acknowledgements**

I wish to thank all the people who were important to me in one way or another during my studies of social anthropology and the development of this Master's Thesis.

I am very grateful to Univ.-Ass. Dr. Gertrude Saxinger, who invited me to join her component in the research project CoRe - *Configurations of Remoteness: Entanglements of Humans and Transportation Infrastructure in the Baikal-Amur Mainline (BAM) Region* and write my Master's thesis in the frame of this engagement. This enabled me to do ethnographic fieldwork in Eastern Siberia, an experience I would not for the life of me want to miss.

My sincere appreciation goes to Univ.-Prof. Dr. Peter Schweitzer, the then head of the CoRe project, who fully accepted me into the team, for his profound expertise and in particular for his supportive, accessible and inclusive attitude, and for kind as well as critical supervision of this Master's thesis.

I am most grateful to the people of Tokma, with whose lives and stories I feel inseparably connected. My special thanks go out to my fieldwork partner Natalya Krasnoshtanova and her parents, Evgeniy Innokent'evich and Zoya Vladimirovna, who opened their home and hearts for me and for sharing their knowledge.

I want to thank IZ, Verein zur Förderung von Vielfalt, Dialog und Bildung, the NGO I have been working for over the years for providing me with the maximum flexibility, which enabled me to (somehow) manage work, studies and research all in parallel.

Thank you to my student colleagues for their openness, their energetic cooperation and the fun we had during special events, such as the CHAGS XI conference or the field practice in Siberia, and in particular for – some of them – becoming real friends.

Every passion wants to be shared. This is why I wish to thank all the people from the heart, who have shown interest in my studies and allowed me to express my enthusiasm for social and cultural anthropology, and who have listened to my stories from Siberia, in particular all my dear friends and my nieces.

Finally, I wish to express my sincere appreciation to the discipline of social and cultural anthropology and all those who have been a part of it – the researchers as well as the administrative personnel - where an attitude that fosters open-mindedness, tolerance and respect towards “the other”, be it human-like or other-than-human, is central.



## *From a bird's eye view*

*In late September 2016, I was on my way to Tokma, a remote village in Katangskiy Rayon (Katangsky District) in the north of Irkutskaya Oblast' (Irkutsk Province) in Eastern Siberia<sup>1</sup>. Tokma lies in the midst of boreal forest (taiga) at the banks of the River Nepa, a tributary to the Nizhnaya Tunguska river. Once a thriving village, today, only a few dozen people live here permanently – indigenous Evenki, Siberian old-settlers (starozhily) and people who relocated in the wake of Soviet industrialisation programmes in the second half of the twentieth century. They engage in hunting, fishing and gathering for subsistence and trapping sable for cash income from selling the furs – in addition to pension payments and salaries from work in the public services of the village.*

*Me and my fieldwork partner, geographer Natal'ya Krasnoshtanova, who was born in Tokma, along with her little son Zhenya, had taken a plane from Irkutsk to Kirensk, a port-town on the river Lena as well as administrative centre of the district of the same name. There, we boarded a helicopter, the only means of transport by which Tokma can be reached in the snowless season since there is no permanent road that connects the village to other places.*

*After departing from Kirensk, the wooden houses, limited commercial establishments and industrial buildings of the town quickly disappeared to be replaced with nothing but forest, still golden shining in the late autumn sun. We flew over seemingly undisturbed taiga, stretching in all directions as far as one could see – thus it seemed and thus were the stories told by a variety of literature that I had absorbed in preparation for the trip, all of which put some emphasis in informing me that this was a very remote area indeed.*

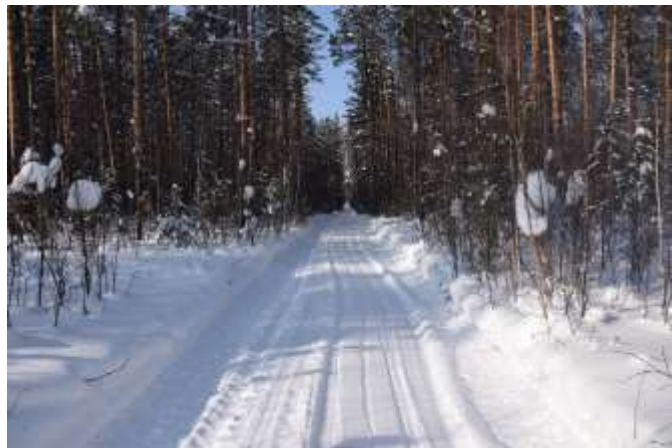
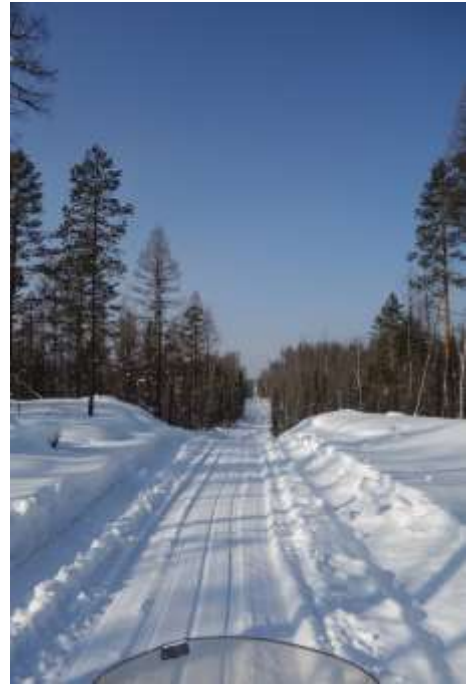
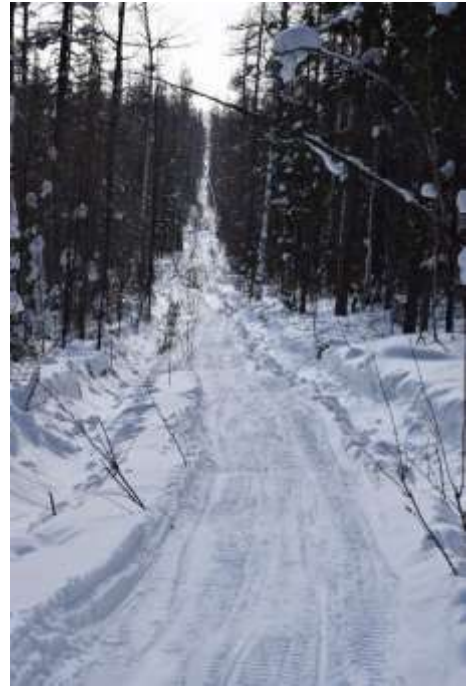
*However, not long after leaving Kirensk behind, the mossy appearance on the ground was crossed by routes of different sizes and shapes. Many of them were in completely straight alignment that seemed alien in the natural environment. Two weeks later, on the way back from Tokma, when winter had changed the landscape radically, unveiling the bare trunks of a forest and heavily harassed by the frost, it became even more obvious that there are many more routes than one would expect in a region that is well known for its remoteness. The contradiction between literary representations*

---

<sup>1</sup> I use the United States Board on Geographic Names (BGN) system for the transliteration of Russian words. In cases where common English-language usage differs from the BGN system (e.g. Baikal, taiga, Perestroika instead of Baykal, tayga, Perestroyka), I give privilege to the latter.

*of the area and what I saw before me was striking. Besides the lines, large empty squares of cleaned out forest appeared, and in the distance the flaring of natural gas shimmered in the winter mist telling another story – one of oil drilling, pipelines, industrial logging, state power and a global demand for raw materials.*

*The routes that attracted my attention when I was looking out of the helicopter window are the subject of this Master's thesis. During my stay in the village, I was informed that the straight routes that have become a typical feature of the landscape in Tokma region are so called seismological or seismic lines that emerge when a region is prospected for oil by a method called seismic prospecting or seismic reflection. I also learned that seismic lines play an important role for the mobility of Tokma hunters and trappers who use the routes to move in the forest on their snowmobiles. "Profili", how seismic lines are called locally and across the Russian North, featured prominently in conversations with Tokma residents, in stories about life and work in the forest, in descriptions of certain localities and how to get there. Most frequent were accounts of when a hunter, after taking a break, would again travel to his hunting ground in the forest and stumble once more over freshly logged profili, which were described as painful discoveries in face of the ever deepening penetration of the oil industry into the expansive taiga and the environmental degradation its activities entail. Conversely, there were just as many accounts about how the elderly men appreciated the sharply logged routes through the taiga, for they significantly ease their commuting between the village and the forest. Several hunters emphasised that without seismic lines and snowmobiles they could not carry on their livelihood and preferred way of life.*





# TABLE OF CONTENTS

<b>1. INTRODUCTION.....</b>	<b>13</b>
<b>1.1. The subject.....</b>	<b>13</b>
<b>1.2. Research questions and research aims.....</b>	<b>16</b>
<b>1.3. Outline of the thesis.....</b>	<b>19</b>
<b>1.4. Theoretical perspectives.....</b>	<b>22</b>
1.4.1. Paths and trails as parts of a “human landscape”.....	23
1.4.2. Infrastructures.....	24
<i>Infrastructures or something else?</i>	
<i>Roads and the political significance of transport infrastructures</i>	
<i>Seismic lines as informal roads</i>	
1.4.3. Affordances.....	29
<i>Reception and further development of Gibson’s affordance theory</i>	
<i>Perception in social and cultural anthropology</i>	
<i>Further application of affordance theory in social and cultural anthropology</i>	
<i>Applying a relational affordance approach in this thesis</i>	
<b>1.5. Methodology.....</b>	<b>39</b>
1.5.1. Master’s thesis as part of the research project CoRe.....	39
1.5.2. Research design, research field, research strategy.....	40
<i>Constructing the research field</i>	
<i>Research strategy</i>	
<i>Data sources and sampling</i>	
<i>Gendered space and mobility</i>	
1.5.3. Ethnographic fieldwork.....	46
<i>Seasonality</i>	
<i>First fieldwork in Tokma</i>	
<i>Second fieldwork in Tokma</i>	
1.5.4. Participant observation.....	49
1.5.5. My role in the field.....	51
1.5.6. Field notes.....	52
1.5.7. Interviews.....	54

1.5.8.	Other sorts of data.....	56
	<i>Photos</i>	
	<i>Secondary sources</i>	
	<i>Tertiary sources</i>	
	<i>Archival documents</i>	
1.5.9.	Data processing and analysis.....	58
<b>2.</b>	<b>FINDINGS.....</b>	<b>60</b>
<b>2.1.</b>	<b>Contextualizing the research field.....</b>	<b>60</b>
2.1.1.	A natural-social landscape.....	60
2.1.2.	The village Tokma.....	61
2.1.3.	(Wider) Tokma region.....	64
2.1.4.	Traditional forms of land use in the Russian Federation.....	65
	<i>Tokma Obshchina</i>	
	<i>Hunting grounds</i>	
	<i>Hunting seasons</i>	
2.1.5.	Resource extraction in the post-socialist period and its environmental impact.....	71
<b>2.2.</b>	<b>A historic perspective on (shifting) mobility infrastructures.....</b>	<b>76</b>
2.2.1.	Walking on reindeer paths.....	76
2.2.2.	Mechanisation of transport in the course of Soviet modernisation....	80
2.2.3.	Helicopter rides into the <i>deep taiga</i> .....	82
2.2.4.	The first snowmobiles in Tokma in the 1980s.....	83
2.2.5.	Back on foot in the years of crisis in the 1990s.....	84
2.2.6.	Resource infrastructures becoming transport infrastructures in post- Soviet Tokma.....	85
<b>2.3.</b>	<b>Seismic lines and their affordances.....</b>	<b>88</b>
2.3.1.	What are seismic lines?.....	88
	<i>Different kinds of seismic lines</i>	
	<i>Corporate roads</i>	
2.3.2.	A transformed landscape.....	91
2.3.3.	Perceiving environmental affordances while travelling the land.....	94
2.3.4.	Tokma hunters' engagement with seismic lines.....	95

<i>Landmarks</i>	
<i>Moving along seismic lines</i>	
<i>Setting traps</i>	
<i>Seismic lines and wild animals</i>	
2.3.5. The affordances of seismic lines – opportunities and constraints.....	102
2.3.6. The ambivalence of seismic lines.....	105
<b>2.4. The (unintended) consequences of seismic lines.....</b>	<b>108</b>
2.4.1. The significance of snowmobiles.....	108
2.4.2. Entanglements with the industries.....	110
<i>Fuel</i>	
<i>Spare parts</i>	
2.4.3. Changes induced by seismic lines and snowmobiles.....	115
<b>3. DISCUSSION AND CONCLUSIONS .....</b>	<b>117</b>
<b>4. NOTES.....</b>	<b>123</b>
<b>5. BIBLIOGRAPHY.....</b>	<b>124</b>
<b>6. APPENDIX.....</b>	<b>135</b>
<b>6.1. Abstract.....</b>	<b>135</b>
<b>6.2. Zusammenfassung/Abstract in German.....</b>	<b>136</b>



# 1. INTRODUCTION

## 1.1. The subject

Since the early 2000s, the extraction of natural resources from the Earth has accelerated across Siberia, but the interest in the raw materials of this vast north-Asian landmass is not a new phenomenon. The exploitation of renewable and non-renewable resources, be it furs or timber, minerals or fossil fuels, has been pursued over centuries by a powerful faraway political centre of such diverse regimes as the Tsarist Empire, the Soviet Union, and, in the current post-socialist period, the Russian Federation (e.g., Stolberg 2009; Stammer 2011). In the course of an industrialisation and modernisation (Sovietization) agenda (*Osvoenie Severa*) (e.g., Schweitzer, Povoroznyuk and Schiesser 2017), accelerated by Moscow from the middle of the 20<sup>th</sup> century onwards, systematic oil exploration was launched in the north of the Irkutsk Province in the late 1950s and several oil fields were opened up. Further advancement of the sector was interrupted when the Soviet Union dissolved in 1991 and the painful transition of a centrally planned economy to a liberal market economy began (e.g., Campbell 2013). After a break of more than a decade, resource development again gained momentum and intensified in the wake of the construction of the Eastern Siberia-Pacific Ocean oil pipeline (ESPO) in the 2000s (Krasnoshtanova 2021). Having established a transport connection for Siberian crude oil to the Asian markets, the exploration and development of oil and gas fields in the north of the Irkutsk Province proliferated steadily. Currently, around 15 oil and gas fields are actively operated in the Irkutsk Province, five of which are located in the southern part of the Katangsky District, where the village of Tokma is located (ibid: 2), some of them overlapping onto neighbouring districts. The boundaries of the Yarakhtinsky oil and gas condensate fields come as close as 50 kilometres to the village Tokma. It is exploited by Irkutsk Oil Company (*Irkutskaya Neftyanaya Kompaniya*, INK), the main oil operator in the region.

Tokma region is being prospected for oil by method of seismic reflection, which is evidenced by an ever growing network of straight logged routes in grid-like patterns that criss-cross the boreal forest. To denote these straight corridors, I use the term seismic lines. Another term for seismic lines used in Russia by professionals of the petroleum industry as well as by the local population is *profili*. Seismic lines, which are installed for one-time use only, have altered the northern landscape, which is the habitat of various animals and home to the people of Tokma, who subsist on

these animals and gain income through the selling of their furs. Besides a few younger men, most of the former state hunters of Tokma, who worked for the local branch of the Soviet state hunting farm (*promkhoz*), are in the age of pensioners by now, but are eager to continue their way of life. Hunting and trapping<sup>2</sup> is not only an economic practice, it is a marker of cultural identity. Moose, wild reindeer and wild birds are hunted for personal consumption. Fish are also an important part of the local diet. Among the fur-bearing animals, only sable fur is requested by the market. Forest products like meat, fish, and berries are also important goods of exchange for other commodities or services like the provision of transport (Illmeier and Krasnoshtanova 2022), which is a key concern for people who live in a remote place like Tokma.

Locally practiced economic activities are divided according to gender roles, which, consequently, have created gendered spaces and gendered mobility patterns (Habeck 2016). In comparison with the men, the scope of women's every day mobility is largely bound to the village, where they work in the public services. Given that this thesis explores seismic lines, which have become a prevailing feature of the forest landscape, the focus is laid on the male part of the population, since today only the men practice hunting<sup>3</sup> and have intensive experience with seismic lines and other kinds of trails in the forest. However, the consequences of the infrastructural build-up in the course of resource exploration and extraction, be they intended or not, are relevant for the whole community, affecting women and other family members as well.

Hunting is a seasonally determined economic practice carried out under the harsh conditions of a northern climate, involving vast territories whose mastery requires a high level of mobility. The routes and the conditions of the trails on which the hunters commute from the village to their hunting cabins and within the boundaries of their hunting grounds are of the utmost importance. The straight corridors that constitute seismic lines offer plenty of new routes and open up the forest for more

---

<sup>2</sup> Russian language does not distinguish “hunter” from “trapper” or “hunting” from “trapping” as known from the North American context. Dictionaries only list the noun *капкан* (капкан) to denote a steel trap. The term hunting refers to both types of activities – hunting animals with a rifle, and trapping animals by use of traps. In Russian, the term “trapper” is solely used in translations of literature on Canadian and Alaska trappers, in particular the books of Jack London as I was told by a professional interpreter (Russian - English and Spanish) with Russian as first language. Throughout this thesis, the term hunter is used to denote both activities – hunting and trapping.

<sup>3</sup> Sirina (2006) notes that the presence of female hunters “is one of the distinctive traits of Evenki culture” (ibid: 69).

extensive utilisation. In order to make use of seismic lines, which are omnipresent in the Tokma region, snowmobiles come into play. Seismic lines, the widespread infrastructure of choice for prospecting oil fields, are the kind of trails that afford access by mechanised transport on snowmobiles best of all. The vehicles, however, require fuel and attentive maintenance, including spare parts, which are hardly affordable for Siberian taiga hunters.

In 2003, on the eve of a new resource extraction boom, the people of Tokma took advantage of new legislative opportunities and founded a hunting commune (*obshchina*), reserved for “traditional”<sup>4</sup> economic practices to be carried out on indigenous homelands (Fondahl and Poelzer 2003; Sirina 2010) to gain a stronger position vis-à-vis the industries that began appearing in “their” forest, which is state property. An *obshchina* is eligible for compensation payments by the industries that hold licences for resource extraction on the same land that is allotted to indigenous communes. *Tokma Obshchina* has signed socio-economic development agreements with Irkutsk Oil Company (INK) and the timber company TSLK (changed later into LDK Igirma), which provide compensation in form of fuel and purchase of hunting licences (INK) as well as in cash (INK, TSLK) to Tokma and other hunting communes.

Since major infrastructural projects often violate local people’s vital interests (Rodgers and O’Neill 2012), in particular, when marginal groups in remote regions are at stake (e.g., Haller et al. 2007; Wiget, Balalaeva 2010; Tsyachnyuk, Tulaeva and Landonyo 2012; Southcott et al. 2019), scholarly debate typically places emphasis on the negative impact of major infrastructural projects. The negative implications of resource development on the natural environment on which local livelihoods depend is without a doubt a heavy burden on the inhabitants of the Tokma village. However, local experiences with the *profili* are far more nuanced and not only negative, rather the opposite: The local hunters, indigenous (*aborigeny* or *korennnye zhiteli*) and non-indigenous, enjoy the open corridors across the forest since these seismic lines provide much appreciated affordances for their travels in

---

<sup>4</sup> In the current Russian context, the notion “traditional” is a legal term, used to denote an assumed indigenous way of life that is largely based on hunting, reindeer herding, fishing, as well as gathering. Throughout this thesis, the term is used in this sense. Vorob’ev (2004) makes clear that the widely practiced turn to these activities in the 1990’s across the Russian North shall not be mistaken as a return to natural subsistence practices of precolonial times, but rather a “development of new forms of adaptation to the changing ‘socioeconomic’ conditions on the basis of experience gained during various historical periods” (ibid: 37).

an unruly terrain. Yet, at the same time, people suffer in the face of rapid depletion of their land due to infrastructural build-up and industrial activities.

## **1.2. Research questions and research aims**

This Master's thesis sets out to explore the impact of seismic lines that have emerged in large numbers in the process of oil exploration across a vast space that is used in traditional ways by the people of Tokma, for whom this land is home. I approach seismic lines from anthropological perspectives on (transport) infrastructures, putting the focus on human-infrastructural relations, which has been discussed in scholarship as part of the larger research problem of how humans relate to their environment. I will elaborate on this in the theoretical chapter (1.4.). The topic has been brought forward in recent years by Schweitzer (2017), with a regional focus on the Russian North (Schweitzer, Povoroznyuk and Schiesser 2017; Schweitzer et al. 2014) and the global north (Schweitzer 2019).

Having identified seismic lines as (one of) the most relevant contemporary transport infrastructures for local mobility in Tokma region, I place them into a larger historical context, roughly spanning the 20<sup>th</sup> century up to the present (chapter 2.2.). Relating seismic lines to previous transport (infra-)structures, I aim to demonstrate the continuous (politically) intended as well as unintended changes of mobility facilitating (infra-)structures, the reasons and rationales behind these changes, and how they have impacted people's lives (e.g., Campbell 2003; Stammer 2009; Illmeier and Krasnoshtanova, 2022).

Conceptualising seismic lines as a transport infrastructure, I explore people's interaction with these infrastructures by employing a relational affordance perspective (Gibson 1979; Knappett 2014; Ingold 2000, 2018). This thesis understands affordances as the potentialities seismic lines as a feature of a human-modified environment contain as well as that which is perceived by the hunters through their engagement with their environmental surroundings in the course of their mobility-centred activities and evaluated (Knappett 2004) according to their actual needs and ambitions. The affordances of seismic lines are the opportunities and constraints by which these routes support or hamper people's movements and upon which local actors respond in their own particular ways.

I go on to explore the wider implications of these industrial infrastructures for the community under study. Providing open corridors through an unruly terrain,

seismic lines “encourage” (Landerer 2009) the use of vehicles and thus generate particular demands of people who move in this terrain and live off this land. Yet, mechanised forms of transport are not an automatic given for many of the people living at the geographical and social margins. In absence of state support for traditional activities and other alternatives, the resource companies that operate in the region have become the most important actors vis-à-vis the local communities. This thesis looks into the ways by which the affordances of seismic lines are productive in creating and fostering new entanglements of the people of Tokma with the oil industry, snowmobiles, gasoline, and spare-parts.

Based on these considerations, I address the following research questions:

*“What is the impact of oil exploration and its infrastructures (seismic lines) on the livelihoods of taiga hunters of the Tokma village in Eastern Siberia?”*

This overall research question will be answered along the line of two sub-research questions:

- *What are the affordances of seismic lines for Tokma hunters?*
- *What are the (unintended) consequences of oil infrastructures for the people of Tokma?*

This Master’s thesis pursues several goals. Firstly, it calls attention to a particular widespread kind of infrastructure, one that services many resource frontiers in Russia and beyond, which has up to now hardly been investigated despite its severe social and ecological implications. Secondly, through answering the first sub-research question, it aims to understand how the hunters interact with these infrastructures on an every-day basis in response to their affordances. Thirdly, turning to the second sub-research question, it seeks to detect the wider implications of rapid infrastructural build-up, be they unintended or anticipated either by the extractive companies or by state agencies and their policies that shape the framework for large-scale industrial operations. The thesis’ main goal is to understand how local people’s lives have changed under the impact of seismic lines, the widely dispersed infrastructures of the oil industry (especially seeing as these changes occurred within only a few years).

This thesis describes the opportunities and constraints of seismic lines as experienced by Siberian hunters and asks how these affordances take effect in the lives of the community. Exploring infrastructures through the lens of their affordances brings the human dimension to the fore, illuminating people’s lived

experiences under conditions of rapid ecological and socio-economic change. It reveals a paradoxical situation the people of Tokma got caught up in: increasingly relying on industrial infrastructures and support to sustain their livelihood, while simultaneously these infrastructures destroy its environmental basis in the long run. In this, the case of the Tokma village is not unique, as people across other northern regions (e.g., Bennett 2018) around the globe experience similar paradoxes (e.g., Pandya 2002), although, I have not come across too many ethnographies that specifically focused on this topic.

However, the impact of accelerated resource extraction on local populations is well explored for certain regions and/or indigenous groups across the Russian North. For instance, this is the case for Chanty and Mansi in Western Siberia, which have already been exposed to the impacts of the oil industry for several decades (e.g., Wiget and Balalaeva 2010; Niglas 2011), as has Sachalin (e.g. Wilson 1999). For quite some time, research interest has focused on the Yamal peninsula, where Russia's biggest gas deposits are located, inhabited by Nenets reindeer herders (e.g., Stammler 2002; Stammler 2011). Recently, Loginova and Wilson (2020) explored the participation of Komi people in oil development in northern Russia. Although there are a number of valuable ethnographies (e.g., Sirina 2009; Tsyachnyuk, Tulaeva and Landonyo 2012) and other research (e.g., Krasnoshtanova 2021), the impact of resource development (oil, gas and timber being highly relevant) on people – indigenous Evenki and others – living in the taiga zone of Central and Eastern Siberia has not yet been sufficiently explored from the perspective of social and cultural anthropology. Krasnoshtanova (2019, 2021) and Kuklina and Krasnoshtanova (2021) have investigated the socio-economic transformations under a changed economic state agenda for the north of Irkutsk Oblast, and there are several ethnographies from the wider region focusing on mobility (Mertens 2016) and roads (Illmeier and Krasnoshtanova 2022; Saxinger, Krasnoshtanova and Illmeier 2021), but so far only two scholars have paid attention to seismic lines as a significant infrastructure for local transport in remote regions without developed road networks (Landerer 2009; Kuklina et al 2020). Their findings will be discussed in the theoretical part of this thesis.

This thesis attempts to contribute to scholarly debate on infrastructures and resource extraction in sub-Arctic Siberia by exploring human-infrastructural relations as well as the largely unintended consequences of infrastructural build-up in the case of the inhabitants of the Tokma village. Given that seismic lines have

become a prevailing feature in the landscape of the Tokma region, much like many northern regions exposed to oil exploration and extraction, as well as their significant impact on local livelihoods, I regard the topic as an appropriate goal for anthropological inquiry.

### **1.3. Outline of the thesis**

This Master's thesis is organized in three parts: the introduction, the findings, and the conclusions.

**Part 1**, the introduction, the subject, the research questions and research aims, as well as the outline of the thesis (chapters 1.1. and 1.2.). Chapter 1.3. presents the theoretical perspectives that I engage in answering my research questions. First, I take a look at how paths and trails, the structures that were most important in facilitating local mobilities until the recent past, have been discussed in anthropology. Drawing on a meanwhile extensive body of anthropological literature, I then discuss perspectives on (transport) infrastructures (1.3.1.). I continue by relating seismic lines to this debate. This brings me to the question of how the various components that together make up an “environmental infrastructure”, such as seismic lines, relate to each other, which includes the inquiry on how humans and infrastructures themselves relate to each other. Moving from the question of what infrastructures “are” to the question of what they “do”, I address the political significance of transport infrastructures, which is particularly emphasized by ethnographic road studies. This is to highlight the immense significance of mobility and mobility infrastructures for traditional ways of life, and to anchor the historical context of my case that I will examine in chapter 2.2. Finally, the chapter discusses one of the few scholarly accounts on the topic of seismic lines that conceptualises seismic lines as informal roads.

The following sub-chapter is dedicated to a comprehensive discussion of affordance theory (1.3.5.). It looks into the evolution of the concept from the original idea developed in environmental psychology (Gibson 1979) to its reception in other disciplines with a focus on social and cultural anthropology (Ingold 2000, 2018). In the last section, I elaborate how I apply a relational affordance approach in discussing and analysing my case.

In Chapter 1.4., I provide a detailed description of the research methods that I applied in answering my research questions. The chapter traces my approaches and

methods in the different, yet overlapping stages of research, which mutually informed each other. These were a development of the research design, data collection in two ethnographic fieldworks in the Siberian village Tokma, and data processing and analysing. The ethnographic material was complemented by data from primary historical sources that I searched for in an archive (GAIO) and secondary literature. The chapter begins with an outline of the wider framework in which my Master's thesis project was embedded through my involvement in the research project CoRe.

**Part 2** contains the findings of the thesis. Chapter 2.1. presents the contextualization of the research field, including a description of the landscape as a natural-social place, a rough overview of the demographic characteristics of the Tokma village and its position in the wider region (2.1.1. to 2.1.3.) This is followed by examining hunting and trapping as the practices used in the land that are most important for this thesis and how these activities are organized spatially and temporally (2.1.4.). Finally, the current resource boom and its adverse environmental impact is examined (2.1.5.).

Chapter 2.2., provides a historic perspective on transport infrastructures from the early Soviet period up to the 2000s, ranging from reindeer paths to seismic lines. In accordance with the ideological and political shifts that induced these changes, I differentiate four periods: 2.2.1. Walking along reindeer paths; 2.2.2. Mechanisation of transport in the course of Soviet modernisation 2.2.3. Helicopter rides to hunting cabins; 2.2.4. The first snowmobiles in Tokma; 2.2.5. Back on foot in the 1990s; 2.2.6. Oil infrastructures becoming transport infrastructures.

In answering my first research question, chapter 2.3. presents an ethnographic account and analyses of seismic lines and their affordances for the hunters of Tokma. At first, I examine how seismic lines come into being (2.3.1.) and, being established in large numbers, how this has been changing the northern forest landscape that is intensively travelled by the local hunters (2.3.2.). I then explore how the altered landscape is perceived by the local hunters, thus, changing from an outside to an inner perspective on the level of the body. (2.3.3.) The environment is perceived with all senses while travelled and such bodily perception can be life-saving in a harsh northern climate. Hunters in a northern forest don't move just anywhere, they move on routes, which hold different potentialities for their travels and their economic practices. The chapter goes on to examine Tokma hunters'

engagement with seismic lines and will provide a glimpse at how wild animals, potential prey and other wildlife, respond to open routes (2.3.4.). The next two sub-chapters will conclude on the opportunities and constraints seismic lines provide and on the ambivalence by which they are assessed by local people.

Chapter 2.4. sets out to explore the (unintended) consequences of seismic lines and their affordances for the inhabitants of the Tokma village. It lays out how seismic lines and snowmobiles are connected and relate to each other. Furthermore, it examines how snowmobiles are used and provides a glimpse at the affective relationship between man and machine under conditions of an extreme climate. The chapter focuses on tracing how seismic lines and snowmobiles are entangled with the industries that provide the necessary means to maintain snowmobiles and keep them running – fuel and cash for spare parts.

In **Part 3**, I draw the conclusions of this thesis in answering my overall research question on the impact of oil exploration and its infrastructures (seismic lines) on the small community of the Tokma village along two lines of inquiry, questioning the affordances of seismic lines for Tokma hunters and their wider implications.

#### **1.4. Theoretical perspectives**

This Master's thesis explores the largely unintended and controversial impact of an advancing oil industry whose infrastructures support a remote community of aging taiga hunters travelling the land on which they live, while at the same time these infrastructures draw people into new dependencies from the industries and undermine local economic practices and foreseeable ways of life in view of the environmental degradation they bring about. I analyse the case of the Tokma village in Eastern Siberia on the basis of the empirical material that I collected in two fieldworks by employing theoretical perspectives from scholarship on (transport-) infrastructures and a relational affordance concept. While exploring infrastructures that are intentionally or unintentionally used to facilitate human movements, it is unavoidable to think about (im-)mobility as well, however, conceptualisations of (im-)mobilities will be considered only marginally as this is not the focus of the thesis.

The bulk of literature that was reviewed stems from social anthropology as well as human geography, another discipline that has developed important perspectives on mobility and infrastructures. Two geographers have been investigating the socio-economic effects of resource extraction in the region under study (Krasnoshtanova 2019, 2021; Kuklina et al. 2020). At times, I complement this corpus of literature with research from other disciplines such as philosophy (Morizot 2020) and ecology (Potapov et al. 2017; Kukavskaya et al. 2013). Furthermore, I have reviewed professional magazines on hunting and trapping sable (e.g., Rideout 2013). Affordances as the most important concept used in this thesis was introduced in the psychology of perception (Gibson 1979) and further developed in anthropology (Ingold 2018). Seismic lines have hardly been a topic of anthropological inquiry, and literature research has been unsuccessful with only two exceptions (Landerer 2009; Kuklina et al. 2020).

The native people in the study region have practiced a mobile way of life almost throughout their history, before they were forced to a sedentary way of life less than a century ago. Adopting a historical perspective directs attention to paths and trails, the (infra-)structures that have almost exclusively facilitated people's movements until up to the 1950s (river transport would be the exception). They are still important today, although they have been largely replaced by seismic lines, the type of infrastructure that suits mechanised transport on snowmobiles very well. Seeing seismic lines in continuity with previous mobility-facilitating (infra-)structures, I

begin my theoretical considerations by looking into conceptualisations of paths and trails, which have been playing a crucial role in the (mobile) lives of northerners.

#### 1.4.1. Paths and trails as parts of a “human landscape”

Numerous theoretical accounts and ethnographies from across the Russian North have emphasised the importance of mobility for traditional livelihoods in high latitudes (e.g., Golovnev and Osherenko 1999; Vitebsky 2005; Hastrup 2009; Davydov 2012). Sirina (2006), the Russian anthropologist who has extensively studied the Evenki of Katangsky District, emphasizes that for this indigenous group, travelling the land is synonymous with being alive:

*“In comparison with other Siberian peoples, Evenki are more inclined to practice a mobile economy (Rychkov 1917, 1922-23). For example, they often substitute words meaning ‘to go’, ‘to stride’, or ‘to move’ for the word meaning ‘to live’. [...]. Because of their mobile nomadic way of life Evenki have developed a specific attitude to space, and a way of exploiting it that extends along their travelling trajectories. It can be called a dynamic-logistical method of ordering space” (ibid: 15).*

Social and cultural anthropology has extensively explored the various elements of mobility constellations (Cresswell 2010) of reindeer herders and hunters, focusing above all on various dimensions of their movement practices in taiga and tundra landscapes and on sea ice (e.g., in addition to the authors mentioned before Habeck 2006; Dudeck 2012; Aporta 2004, 2009) and less on the physical features that facilitate these movements. In one of the more recent studies on “Patterns of Evenki Mobility in Eastern Siberia” (Mertens 2016), the author sets out to explain the factors that shape the mobility of indigenous Evenk, without paying much attention to the trails that facilitate this mobility.

In comparison, rather few studies have explicitly addressed the trails on which taiga and tundra dwellers move. Case studies stem from the north-American and north-European context (Aporta 2004; Loovers 2016; Hastrup 2017); for Russia, Brandisauskas (2012) and possibly Niglas (2011) should be mentioned. All of these ethnographies have in common that they propose to understand paths and trails “rather as lived places than mere transitional locations” (Aporta 2009: 135). A trail becomes a place through practical engagement of humans combined with memorising its features and certain events that occurred there as well as recounting

them to others – activities, by which cultural and personal meaning is inscribed onto the land (Nelson 1986: 242-245 in Loovers 2016: 45-46). Lands socialised in this way are “natural-social places by definition” (Hastrup 2017). The same understanding of a “human landscape” is central for conceptualising trails, paths and roads as proposed by Snead et al. (2009) from an archaeological point of view.

#### 1.4.2. Infrastructures

In recent years, the study of infrastructures has become a prominent topic in the social sciences, creating an awareness that infrastructures “are critical to differentiated experiences of everyday life and expectations of the future” (Appel, Anand and Gupta 2018: 3). The term’s connotation reminds one of its engineering background, its prefix *infra-* meaning beneath, below, or within, denotes something subordinate to an endeavour of a higher order, often remaining invisible (Carse 2017). Extending common conceptions of infrastructures as mundane mechanisms, anthropological scholarship on infrastructures has revealed the multiple ways by which infrastructures take effect on the lives of people beyond a purely technical, assumingly neutral function of mediating flow or exchange over distance (e.g., Rodgers and O’Neill 2012; Howe et al. 2015). In an essential theoretical account, Larkin (2013: 4) states that infrastructures are “nothing that is in any positivistic sense simply out there. Their peculiar ontology lies in the fact that they are things and also the relation between things”, a duality, which makes infrastructures “conceptually unruly” (ibid: 329). Besides a certain emphasis on the material, the “thing-like” quality of infrastructures and its implications for human users, recent scholarship has brought the “soft qualities” (Panel of CoRe project 2018) to the fore, including social interaction, knowledge, or a legislative framework, which are no less an essential part of infrastructures than their built components. Infrastructures came to be seen as complex socio-technical systems (Carse 2012), assemblages (Harvey and Knox 2012) or networks (Larkin 2013), where the material, the technical and the social as well as the imaginary (ideas), are inextricably entangled and whose interplay secures the functioning (or not) of an operation.

In “nature as infrastructure” (2012), Carse extends this understanding of infrastructures as an interplay of technical and social elements entwined with the environmental component. The author illustrates upon the case of the Panama Canal, how whole landscapes (and the people who live there) get drawn into and become part of a large-scale infrastructural system through organising and managing said landscapes (people included) in ways that deliver the desired

services. I find Carse's notions of "assigning landscapes infrastructural functions" and "managed landforms" (ibid: 556) useful in order to conceptualise seismic lines.

### *Infrastructure or something else?*

Examining seismic lines in the light of these debates raises several questions that have accompanied my research throughout, namely, whether infrastructures provide a useful concept for the study of seismic lines and their implications. Seismic lines are a central infrastructure of the oil exploration process by method of seismic reflecting, yet, they appear as no more than logged aisles in the forest. They seem almost too natural to be called an infrastructure, yet too artificial to be called natural. This situation is well described by a statement by Carse (2012): "Environments managed for the purposes of service delivery fit neither framing" (ibid: 544), since such landforms are shaped by natural processes beyond human control and in parallel, managed by human actors to deliver certain services.

When taking into consideration how seismic lines come into being, their purpose and function, they clearly meet scholarly definitions of infrastructure (some of them introduced in this chapter). At the same time, the question whether seismic lines shall be objectified as infrastructure arises in view of several obvious differences between seismic lines and other kinds of (transport) infrastructures, which typically contain something "built", as a categorical property. Seismic lines lack the added (rigid) material – neither asphalt, nor concrete or gravel are involved when seismic lines emerge to facilitate the flow of data conveyed from the sub-surface via seismic waves. Rather the opposite is the case: seismic lines do not emerge because something is constructed, but because something – vegetation – is removed. This way, a lack of something, namely of forest cover, emerges that alters the landscape in ways that substantially change its characteristics and the sensual experiences it enables as well as the possibilities of usage that it offers. Another obvious difference to more popular conceptualisations of infrastructures is that seismic lines are established for one-time use only, given that the process evolves without problems.

Questions on "the boundaries and ontological properties" of infrastructures were also asked by Howe et al. (2015), who brought the "paradoxical qualities" of infrastructures to the fore that become apparent as "ruins, retrofit and risk", which is in stark contrast to popular imaginations and expectations towards infrastructures as something durable over long timespans. The authors observe that it is often ruins, where infrastructures meet and conjoin with the natural, "the

organic, the ecological, and the hydrological” (ibid: 11) in ways that “one might become a part of the other”, as the authors cautiously conclude.

Schweitzer, Povoroznyuk and Schiesser (2017) approach infrastructures by making an analytical distinction between “the built environment” (where infrastructures are situated) and “the natural environment”, adding – and this is important for my argument – that “any strict dichotomy between ‘natural’ and ‘built’ must falter in the light of their entanglements” (ibid: 2). Both are entangled and interwoven with each other so that it is impossible to draw a line where one ends and the other begins. Taking the “peculiar ontology” of infrastructures (Larkin 2013) into account, it is obvious that defining infrastructures is not at all easy, which is why definitions of infrastructures often resemble descriptions. Carse (2017) speaks about infrastructures as “a mix of materials, practices, and meaning” (ibid: 35), thus offering a wide reaching, yet compactly written, useful definition.

Besides the question “what are seismic lines”, this thesis is concerned with the question “what do they do” and how infrastructures and humans interact with each other. As such, my inquiry relates to the larger research problem of how humans relate to the non-human, be it other species, things, entities or infrastructures. Social and cultural anthropology offers two main approaches to investigate human–non-human relationships: the Actor-Network Theory (ANT) developed by Bruno Latour (2005) and Tim Ingold’s concept of meshwork (2011). ANT views material objects as equal “actants” in, and mediators of, social relations. Things have the capacity to act or participate in social networks on their own; together with the actors they form a “network of connected points”. The concept of “meshwork” views humans and non-humans as enmeshed through a tangle of relationships that form “the web of life” (Ingold 2011: 63). According to Ingold, action “emerges from the interplay of forces conducted along the lines of the meshwork” (ibid: 64). Ingold understands his meshwork concept in explicit contrast to the Actor-Network Theory (ibid: 64), yet, there are scholars who use both concepts in parallel in their publications (e.g., Kuklina et al. 2020). Since I analyse seismic lines through perspectives of a relational affordance approach, which implies that the properties of the environmental surrounding become discernible to a perceiver through his or her sensual activity, I see Tokma hunters *enmeshed* with a landscape-infrastructure environment. I will elaborate on this in more detail in chapter 2.3.3. and 2.3.4.

### *Roads and the political significance of transport infrastructures*

Road ethnographies from around the world account for a large part of the body of literature on transport infrastructures (e.g., Masquelier 2002; Porath 2002; Argounova-Low 2012b; Argounova-Low and Prisyazhnyi 2015; Harvey and Knox 2015). Road studies in particular have brought the political dimension of infrastructures to the fore. While any other large transport infrastructure project, be it highways, airports, or railroads come into being through financial, political and logistical support of the state, it is roads in particular where the state's impact on the lives of its citizens becomes tangible. While this is certainly true for regions with roads, it can also be true for regions without roads, where imaginaries of roads and the promises they carry can unfold into strong societal and political forces (Harvey and Knox 2012), or, conversely, without proper roads that satisfy the needs of local people (Saxinger, Krasnoshtanova and Illmeier 2021). In a totalitarian state like the former Soviet Union, state control over transport and mobility was enforced in direct and indirect ways. Introducing new transportation networks were one of the key instruments of the Soviet state to gain control over indigenous mobilities and to enforce new economic practices and social and cultural change according to Soviet ideologies and modernisation programmes (e.g., Campbell 2003; Habeck 2013). In this thesis, I examine how transport infrastructures were used as a political tool to shape people's lives in historic perspective. Throughout the lifetime of one generation, people's experiences have ranged from entire state control to a perceived absence of the state in the post-socialist period, and further to the appearance of new (industrial) stakeholders holding power to reconfigure local mobilities, even though these implications of their activities were largely unintended.

### *Seismic lines as informal roads*

An ongoing research project explores "informal roads" in Eastern Siberia that do not appear on official maps and maintenance budgets of administrations, but often play an important role as transport networks of 'remote' communities (Kuklina et al. (2020)<sup>5</sup>. Besides forestry roads and gas and oil service roads, the project treats seismic lines – denoted as "geophysical", or "seismic line clearings" – as informal roads. Such roads are negotiated and maintained by informal practices and arrangements, and the informal social relations between different groups of

---

<sup>5</sup> The article is partly based on research conducted by the author of this thesis and Natalya Krasnoshtanova in 2016 and 2018 in Tokma (Kuklina et al. 2020: 15, Acknowledgements).

stakeholders that evolve and develop around these roads, as will be discussed in a paper that is currently under review (Kuklina, Illmeier and Krasnoshtanova, in progress).

In this thesis, I argue for a more differentiated understanding of seismic lines and roads. I present detailed investigation of the informal ways how the hunters of Tokma utilise seismic lines and that these practices are not part of the “official” negotiations between the Tokma hunting commune (*obshchina*) and the oil and logging companies in the framework of the annually renewed socio-economic development agreements. The informal use of industrial infrastructure as described in this thesis as well as their further implications are an unintended consequence of infrastructural build-up for resource exploitation. The approach that I take in this thesis differs in that I stick to the emic differentiation between roads and seismic lines. According to the local use of language, the notion that a road – *doroga* – is first and foremost used to denote industrial access roads, in particular corporate forest roads, which are more frequent in the Tokma region than access roads to oil fields (Illmeier and Krasnoshtanova 2022). The term *doroga*, in combination with a respective adjective, is also used to denote different types of trails, for instance “*Buranovaya doroga*”, which is a trail used for snowmobile-facilitated transport. *Trassa* is the term for large, well maintained roads that function as main access roads to the resources in the taiga. Although seismic lines providing open corridors across the forest resemble roads, they are not put in place as a transport infrastructure per se, though the process of oil prospecting is carried out by a specially equipped vehicle that slowly moves along these lines. Another difference when compared to roads is that seismic lines are not implemented by the state, but by an oil company in mainly private ownership<sup>6</sup> – Irkutsk Oil Company (INK). Here, one needs to keep in mind that the oil and other resource industries are tightly interlinked with the state, whose federal budget largely depends on revenues coming from the resource sector. In making a distinction between roads and seismic lines, I also draw on ethnographies from other regions of the Russian North that demonstrate a similar differentiated understanding of mobility (in the taiga) and the infrastructures that condition it (Dudeck 2012; Davydov 2012, 2017; Habeck 2006).

---

<sup>6</sup> Irkutsk Oil Company (INK) is a holding comprising several daughter companies. <https://irkutskoil.com/about/structure/> [last access 03.09.2021]. The majority of shares seem to be in private ownership; the European Bank for Reconstruction and Development (EBRD) is also a shareholder of and lender to INK. <https://expert.ru/expert/2020/43/vvyskochka-iz-bodajbo/> [last access 03.09.2021] (Saxinger, Krasnoshtanova and Illmeier 2021).

### 1.4.3. Affordances

Affordance is a concept that explains perception by giving the environment or object that is perceived an active role in the act of perceiving, possibly even “agency” (Latour 2005), as Landerer (2009) cautiously suggests. In its essence, the concept deals with the problem of how the mind relates to the material world, which has been a key concern of many disciplines including philosophy, psychology, social and cultural anthropology as well as the life sciences.

The concept of affordances was developed by the environmental psychologist James J. Gibson (1979) in an attempt to explain visible perception. Gibson’s point of departure is the question “how do we see the environment around us?”. He endeavours to understand the environment as an ecological reality that holds values and meaning to be discovered in difference to a physical approach, where the world is understood in terms of “entities of physics and mathematics” (ibid: 24). His strong rejection of an assumed duality between the “objective, real, and physical” on the one hand, and the “subjective, phenomenal, and mental” on the other hand, runs through the whole essay. Gibson evaluates such separation of the “physical – the world of matter” and the “phenomenal – the world of mind” as “false” (ibid: 6) or “pernicious” (ibid: 139), arguing that “there is only one environment” (ibid: 138).

Gibson (1979) argues that what we perceive is not the single qualitative properties of an environmental setting or object, which was the dominant paradigm of the time (ibid: 134), but what it offers to the observer. Gibson calls these environmental offerings affordances, a term he created to express the relationality between the environment and the animal (including the human), which implies their complementarity. “Affordances are what the environment offers the animal, what it provides or furnishes, either for good or ill” (ibid: 127). Affordances, thus, shall not be mistaken with benefits per se. The affordances of an environment can be both, beneficial or injurious, safe or dangerous, in short positive or negative (ibid: 137).

A key argument of Gibson’s (1979) theory is that the values and meanings things carry as potentials can be perceived directly by an observer. This means that the process of perception is not something that exclusively occurs in a person’s head where external information is transformed into cognition through cultural representation. In conclusion, this entails that the information perceived “resides somewhere in the environment”.

Gibson emphasizes that there is only one environment that provides a set of affordances to humans and animals alike. As animals, humans too were formed by the environment they have been living in and as such they are compatible to the environmental substructures. The environment is described as “substances, surfaces, medium, places, objects and other animals” including the human animal, without making an ontological distinction between the natural world and an artificial world altered by man, only, that man has altered it more rigidly to “make life easier for himself”, while in parallel, “he has made life harder for most of the other animals”) (ibid: 130). For humans, the affordances of an environment are perceived first of all by seeing. Affordances are recognized on the base of certain information provided by the properties of an object (the environment) by sound-fields, by odor-fields, and above all by illumination (ibid: 161).

In developing his argument, Gibson (1979) draws on Gestalt psychology of the 1920s and 1930s which asserts that things have “demand character” or “invitation character” (another term for it is “valence”). “Things tell us what to do with them” (ibid: 138). An understanding of these messages, however, was linked to the subjective need of the observer at a certain point in time. This implies that the value of an object changes as the need changes. Rejecting this, Gibson argues that the affordance of something is *invariant* and always there to be perceived and recognised by an observer as an affordance or not. (ibid: 138-139). However, in the same publication, Gibson goes on to describe affordances as also relating to both the “motives and needs of an observer [...] and to the substances and surfaces of a world” (ibid: 143). Affordances are thus neither an objective property of the environment, nor a subjective one that is being created in the mind of an observer. Gibson’s inconsistency in this point was later criticised by Ingold (2018).

#### *Perception and further development of Gibson’s affordance theory*

Gibson himself had already pointed out some weaknesses in his theory. The assertion that was most sharply criticised was that of direct perception of an affordance. His argument that the affordances of an object can be directly perceived on the base of its visual appearance, its form and shape, without any culturally transmitted knowledge and independent of the subjective need of the observer, was questioned on the famous example of the post-box. Its affordance is obvious only to a person who has the cultural knowledge of its purpose.

In a volume on “Rethinking materiality”, the archaeologist Carl Knappett (2004) presents a “post-Gibsonian perspective on the relationality of mind and matter” (ibid: 43). In the more than 20 years since Gibson’s theory of affordances was published, a more refined and a more dynamic understanding of the affordances of things and human perception, and how the two are interconnected, was developed.

Under the influence of a “situated cognition” approach in psychology, *perception*, *cognition* and *action* came to be seen as an “embodied, situated and distributed process” (Knappett 2004: 45). Objects and agents interact in specific situations. Not only the object which is itself within an environment and the agent, the context too plays a role in establishing the affordances of a particular situation. This implies that the affordances of an object may change in accordance with the situation. This modification of the concept brings the social to the fore. Affordances can be shared, negotiated and contested in social interactions (ibid: 46-47).

Gibson’s concept of direct perception was criticised for reducing humans to “reactive agents” on environmental stimuli without the capacity to evaluate as well as react (Knappett 2004: 47). The theory of situated action seems to offer an exit by differentiating between “an active agent at the level of evaluation and reactive one at the level of execution” (Knappett 2004: 47-48). The human agent not only reacts on certain affordances, but evaluates them in an internal mental process and this evaluation might affect the perceived affordances of the object. (ibid: 48). In light of this theory, cognition is both an internal and an external process, and perception is both direct and unmediated while simultaneously indirect and mediated by cultural knowledge (ibid: 48). The new post-Gibsonian definition of affordances states that “affordances of objects are understood simultaneously directly and indirectly; through both execution and evaluation, and in terms of embodiment as well as representations” (ibid: 48).

#### *Perception in social and cultural anthropology*

The question of how humans relate to the environment they live in has been a key concern in social and cultural anthropology. Should the human mind and the material world be understood as two separate and distinct spheres, or as one interrelated whole? Cognitive approaches go for the first, ecological and phenomenological approaches in anthropology (and other disciplines) for the latter position. In social and cultural anthropology, Tim Ingold (2000) is the most prominent representative who promoted the idea of affordances, however, more

recently, he has distanced himself from it (2018). In his book *The perception of the environment. Essays on Livelihood, Dwelling and Skill* (2000), Ingold provides a compact overview of different perspectives on perception and cognition developed in psychology, philosophy and anthropology, going all the way back to Emile Durkheim, one of the founding fathers of sociology (2000: 158ff).

Ingold approved of an affordance perspective for it seemed to offer a way out of an assumed dichotomy between a universally given world of nature versus diversely constructed worlds of culture, laid down in the theories of physical realism on the one hand, and cultural constructivism on the other hand. Affordance theory promised to overcome this culture/nature divide that is at the base of modern thinking since the European Enlightenment. In a realist position, affordances are intrinsic properties of an object (its potentials) that exist independently of a perceiver. In a constructivist position, affordances exist in relation to a perceiver who acts upon them. Gibson had used both perspectives, the “realist” and the “relational” in parallel in his book, while favouring the realist perspective. For Gibson, as for Ingold (2018), the process of perception occurs directly between human sensing and the environmental surrounding. Humans can access their surroundings directly and not through a detour of reconstructing data provided by the senses according to pre-defined conceptual schemata. “Affordances are perceived, not interpreted or represented” (ibid: 41). This understanding implies that in perception, humans are in no way different to non-human animals, a position that met a lot of rejection in anthropology, as Ingold criticises (ibid: 41).

Resonating with ecological psychology in general and Gibsons’ elaborations of visual perception in particular, Ingold (2000) emphasizes the importance of movement for perception. Movement implies changing reflections of light from surfaces in the environment which contain information about the properties of the environment that are meaningful for an observer that moves from place to place. “Perceptual activity does not consist in the operation of the mind upon the bodily data of sense, but in the intentional movement of the whole being (indissolubly body and mind) in its environment. The emphasis on movement is critical” (ibid: 166). This premise contains two important implications:

a) perception as a mode of action

Perception coming along with movement shall be understood as an “active and exploratory process of information pickup”, Ingold (2000: 166) states referring to Gibson. A process that involves the “continual movement, adjustment and

reorientation of the receptor organs” at least, but most often that of the other senses (“looking listening, touching and sniffing” (ibid: 166)) too. This stands in stark contrast to a static model of perception used by cognitive science that renders perception a prerequisite for action. Contrary to this, in Ingold’s (2018) view, “perceiving an affordance, and acting in its realization, are not distinct and sequential but one and the same: ‘to act is to attend’” (ibid: 39). This point of view complies with “wayfaring” as a mode of movement of attentive engagement with the surrounding landscape. Other scholars describe perception in a similar way, as “an activity, a reaching out to the world” (Tuan 1990: 12 in Hastrup 2009: 183).

b) gaining practical knowledge

Perception inseparably linked to people’s active engagement with the environment in the course of every-day life, implies that humans are inclined to pick up the kind of information which supports them in pursuing the activities they are currently involved in. In this sense, knowledge obtained through direct perception of the affordances of an environmental setting is, in Ingold’s (2000) understanding, “practical knowledge” (ibid: 166). Perception is not disconnected from culture as one learns to perceive according to one’s culture. In subsisting cultures, perception is trained through “‘hands-on’ training in everyday tasks whose successful fulfilment requires a practised ability to notice and to respond fluently to salient aspects of the environment” (ibid: 166-167).

Ingold addresses the implications of the affordance model for human sociality, an aspect that was neglected by Gibson, which, as Ingold assumes, was the reason that the affordance theory had no greater impact on social and anthropological theory building. For Ingold, sociality is not a matter of organising sensory data according to an objective system of collective representations. Instead, he positions sociality “*prior* to the objectification of experience in cultural categories, in the direct, perceptual involvement of fellow participants in a shared environment” (Ingold 1993: 222-3 in Ingold 2000: 167). This argument is demonstrated in the example of anthropological fieldwork, where the fieldworker and local people engage in the same activities in a shared environment. Although they might interpret it differently according to each one’s conceptual frame, there is common ground given through the shared experience “that lies at the heart of sociality” (ibid: 167).

In the years to come, Ingold came to see Gibson’s’ concept of affordance quite critically. By now, Ingold seems to have dropped the concept in the versions presented above overall. In a rejoinder to a paper of Keane’s (2018), he explains the

reasons. His point of criticism was Gibson's' indefiniteness with regards to what affordances are in the end. Are affordances intrinsic invariant properties of objects regardless of whether any living being is there to realize them? Or are affordances something that exists only in its relational aspect to a perceiver who acts upon it? Ingold came to the conclusion that the concept of affordance is not capable to solve this fundamental ontological problem (2018: 42).

He praises the affordance theory for bringing the perceiver "back to life" (2018:42), but criticises it for portraying the environment as consisting of fixed, invariant objects, rendered inert. This asserts that the perceiver actively attends to and explores a world that is already there. Ingold came to propose a fundamentally more dynamic model, where humans are "present and aware in the very moment of formation itself" (ibid: 42). The necessary analytical step towards this proposition is that the world needs to be "reinserted in the current of real time" (ibid: 43). This requires the perceiving actor to attune one's movements and the timing of one's activities to the dynamic environmental forces so to catch the right moment when all forces are in favourable alignment for the actor's endeavour. (ibid: 43).

Ingold (2018) goes on to elaborate on the relation between perception and imagination. He rejects a strict distinction between the real and the imaginary promoted by cognitivists as well as by Gibson, who situated the imaginative opposite to the "real world" that can be directly accessed in the process of perception. In order to overcome this separation, imagination needs to be conceptualised differently, "not as a capacity to construct images, or as a power of mental representation, but more fundamentally a way of living creatively in a world that is not already created, already formed, but one that is itself crescent, always in formation" (ibid: 43).

#### *Further application of affordance theory in social and cultural anthropology*

Despite its inconsistencies, the concept of affordance has firmly established the idea of a mutual relationship between man and the surrounding environment, a co-dependency of mind and matter (Knappett 2004). Recently, the concept was proposed by the research project InfraNorth<sup>7</sup> to examine human-infrastructure relations with the aim to investigate "the role of transport infrastructures in sustaining arctic communities" (Schweitzer 2019). Infrastructures are conceptualised in a Gibsonian sense as part of the (built) environment. The offers of

---

<sup>7</sup> <https://infranorth.eu/>

infrastructure include realised actions but also potentialities, which can look very different depending on the interest of the person (ibid: 5). The project argues for the affordance approach because it allows to ascertain the effects of infrastructure “without taking the problematic step of assigning ‘agency’ to infrastructure” (ibid: 5). The results of this project’s engagement with the theory of affordance are still to come. At present, according to my knowledge, the before mentioned Evelyn Landerer (2009) is the only anthropologist (except theorists like Ingold) who employed the concept in analysing *profili* in the context of Siberian reindeer keepers.

Landerer’s (2009) dissertation “Hunting, Walking, Reindeer Keeping” is based on empirical data collected by travelling the taiga as an apprentice of reindeer keepers and hunters in the Teteya and Kochema river valleys in the central part of Katangsky District, north of this thesis’ study region. The study explores the interrelations between *profili* – “straight clear logged lines” – trails and places of dwelling, the movement they elicit and the attitudes of people who use them. The author engages with an earlier understanding of Ingold (1992: 42 in Landerer 2009: 13), of affordances as well as with his concept of wayfaring and transport, the two modalities of human locomotion (Ingold 2007). Wayfaring *along* paths and trails means attentively perceiving and actively engaging with the immediate environment that opens up along the way and all kinds of events that occur while travelling. Transport denotes a carrying of goods and people *across* a surface from location to location towards a final destination in a way that leaves the basic natures of the involved goods and people unaffected (Ingold 2007: 76-77). These two modes of locomotion comply with different kinds of “lines”, namely paths (wayfaring) and routes (transport). I came across Landerer’s (2009) dissertation sometime after my first fieldwork in the Tokma region in autumn 2016. By then, I had already acquainted myself with Ingold’s concept and metaphor of “lines” and applied this concept in one of my seminar papers (2016).

Landerer (2009) argues that movement and attitude of a traveller is determined by the affordances of places and trails and their “agency”. Relativising Ingold’s approach, the author moves attention from the travelling person to the agency trails and places display. Trails and places not only have inherent potential that encourages or discourages one to move on or to stay, but “compel” or “demand” one of the two modes of moving distinguished by Ingold – wayfaring or transport. Landerer goes on to argue that the agency of trails is dynamic and can change over time. A newly logged straight *profil’* encourages movement without the need to

engage much with the natural environment (forest, bogs, and underbrush) that borders it, which would comply with Ingold's definition of transport. *Profili* become overgrown with brush relatively fast and making the way along such kind of *profili* demands a high level of attention and bodily engagement since they need to be cleaned, which would comply with a wayfaring mode of movement.

It is tempting to attribute certain mobility-facilitating features to one of the two modalities of locomotion as distinguished by Ingold. Wayfaring overall does seem to correspond first of all with paths, tracks and other physical features that demand movement at lower speed and require higher attention because they are windy, uneven, etc. Ingold (2007) demonstrates this with the example of the Orochon people in the Russian Far East, who draw their livelihood from hunting wild reindeer. Riding to the hunt along paths on the saddled backs of domestic reindeer occurs in a manner of wayfaring, the path represents a "line of wayfaring". Driving a sledge on a sledge-path (different type of path) to collect the kill in the most direct and shortest possible way between the camp site and the location of the kill, a particular point of destination, represents a "line of transport". This, however, is not to be put absolutely, as Ingold illustrates upon another ethnographic case and according to my own observation in the field. Ingold (2007) demonstrates that also cars or other types of machines like motor-bikes, all-terrain vehicles or snowmobiles can be "turned into an organ of wayfaring" (ibid: 77-78). Summarising, the distinctive feature between different modes of movement is not a matter of involved technology, but the "intimate bond that in wayfaring couples locomotion and perception" (ibid: 78).

#### *Applying a relational affordance approach in this thesis*

This thesis understands affordances as the *potentialities* seismic lines contain as a feature of a taiga landscape altered through industrial development, which are perceived and evaluated (Knappett 2004) by the hunters of the Tokma village in the course of their mobility-intense activities. Moving under the free sky of a vast land in harsh climatic conditions and extreme temperatures, Tokma hunters are exposed to intensive sensual experiences and need to continuously and attentively engage with the properties of the environment in which they move to make the right decisions for reasons of personal security as well as to succeed in hunting and trapping.

The environment, which is natural and “built” (in the sense of artificially altered) at the same time, and which is in a constant process of change (even though this might not be detectable for humans), contains changing information that is perceived through seeing, smelling, hearing, and sensing of touch as the hunter moves across various kinds of ground, of different types of trails (paths, trails, seismic lines, etc.), and evaluated according to his current needs and interests. I see this information as intrinsic in the environmental setting, but changeable and not as invariant as the properties Gibson (1979) suggested. Under the impact of naturally or artificially induced processes, these properties of an environment are continuously changing, in more or less detectable time sequences, often hardly or not at all noticeable for humans. These properties are perceived by a human or other-than-human and evaluated in response to a situation that occurs at a particular time. If the property is supportive to the current endeavour of the perceiver, he or she will respond to it. However, if this property is not affording actual needs, it still contains the potential that can be remembered to be utilised at another time – if the property is still such that it offers the same affordance and has not changed in the meantime into another quality that possibly affords another action. This is why some animals come back to the same places to breed, or give birth, often over years, or migrate along the same routes. When the necessary affordances of these places or routes are changing so that they don’t meet the animals’ needs any more, they change place, find another route. This view complies with Ingold’s (2018, 2000) understanding of an environment that is always in the process of becoming. The affordances of seismic lines as a part of the landscape are first and foremost the *opportunities* and *constraints* by which these routes support or hamper the hunters’ movements facilitated by snowmobiles and their ambitions as I demonstrate in chapter 2.3. (Seismic lines and their affordances).

Employing a relational approach towards affordances, which implies that the affordances of the environment and its objects become discernible through sensual activity of a perceiver, I see Tokma hunters *enmeshed* with the “land-scape” (Hastrup 2009). Humans as bodily beings need air, light, water and food, touch (and sound in order to learn speaking). Through their sensual perception humans are per se entangled with the world, which is simultaneously natural and built since – as mutually constitutive components of the same world – humans make an impact on the environment and the environment makes an impact on humans (Ingold 2000). Out of his or her bodily being-in-the-world, a human perceives the affordances of his or her surrounding and evaluates them (Knappett 2004) according

to his or her needs, and acts on them. The opportunities that open up with straight, clear-cut routes across an unruly taiga landscape generate new needs to make use of these opportunities. As such, affordances are productive and stimulate re-action. There is a constant interplay between the affordances of the environment in a given situation and the demands that are generated and reacted upon or not. I explore this re-action on affordances when discussing the Tokma hunters' entanglements with snowmobiles, fuel and industrial stakeholders in chapter 2.4. (The wider implications of seismic lines).

## 1.5. Methodology

### 1.5.1. Master's thesis in the frame of the research project CoRe

In 2015, the research project *Configurations of Remoteness (CoRe): Entanglements of Humans and Transportation Infrastructure in the Baikal-Amur Mainline (BAM) Region*, led by Univ.Prof. Dr. Peter Schweitzer from the Department of Social and Cultural Anthropology at the University of Vienna was launched<sup>8</sup>. The research design of the project included three interrelated components and sets of field sites with different research foci, and one crosscutting component, which had a unifying role. In autumn 2015, I was invited by Dr. Gertrude Saxinger, the research collaborator responsible for Component B *Mobility Infrastructure and Participation in the Extractive Industry*, to join the project as a student collaborator. My background as a trained historian (in Eastern European and Russian history), who speaks Russian and has some years of professional experience in journalism, project management and living abroad may have been a decisive factor for this decision. CoRe set out to address the ways in which humans and transportation infrastructure are entangled under conditions of remoteness in the case of the Baikal-Amur Mainline (BAM) (Schweitzer et al. 2014). The BAM is Russia's longest northernmost railroad, crossing six federal subjects, and is considered the largest modernisation and industrial project of the late socialism. Besides towns and settlements located on the railways, research should be conducted in places that are not directly connected with the railroad. Tokma, a remote village located in linear distance some 220 kilometres north of the closest BAM station in Ust'-Kut, is such a place. Through the involvement of Natal'ya Krasnoshtanova, a researcher at the V. B. Sochava Institute of Geography of the Siberian Branch of the Russian Academy of Sciences, who was born in Tokma and whose parents still live(d) there, access to Tokma could be gained for CoRe researchers.

My involvement in the CoRe project was largely decisive for the course my studies took and the thematic, theoretical and methodological orientations I followed in developing my Master's thesis project. Being involved in a research project much larger than my own MA project was highly interesting and beneficial for me in many respects. In return, I have actively contributed to the project's research and gaining

---

<sup>8</sup> CoRe was funded by the Austrian Science Fund (FWF): P27525-G22.

research results<sup>9</sup> as well as to the dissemination of (preliminary) research results either on the project's website<sup>10</sup> or the cartographic storytelling blog *Life of BAM*<sup>11</sup>, or in print<sup>12</sup> The research plan of Component B foresaw the production of a publication to bring the research results back to the field. Together with my fieldwork partner Natalya Krasnoshtanova, I intensively worked on this booklet<sup>13</sup>. After a delay due to the Covid-19 pandemic, it could finally be handed out to the people in Tokma in August 2021. The greatest challenge I was facing throughout my involvement in CoRe was a shortage of time, since I had to reconcile my work for the project with my studies in the MA program and a regular job in an NGO.

#### 1.5.2. Research design, research field, research strategy

Although my MA project has been closely entangled with the CoRe project, the thesis is the genuine work of my own. Within the broader framework of CoRe, I carved out my own research project: I defined my research problem and topic, formulated research questions and constructed the field to answer my research questions.

The overall research process I was involved in can be divided into three stages: the period up to and including the first fieldwork, which I conducted in September 2016 together with geographer Natal'ya Krasnoshtanova, our aims being to get more clarity about the actual research field for Component B of CoRe, build up relations, and collect quantitative data through the CoRe survey (Sancho-Reinoso et al. 2022) as well as qualitative data from four different field sites; stage two comprised the period after fieldwork one and up to and including the second fieldwork that I carried out (except the travel there) alone, in late winter 2018 - it was not until the second fieldwork that my Master's thesis project took on shape; the third stage comprised the time after the second fieldwork including writing up the Master's thesis. A third fieldwork was planned to take place in summer 2020 to present the research results to the studied communities and bring a brochure on Tokma to the village to give something back to the community, although, due to Covid-19 pandemic, this fieldwork had to be cancelled.

---

<sup>9</sup> Illmeier and Krasnoshtanova 2022; Sancho-Reinoso et al 2022; Saxinger, Krasnoshtanova and Illmeier 2021.

<sup>10</sup> <https://core.univie.ac.at/>

<sup>11</sup> <https://lifeofbam.com/>

<sup>12</sup> <https://us scholar.univie.ac.at/detail/o:1113516>

<sup>13</sup> <https://phaidra.univie.ac.at/detail/o:1249268>

The first stage of the research process proceeded in accordance with the design developed for Component B around the main research question, “*how does transportation infrastructure structure social inequality and inequality of spatial practices?*” This broadly formulated research interest was tackled through applying a mix of different qualitative research methodologies (participant observation, interviewing). In addition, a mobility questionnaire survey was used to gain spatial, demographic and social data from the different regions covered by CoRe. As I will outline in more detail below, my original research focus that was in accord with the overall research plan of Component B changed in response to my observations upon my entry into the field. The implications of this decision required a general re-orientation of the whole research process, including redefining the research strategy and adjusting the research design and the research field according to the new research focus. As already indicated, this was in no way a linear process.

#### *Constructing the research field*

The ethnographic “field” is not something natural or given, but is constructed in accordance with a researcher’s interest, which in turn is influenced by values of the discipline as well as by practices and traditions of the institution the researcher is affiliated with. “The field” is the geographical, the physical, as well as the social and institutional space or setting confined by defined boundaries where a selected research problem is to be studied” (Schensul and Le Compte 2013: 23). The previous methodological demand and ethnographic practice that the field has to be at a faraway place inhabited by cultural “others”, is no longer state of the art, though, this requirement seems to linger on in informal ways, as Capute (2020) critically observes.

Due to my involvement in CoRe, my first fieldwork was carried out at four field sites, which differ in terms of their demographic and socio-economic characteristics and, most importantly, in terms of their accessibility and connectivity provided by different means of transport, which was the main research focus and the reason why these places were chosen. The remote village Tokma is year-round accessible only by air-transport, the small “oil-town” Verkhnemarkovo is permanently connected by a gravel road with the administrative centre – and the third field site – Ust’-Kut on the River Lena, an important transportation hub for supply of northern settlements and industrial expansion, as well as Niya and Zvezdnyy, the once famous pioneer settlements of the BAM project located on the railways east of Ust’-Kut. Except in Zvezdnyy, where I was on my own, this fieldwork was conducted

together with my partner, geographer Natal'ya Krasnoshtanova. One of the expected outcomes of the first fieldwork was to further define which of these locations and settings (except Tokma, which was already selected) would be best suitable for more in-depth inquiry on the thematic focus of Component B of CoRe. Within this larger research field, I constructed the field of my own Master's thesis project in the Tokma village.

The research topic of this thesis evolved out of a process that I describe in the form of a narrative (*"From a bird's eye view"*) placed at the very beginning of this thesis. In this account I describe how an observation that I made on the way to my field site Tokma sparked my interest to an extent that my research focus that was originally directed to forms of outwards mobility of village residents shifted to movement patterns in the context of the local hunting and trapping economy and the involved infrastructures. A setting that represents a distinct constellation of mobility (Cresswell 2010) compared to people's travels to the distant towns in the wider region that involve other (transport) infrastructures. With this re-orientation on a topic coming from the field, I demonstrated openness towards the objects studied, which are regarded as important characteristics of qualitative research (Flick 2009: 12-15).

Originally, I had conceptualised my research field as a single-site location with the Tokma village as the local focus point, while including other places in the region that were relevant in terms of outwards mobility of people living remotely and off the BAM. Due to my changing research focus, I had to adjust the research field. Instead of the whole population of the Tokma village (65 people in 2016, 45 in 2018) and its institutions, which were all affected by the lack of permanent connectivity, albeit to different degrees, the focus shifted to the group of people that are directly confronted with new industrial infrastructural build-up in the region in the course of their daily mobility-centred practices of hunting and trapping. These were the hunters of Tokma, the majority of which being members of the local hunting commune (*Tokma Obshchina*), the only institution with direct connections to the resource companies that came to play a crucial role for local livelihoods, as my thesis will demonstrate. The wider geographical scope of the field shifted from the regional centres, where airports, railway stations and the respective public administration were located, to the hunting grounds of the Tokma hunting commune, which were heavily affected by industrial roads and seismic lines, that which had become my main research interest.

Hunting and trapping in Tokma is an occupation that is exclusively practiced by the male population. It was unclear until I was in the field for the second time, whether I would be able to accompany one or more hunters on their trips to their hunting grounds, which can last from two days to two weeks depending on different factors. This example demonstrates that it is often not possible to make straightforward decisions and plans ahead of the trip to the field, as is suggested in literature on methodology (Blaikie 2010: 13ff; Schensul and Le Compte 2013: 61ff). Equally important is the ability to flexibly adapt one's plans to the conditions one finds in the field. Because of this uncertainty, I had to develop a double strategy for the second fieldwork. If joining one or more hunters on their trips to the forest would not work out, my plan was to continue exploring people's outwards mobility by collecting data regarding the use and meaning of the winter road. This way I would broaden and deepen the existing data collection from the first fieldwork by adding new material on an infrastructure, which was not in place then, since the first fieldwork was conducted in the snow-free season (September). Then, the focus was on transport via helicopter, which I used myself to get to and away from the village. While both topics – mobility in the hunting context facilitated by seismic lines and snowmobiles and outwards mobility facilitated by helicopter and the winter road – are best explored by the same methods of participant observation and interviewing in natural social and semi-natural settings (Blaikie 2009: 21-22), they differ in regard to the data sources (see chapter on sampling).

### *Research strategy*

The research strategy of this thesis followed an inductive logic where at first data is collected, before the attempt is made to generate more general insights out of the empirical material (Blaikie 2009: 18). Based on the data that I collected in the first exploratory fieldwork, I formulated a thesis on the importance of seismic lines for Tokma hunters' mobility and livelihoods and that this meaning is ambivalent, which I tested in the second fieldwork. In response to my observations, "why" questions came up, which I tried to answer with the help of concepts offered by a large body of anthropological literature on the topics (transport) infrastructure, mobility, resource extraction, northern livelihoods and others (see chapter 1.3. Theoretical perspectives). I worked with different concepts to see whether they would prove useful in explaining the observed phenomena. As such, my research strategy also included a deductive logic and I applied to the research process both inductive and deductive strategies of knowledge production (Blaikie 2009: 81-87). As I analytically

moved back and forth from the empirical material to the theory level and from conceptual assumptions back to the empirical data, the research process proceeded in a circular order (Flick 2009: 92). The interpretation and analysis of data was an ongoing, integrated part of the processes of data collection and writing.

Since the aim of my research was to empathetically understand social change (caused by resource extraction) on the case of a particular village, by grasping the local – emic – point of view on these changes, the project complied with a humanistic positioning in social research (Salzman 2004: 366). I entered the field aware that my personal background, in terms of my individual social conditioning, my theoretical and methodological knowledge and abilities, would impact any stage of the investigation and the analytical process. By contrast, a scientific approach sets out to discover descriptive generalisations and explanatory laws about society (ibid.). Following a humanistic approach entails choosing a set of particular methods and techniques for information collection. These were participant observation and formal and informal interviewing as the most important ones; furthermore, spatial observation and interpretation and the use of maps. Having the opportunity to accompany two different hunters to their hunting grounds and stay there for two and for three days were key for my research on seismic lines and their affordances as well as with regards to their entanglements.

#### *Data sources and sampling*

Following the research plan of Component B, all inhabitants of the Tokma village were included in the sample in order to answer the research questions on *how transportation infrastructure structures social inequality and inequality of spatial practices*. In 2016, Tokma had 61 residents, out of which 53 people lived permanently in the village in 23 households. Official figures were higher and indicated a population of more than 70 persons. Two years later, the number of residents had declined due to outmigration and one resident had passed away. By then, the ratio of registered persons and those who permanently lived there was 51 to 45 persons. Given my overall research question on *“the impact of seismic lines as an infrastructure of the oil industry on the livelihoods of taiga hunters of the village Tokma”*, sampling concentrated on this particular group of the population, which represents with very few exceptions the whole male population of the village.

In 2016, *Tokma Obschina* (leaving the hunters of the village Bur out)<sup>14</sup> counted 26 members; out of them 15 men lived permanently in the village, while 11 men had their permanent residency somewhere else. The 15 hunters who lived all year round in Tokma were my main sources of information. The 11 other hunters of *Tokma Obschina* come in first and foremost during the winter hunting season, which is the time when the men spend the largest part of their time in the forest, although they regularly return to the village to get a rest, restock food supply and deal with other issues. For obvious reasons, these men were not easy to meet.

The majority of the huntsmen of Tokma were in pension age. Under the conditions of a district having the legal status of a “Far North” region, this meant that these men were 55 years or older. Only three hunters were younger and I was interested in meeting them so that their views would be represented in the sample. Except one man, all hunters had a regular income in the form of pension payments and in two cases in the form of salaries from employment at the meteorological station and the “airport”. Only in the case of a man in his 30’s, the cash income was solely based on selling sable furs.

#### *Gendered space and mobility patterns*

It was already obvious during the first fieldwork that the male population of the village would be less accessible for me than the women, who worked in the public service sector in the village administration, the medical and obstetrical station, the post office, the library, in the school and kindergarten (both closed in 2017) as well as in the grocery store (which was reduced and relocated when the salesperson moved to a town in 2017). They keep up a certain level of communal life, while the men engage in the hunting commune (*obshchina*), but are hardly seen walking in the village or at public events. It was easier to meet the women in their offices than the men, because it was unclear whether they were home or not, busy or not, etc. Calling someone up was limited to the times when electricity was available (in the morning and the evening roughly until midnight); moreover, phoning someone is not such a widespread habit. Besides these logistical issues, it was easier for me as a female researcher being there on my own to approach the women than the men. This is one of the reasons, why I had more interviews (often on issues of outward mobility) with female interlocutors during the first fieldwork. Furthermore, the

---

<sup>14</sup> This paragraph considers only the hunters of the Tokma village, leaving out the hunters of the village Bur that are also members of *Tokma Obshchina* (see chapter 2.1.).

thematic focus was different compared with the second fieldwork, when my research clearly focused on the male dominated hunting sphere.

Gaining access to the hunters was successful for a mix of reasons, which I can partly only assume: some hunters were interested in talking to me or ready to do so and this willingness had grown when I came to the village for a second time. My understanding is that people's general trust in me and my intentions had increased by then. Furthermore, being a guest of the family Krasnoshtanov surely opened some doors (I will elaborate on this relationship further below). My interest in joining hunters on their trips to their hunting grounds was a more sensitive issue than talking to them in the village. Finally, I could accompany my host as well as a hunter with unmarried status (which was not random, as I suppose) and spent three and two days with them, respectively, at their hunting grounds.

Women's scope of mobility in everyday life is largely tied to the village. However, women also move beyond village boundaries in the course of local subsistence practices. Depending on the seasons, they go to the forest and swamps for berry and mushroom picking. In the vicinity of the village, they move on their own, but to reach places farther away, they are accompanied by their husbands or sons. There are spheres of intersecting male/female spaces: men also go berry and mushroom picking, though it is not their main occupancy. In winter, many women are keen on ice-fishing, which is also a necessity to secure the food supply for the dogs, however, on their own, they don't move far from the village. As a consequence of these gendered mobility patterns linked to economic practices, my main sample included the (male) hunters who permanently lived in the village. With regards to outward oriented mobility to the towns in the wider region by helicopter or car (winter road) – my original research interest – the women were a main source of information.

### 1.5.3. Ethnographic fieldwork

Ethnographic fieldwork is the central methodological approach in social and cultural anthropology when qualitative data should be collected. Marvasti (2013) states that the strength of ethnographic techniques of observation lies in that “they allow the researcher to directly observe the many nuances and contingencies of human behaviour as they become manifest in a ‘natural setting’” (ibid: 355). The respective literature encourages the use of various different methods, both different qualitative methods (triangulation) as well as mixing qualitative and quantitative methods (Bernard 2009: 298; Blaikie 2009: 2018). Different methods are complementary to

each other and lead to a fuller picture since they allow the ethnographer the opportunity to get different perspectives on the research subject (Flick 2009: 44-45). Given that my research question that asks for the ways of how a particular kind of industrial transportation infrastructure (seismic lines) effects the livelihoods of a community engaged in subsistence hunting and sable trapping, my aim was to *observe* local practices and *explore* their meaning. The main methodological techniques to collect this kind of information were participant observation and interviewing.

Applying different methods was necessary to understand the phenomena I was investigating. It would have been impossible to engage a concept like “affordances” that are tied to perception through sensual experience (in the understanding as I use it) nor to gain insights into the entanglements between seismic lines, movement patterns, local livelihoods, snowmobiles, the hunting commune and the oil company, without doing participant observation. Likewise, I would not have understood many aspects of my observations without interviewing the hunters and getting their explanations and (emic) point of view. While interviewing could be done in the village, for participant observation of movements on seismic lines in order to sense their affordances with my own body, trips with the hunters to the forest were key. Based on the interviews which I had with hunters in the first fieldwork (in the village), I formulated a thesis on the ambivalent meaning of seismic lines for the inhabitants of Tokma. To test these assumptions, it was necessary to do participant observation, which was possible only during fieldwork in winter. Furthermore, joining the hunters in their mobile routines (during the winter hunting season) in the forest were the best possible setting for interviews and talks on the very topics of my research interest – affordances of seismic lines and their wider implications.

Different theoretical perspectives have assessed the role of the individual ethnographer in the research process and his or her impact on its results differently. In the second half of the 20<sup>th</sup> century, the understanding of the role of the ethnographer as a “neutral research tool” (DeWalt/DeWalt 2000: 278) began to be critically questioned, shifting towards an understanding that takes the individual person into account. Today, it seems to be common ground in contemporary methodological reasoning that all observations as well as their interpretation are filtered at least to some degree by the researchers’ (changing) understanding of the object of the observations and his or her projections and biases. The ethnographer is expected to develop the necessary awareness about this and be self-reflexive

throughout all stages of the research process. Biases are unavoidable, but have to be reflected upon and made transparent (DeWalt/DeWalt 2000; Marvasti 2013; Bernard 2006). On a more technical-methodological level the argument goes that through applying different methods personal biases can be overcome (DeWalt/DeWalt 2000: 287-290).

### *Seasonality*

Entanglements of humans and transportation infrastructures under conditions of remoteness of a high latitude region was the overall research topic of the CoRe project and as such of my project as well. Seasonality was therefore not only an important practical issue, but an analytical category that had to be given sufficient attention in the preparatory phase. The two fieldworks were scheduled to take place in different seasons – in autumn, a still snow free season, and in winter. This way different means of transport and transportation infrastructure could be used and experienced. Another important consideration was related to the hunters' availability in the village which was linked to the hunting seasons and schedule. The second fieldwork had to be scheduled towards the end of the hunting season, but at a time when it was still possible to use the snowmobile to drive the seismic lines, hence it had to be scheduled for late winter. End of February, beginning of March was also the right season in terms of milder temperatures. Severe frost in high winter can make fieldwork impossible. Furthermore, my travels to Tokma had to be reconciled with transport opportunities (helicopter schedules and privately organized car transport), available seats in the helicopter as well as with accommodation possibilities and food resources in the village. None of this was a given.

### *First Fieldwork in Tokma*

The first fieldwork was carried out in the second half of September 2016. From the capital city Irkutsk, my partner Natal'ya Krasnoshtanova and her little son Zhenya and I took a plane from the local air transportation company Angara to Kirensk, the administrative centre of the district of the same name. From there, we took a regular helicopter flight to Tokma. The schedules of air transportation on the one hand, and of the overall research plan for this fieldwork on the other hand, were decisive for the duration of our stay in Tokma. We stayed there from September, 18 to October 1, 2016 (14 days), before the helicopter would again come to the village. Due to bad sight caused by extensive forest fires that came as close as eight kilometres to the

village, the flight was delayed for two days. Since the parents of the village's shopkeeper were absent for some time, she and her ten years old son agreed to host me.

#### *Second fieldwork in Tokma*

In 2018, fieldwork was carried out only in Tokma with an emphasis on data collection for my Master's thesis. Except for the trip itself to Tokma and the first couple of days, I stayed on my own in the village. As already explained earlier, two research topics were on my mind when I entered the field. Depending on the opportunities that would open up, I wanted to follow one or the other topic related to different realms of local forms of mobilities and related transportation infrastructures – either mobile practices of the subsistence economy with a focus on industrial transportation infrastructures (seismic lines), or deepening the investigation of local forms of outward mobilities and broadening the data base collected during the first fieldwork by adding data from the use of the winter road. This time, Tokma was approached on the ground by use of a private car transport along a confusing network of forest roads<sup>15</sup>. I stayed for 15 days in Tokma, from February, 22 until March, 9, 2018. This time I was hosted by the family Krasnoshtanov.

#### 1.5.4. Participant observation

Participant observation is regarded as “quintessential qualitative method” (DeWalt/DeWalt 2000: 287) and the methodological hallmark of social and cultural anthropology. The original blueprint for this method was formulated by Bronislaw Malinowski (1922), who set rules concerning the duration of the ethnographers' stay in the field (1 year minimum), the (decent) level of knowledge of local language and concerning questions of personal involvement in activities and ordinary life of local people through participant observation. These rules have been regarded as standard of the discipline to this today, though in a less rigid way. As Carrithers (2007) states “fieldwork can take as many forms as there are anthropologists, projects, and circumstances” (ibid: 229).

Literature differentiates between different levels of personal involvement of the ethnographer with the research field in respect to participation – ranging from non-participatory over moderate and active to complete participation – and emotional

---

<sup>15</sup> Illmeier, G. and Krasnashtanova, N. (2018) 'Driving to Tokma, 'Life of BAM, Episode 4. Online. [www.lifeofbam.com](http://www.lifeofbam.com)

involvement (DeWalt/DeWalt 2000: 262-263). As a methodological strategy and due to my personal inclination, and because I was enthusiastic about the project, I have tended towards intensive personal interaction with the field. I was also aware that this approach can bring about pitfalls since it involves *nolens volens* expectations on the side of the ethnographer and on that of the informants (DeWalt/DeWalt 2000). I think I managed to avoid such disappointments, but I realized that it is necessary to reflect on this issue while being in the field and navigate things in the desired direction. The level of my integration was dynamic, changing over time and was different in regards to different people and settings within the research field. I strived for active participation to an extent that seemed appropriate for my role and in accordance with the mostly tacit rules of local behaviour, though I challenged these rules to a certain extent, for instance, when I was required to accompany a hunter to his hunting ground.

Participant observation contains the paradox that “the observer becomes a participant in what is observed” (DeWalt/DeWalt 2000: 263), which implies a tension between getting involved as a participant and staying apart as an observer. I entered the field with the understanding that ethnographic fieldwork can only succeed when the researcher attempts to build up a rapport and develop empathic understanding for the people observed. Marvasti (2013) regards rapport as a “key component of observational research” (ibid: 357), but reminds the reader that an unreflective affinity with the people in the field (“going native”) can bring bias to the analyses. For my thesis the most relevant was the participant observations that I could do when accompanying hunters on their trips to their hunting grounds and stay there with them. I had such an opportunity on three occasions in 2018: one day trip to a hunting cabin, one trip that lasted two days and another trip with another hunter that lasted three days.

In 2016, I could do participant observation of some activities related to the subsistence activities. I accompanied hunters twice on their motorboats to the parts of the River Nepa where they fish and trap muskrat, which is used as bait for sable. Once, I walked with a hunter along paths to a lake in the vicinity of the village, where certain kinds of goose are hunted during the migrating seasons of the birds in May and August. I enjoyed very much a day of berry picking in the – then dry – swamps in the vicinity of the village with two female residents and a boy.

Besides participant observation of subsistence practices, which are all mobile practices involving different infrastructures (paths, roads, seismic lines, boats, snowmobiles etc.), I could observe everyday life in the village. I participated in several public events on the occasion of official holidays (dedicated to educators, to women, to “older people”), which were celebrated by the women in the school building and the library, and one event in the village’s cultural house (which was already more or less permanently closed) with songs, games and fun competitions. Other interesting events in which I participated were the arrivals of the helicopter and the visit from the head of the administration of the Katangsky District, who visits the village once a year in late winter (however, it does not work out every year that he comes as far as Tokma, which is the southern most village of the long-stretched District, due to bad weather or road conditions).

#### 1.5.5. My role in the field

Against the background of the CoRe project and my Master’s thesis project, I entered the field in multiple roles: as the representative of a research project based at a University of a foreign country and as a student, yet, confusingly, a student of an age that is beyond typical student’s age. This mix of roles, both linked to different social statuses, was not always easy to handle.

In Russia, a foreigner’s interest in issues of transport and infrastructure, which are associated with the state and the military sphere, is generally met with suspicion. This legacy of the Cold War has been actively fostered by the ruling political elite over the last years. I tried to disperse mistrust by being fully open and transparent in regard to the project and to myself as a person. I could build up trustful relationships to a number of people and had friendly and respectful relations to others. Most of the people were willing to talk to me, except one hunter for reasons I don’t know. Some people simply didn’t seem interested in me and my projects.

My relations with the Krasnoshtanov family affected my role in the field and were in several ways decisive for the research process. I entered the field as a research partner of their daughter and we gave a full explanation of the research goals and purposes of the project orally as well as through information leaflets and in one public presentation. Yet, more relevant for gaining access and social acceptance was, I believe, the fact that I was a guest of a local family, who is a respected member of the community and that they actively supported the research project. They were my kind hosts and key informants (among others). Such a relationship involves a

certain level of dependency that contains methodological, practical and relational challenges. For instance, I was not under full control over planning my daily schedule. At times, the information which was shared with me seemed to a certain extent pre-selected according to their understanding of my research interest or due to other considerations I wasn't aware of. This included information on the presence or schedules of certain people in the village and possibilities to meet them. With time, the understanding of key informants, and the village's population in general, for my research topic that focused on the male-dominated sphere of hunting and trapping increased. Nevertheless, there were – well intentioned – attempts to direct my interest towards other aspects of social life that are closer interlinked with the female spheres of life. There were some occasions when I was drawn into social interactions that were not directly related to my research agenda, when I would have preferred to use the short time available otherwise. However, being on good terms with my hosts and informants had priority for me and I tried to meet their expectations as much as possible.

Being with Natal'ya, and without her in the village where she was born, made a big difference in several respects. In the first fieldwork, she was often in the role of mediating between me and the field, which is natural in the early phase of fieldwork. Being there on my own, more direct communication and social interaction between me and village dwellers and the field as well as more intensive experiences by myself were possible. When it comes to language, during the first fieldwork I could always refer back to Natal'ya whether I had understood things the way they were meant. I missed this amenity after she had left the village. Comparing interviewing situations, my impression was that some people were more open regarding sensitive issues when I conducted the interview alone. Critical attitudes on certain issues were expressed more openly towards me alone, since I was in a more neutral position, while Natal'ya belonged to the community as daughter of one of the senior hunters of the hunting commune (*obshchina*). Being a foreigner was, in this respect, an advantage.

#### 1.5.6. Field notes

Recording field notes is a critical part of the ethnographic methodology. Literature urges future-to-be ethnographers to cultivate writing down field notes as daily practice (Le Compte, Schensul 1999: 47-49; DeWalt/DeWalt 2000: 270-272). This rule is very true, however I had difficulties living up to it in both field works, but particularly in the second one. One of the reasons for this was that in winter, there

are very few places that are heated in a Siberian village like Tokma. During the day, this is the *povarka or povarnya*, the kitchen, which is a separate, smaller building next to the house where practically all life is being lived except sleeping, for which the house is used, and which only gets heated in the evening. Thus, there was no opportunity to seclude myself behind a closed door to write up field notes. Another complicating factor was limited electricity, which was turned off at midnight as well as physical constraints after a day in the field at low temperatures, which can be very exhausting. In both fieldworks, but particularly during the second fieldwork, I felt under constant time pressure because of the relatively short time that I could stay in the village, which was determined above all by transportation opportunities. This meant that I had a full schedule and was constantly tempted to use the time for collecting information instead of recording field notes. Many things happened in a short period of time and it was impossible to catch up with writing field notes into protocols (Breidenstein et al. 2015: 97-102), which is a time consuming process because it is already an “interpretative process” (Wolfinger 2002: 88). Field notes are “similar data and analysis” (DeWalt/DeWalt 2000: 271), “a construction of the ethnographer and part of the process of analysis” (ibid: 271).

I strived to write down jottings while I did participant observation or interviews, if this was possible. During the forest trips, even taking jottings was difficult due to the low temperatures, and because we were mostly on the move with only several short stops when the hunter checked the traps, which I had to observe. I was either sitting behind the hunter on the snowmobile, or in a sledge which is usually used to transport material. The hunter had kindly equipped it with a chest I could sit on (but standing was more fun) and a mount I could hold on to. Due to several layers of clothes and gloves, it was difficult to take off the outer pair of gloves to write something down. I have tried to counter this difficulty through photographing, which worked a bit better. The advantage of photographing was that I could constantly watch what was happening and I could catch the scene only by pressing the button. Writing something down would have taken much longer and there was no time for it. The pictures I took fill in the gaps in my notes; besides that, they are genuine data in themselves. I used them to reconstruct routes and relate them to time and distance since the camera automatically documented the time. Furthermore, they are valuable due to their ability to stimulate memories and make the situation they depict come to life again.

I used two different types of notebooks: a log for organisational notes and a field diary for all other notes. In addition, I always carried a small notebook in one of my jacket pockets, where I could jot something down. I differentiated between descriptive, analytical (memos) and methodological notes (Bernard 2006: 395-398). In the evenings, I strived to develop my jottings or notes from the day into more comprehensive field notes or protocols (Breidenstein et al. 2015: 97-102) either in my diary or in my laptop. Even though this was not always possible, I revised my notes on daily basis and tried to complete them. I extensively wrote up field notes immediately after I had left the field, when I had some time in the towns (Ust'-Kut and Irkutsk) ahead of my flight back home.

#### 1.5.7. Interviews

Informal interviews are the type of interview that literature recommends for the early, exploratory, phase of fieldwork, when the ethnographer has to build up relations and get a basic understanding of what is going on (Schensul and LeCompte 2013). Yet, Bernard (ibid: 211) reminds us that informal interviews are a major ethnographic technique of information collection and should not be mistaken as 'lightweight'. At a later stage in the research process this method is used to build greater rapport and uncover new topics (ibid: 211).

Conducting the mobility survey and interviews provided good possibilities to involve people in informal conversations. It happened that interesting information was shared only when the recorder was turned off. Since I lived together with key informants in a confined space, there were theoretically plenty of opportunities to involve them into informal conversations. Practically, however, there were limits I was keen to respect, for instance when people were busy going about their daily activities, or when they wanted a rest or it was simply not the right moment. Within the limits of politeness I tried to make use of all opportunities for informal talks with my hosts and all other people I had a chance to converse with.

In 2016, I entered the interview situations with interview guides on the topic of Component B of the CoRe project – the historic and present mobile practices related to different spheres of life (work, hunting, education, vocational training, administrative, and medical issues). The questions on the interview guides were general and broad and these exploratory interviews were conducted as open-ended interviews (Schensul, LeCompte 2013: 134-36). In accordance with the different sectors mentioned before, that had been defined ahead of fieldwork, several

interviews were designed as expert interviews. In two cases, we interviewed the same person twice, once in her official function and secondly as private person. These latter interviews were more narrative and biographical, not the least because we were interested in also getting a historic perspective on the research topics.

The difficulty with open-ended narrative interviews lies in that the interviewee can get easily carried away by his or her memories and moves in directions that are not relevant for the research question (Flick 2009: 164-165). It is the delicate task of the interviewer to lead the person back to the main topic without causing too much confusion. On the other hand, this type of interview can bring up new topics or new facets of the topic that had been overlooked. These can be exciting moments. In several interviews, my interview partners surprisingly raised unexpected issues that provided me with interesting contextual information.

In 2016, two in-depth interviews with two hunters were conducted. One was an expert interview with the head of the Tokma hunting commune (*obshchina*). This interview was crucial to gain insights into how hunting is structured and organized, and regarding the relations of the hunting commune with this company – the interviewee being the main official interlocutor of Irkutsk Oil Company (INK). Five other exploratory interviews were conducted with hunters but not recorded.

During the second fieldwork in 2018, the investigation that I carried out was more focused (Spradley 1980 in Flick 2009: 227). The aim of interviewing was above all to gain insights into transport infrastructures used on the local level and their affordances as well as their wider socio-technical entanglements. The interviews were mostly semi-structured, but I handled the interview guide flexibly and tried to modify it whenever new questions came up or I had gained insights from (participant) observations, informal talks or other interviews. When I incorporated new aspects into the interviews, the challenge was to not let my main interest get out of sight.

From the formal and informal interviews that I carried out on this topic, all but one were recorded. The latter type of interviews were ethnographic interviews, since they were conducted during the two trips with two different hunters to their hunting grounds. These interviews were interrupted several times, when the hunters heated the oven, fed the dogs or had other immediate things to do before they continued the conversation. I count these groups of shorter recordings as one interview each.

The sampling of interviewees from among members of the hunting commune was largely determined by practical issues. I talked to all those who were available to me, meaning they were there at the right time in the village and at home, and who were willing to give me an interview (besides the ethnographic interviews). Overall, in both fieldworks, 16 interviews were conducted with eight different representatives of the Tokma hunting commune; five formal and recorded, four formal and non-recorded and two recorded ethnographic interviews as well as five informal interviews (not counted are other shorter talks).

On forms of mobilities in the realm of outward travels facilitated by air transport and the winter road, 15 formal interviews were recorded in addition to non-recorded formal and informal interviews.

#### 1.5.8. Other sorts of data

##### *Photos*

In all stages of the research process, I used photographing and photos in different ways and for different purposes. As mentioned earlier, photographing was an important tool for collection of information in situations where note taking was difficult. As such, the photos were taken to fulfil the same function as field notes – documenting observations. In this respect they are a genuine form and source of data with the main purpose being to complement other information and get other perspectives on the issues under observation. As with data in the form of text, photos also need to be understood not as “mere reproductions of reality but as presentations of reality” (Flick 2009: 240), which can be perceived and interpreted differently. Since pictures have a “high iconic quality” (ibid.), they can help to activate one’s memories more than field notes can. In this way I used photos to fill gaps in my written documentation of data.

##### *Secondary sources*

In the field, I could gather various historical data and other materials, which proved to be important secondary sources for my research:

- Chronicle of Tokma: “Historical reference of the Tokma village council” (Istoricheskaya spravka] from Tokma Administration
- Different kinds of maps:
  - o from *Tokma Obshchina* indicating hunting grounds

- from the company GEOTECH indicating the establishment of seismic lines in particular areas
- geographical maps
- Drawings from informants illustrating certain information
- Historic newspaper articles and other print materials from the Tokma library
- Contents of books on trapping and the Russian snowmobile Buran shown to me by informants

Before and after my fieldworks, I searched online for secondary data on various topics with a geographical focus on the Katangsky District, or – if such data was not available, as was often the case – on neighbouring districts (Kirensk, Ust'-Kut) or on the Irkutsk Province as a whole. I was interested in demographic and socio-economic data, issues of transport and connectivity, resource extraction (technical, social, legal issues), legislation on indigeneity in the Russian Federation, hunting, environmental protection, forest fires, etc. On the Katangsky District very little information is available online; the main source of public information is the official website of the District's administration.

#### *Tertiary sources*

The publication of research results of several expeditions that had been carried out in the second half of the 1920s to a region covering parts of today's Katangsky, Kirensk and Ust-Kut Districts represents a highly interesting historical source, which I used to gain information on issues of mobility and transport in my study region from that early Soviet period. The volume authored by the head and participants of the expedition Kopylov I.P., Pogudin A.A. and Romanov N.Ya was edited by Sirina A. A. and Ragulina M.B. (2009).

#### *Archival documents*

After returning from the field in 2018, I visited the State Archive of Irkutsk Province (GAIO) to search for historic documentation on the build-up of transport infrastructure and mobility regimes in my study region in the 20<sup>th</sup> century. Although, the archival research was not carried out very systematically due to a lack of time, I found interesting documents on Tokma and other places in the study region from different periods of Soviet rule (see Bibliography). Through this secondary research, another sort of data entered into this thesis, although it could only be integrated in parts.

### 1.5.9. Data processing and analysis

I have captured my observations from two ethnographic fieldworks in various forms. These were field notes (including memos), partly handwritten (in field diaries), partly further developed into protocols (in electronic files), drawings and photo material. Together with interviews (in Russian language), primary historical sources, as well as maps, official documents, legislation and other material, they constituted my data base that I further processed and analysed. Theorists on anthropological methodology emphasise that observation and analysis are not two distinct processes that occur in separated modes of work, but a reflective activity throughout the whole research process, including development of the research design and the data collection (Marvasti 2013: 363). In the field, I tried to make analytical reflection of my observations and interviews a daily routine, but this was not always doable for mainly practical reasons as I described above. Still, reflecting upon what I had observed was an ongoing practice throughout the research process and both practices mutually informed each other, what Marvasti (2013) calls “a cyclical research process” (ibid: 363 following Coffey, Atkinson, 1996: 6).

Working with the qualitative data collection included the overlapping processes of data reduction, data display as well as conclusion drawing and verification (DeWalt and DeWalt (2011) in following Miles and Huberman (1994a, 1994b). The lengthy stage of processing included selecting, translating, comparing, complementing information (explication), summarising, abstracting and verifying, which continued to change the data collection. All other materials in Russian language including field notes and primary historical sources and other documents were translated by myself. Selected interviews were transcribed by Russian native speakers. I was very mindful of getting the meaning of the verbal data right and verified it by cross-checking with diverse kinds of data, by comparing it with relevant ethnographic studies or other sources, or I consulted my fieldwork partner or a friend of mine, who is a Russian native-speaker and a trained interpreter. Questions that had emerged during the first fieldwork, I could partly clarify with respondents directly when I was in the field for the second time. Throughout the thesis, I extensively display verbatim quotations, not only to back my arguments (DeWalt and DeWalt 2011: 198), but to give my interview partners a certain “presence” in the ethnographic account and to illustrate their contribution in “co-constructing” the data (e.g., Roulston 2013; Preinsack and Pot 2021: 143ff). Furthermore, I wanted to provide the reader with the pleasure of reading verbatim quotations.

Coding was the main technique that I employed in making sense of the verbal data from interviews. Hence, the analytical process evolved within the conceptual framework of the “Grounded Theory” model, developed by Anselm Strauss and Barney Glaser (Strauss and Corbin 1996; Titscher et al. 1998). This analytical method involves inductive, interpretative and iterative processes in order to come from the specific data of an empirical case to more general insights. Codes – names or labels assigned to pieces of text – are understood as representing a more abstract concept for something that is inherent in the text itself. This way, layers of meaning emerge that are implicit in the data material stemming from (mainly) conversations (ibid.). In technical terms, the analytical process was supported by the use of the software program MaxQDa. I conducted several rounds of coding, beginning with “open coding”, for development of more focused codes in accordance with the research questions and attempting to gradually reach a higher level of abstraction (Prainsack and Pot 2021). This included reducing the high number of codes that emerged from previous rounds of inquiries and condensing them. Through open coding I made sure to capture ideas, which I might have overlooked otherwise. Furthermore, I systematically read the texts for “in-vivo codes” to identify themes and concepts that are used by the people in the field in order to even stronger ground my analyses in the lived reality of the people under study (Strauss and Corbin 1996: 50). With the growing amount of data that I processed, codes and categories that had already emerged had to be reorganised and reclassified in the light of new “ideas” that were extracted from the newly added text. Besides coding interview data, analytical field notes, memos (longer, more processed analytical notes), historical records, and cartographic material, all were sorted and related to each other, compared, verified and classified. Other sorts of data were equally critically inquired. The whole collection of data was reflected in light of prior research and theory. Through this intensive process of engaging with the data, themes were generated that over time modified my research questions, formed the basis for my arguments and structured my thesis.

## 2. FINDINGS

### 2.1. Contextualizing the research field

#### 2.1.1. A natural-social landscape

In public discourse, the Katangsky District is discussed as the most northern, the most remote and the least developed district of the Irkutsk Province in Eastern Siberia. Due to the harsh conditions of a strongly continental climate and general low accessibility, the district is classified as “Territory of Far North”. Residents of regions with this status enjoy higher salaries, longer vacations, lower pension age, and reduced prices for transport and other benefits as compensation for harder living conditions. Less than 4000 people live in 13 settlements that are scattered over an extensive long-stretched territory of roughly 140,000 square kilometres traversed by the Lower Tunguska River (*Nizhnaya Tunguska*) over 1,500 kilometres from south to north (Administration of Katangsky District 2014). The many shift workers, the majority of which are long-term commuters from different parts of Russia and the former Soviet Republics, who work on the oil and logging fields in the district do not appear in official statistics.

The village Tokma, on the Nepa River, a tributary to the Lower Tunguska River, is located in the very south of the Katangsky District. The rather flat land of the Central Siberian Plateau is part of the boreal forest zone (*taiga*). Most hydronyms and toponyms originate in the language of the indigenous Evenki that belongs to the Tungus-Manchurian group of the Altai language family. River systems occupy a central place in the culture of the (former) nomadic reindeer keepers and hunters and have served as important landmarks and transportation routes. The village Tokma is named after a creek that flows into Nepa River, a place where Evenki used to hold clan meetings (*suglany*).

The headwaters of the Lower Tunguska basin, which is home to the people of Tokma, is characterised by a waving landscape with flat lowlands and low hills and ridges and innumerable rivers, swamps and lakes. The terrain and vegetation cover is relevant to the ways how people have been organising their movements in this landscape. Despite a certain homogeneity, the vegetation alternates rather quickly. Stretches of dark coniferous and mixed forest (spruce, pine, larch) change with light fields of birch, extensive bogs with dry places covered only with moss called “tundra”. Past forest fires have left burned fields of charred remains of trees that

stick up into the air. The large area that was destroyed by an immense wildfire half a century ago (in 1969 E.K.) is in this zone of extreme climate, covered with no more than bushes and small broad-leafed trees. It is a multifaceted natural-human landscape (e.g., Hastrup 2017; Snead et al. 2009) full of stories and memories of the people who have dwelled here in the past and present. One of the narratives that inhabit this landscape is that of a snowmobile breakdown, when the hunter had to walk 45 kilometres back to the village in wet, heavy snow, which did not favour the use of skis and only allowed small steps to make the entire journey. The man left his gun behind for it was too heavy to carry with him (E.K.), adding that he would not dare to do so again due to the danger of bears whose hibernation becomes increasingly disturbed by industrial activities. Among older memories that are placed in this landscape are those of the graves of shamans (V.N., Z.N.). In recent years, straight clear-cut routes (seismic lines), corporate roads and logged fields have become familiar features of a landscape that is being changed through oil extraction and industrial logging. Spruce and Siberian larch are the types of wood that are harvested most of all in the Tokma region. Due to the clear-cut logging method, large amounts of wooden debris is left on the logging sites, which significantly increases the danger of wildfire (Kukavskaya et al. 2013). Today, the activities and infrastructures of the industries have come to feature prominently in the stories and memories that inhabit the landscape of the Tokma region.

### 2.1.2. The village Tokma

Different groups of colonisers arrived in the area of the Katangsky District in the late 17<sup>th</sup> century. Borrowing from the rivers, they called the nomadic reindeer herders and hunters that they encountered “Tungus”, while the Katanga Evenkis call(ed) themselves “ile”, which means “human beings” (Sirina 2006: 2). The Soviet state renamed the Tungus people Evenki. According to the classification system of the Russian Federation, Evenki are currently one of 40 (Rohr 2014) so called “Indigenous small-numbered peoples of the North, Siberia and the Far East of the Russian Federation” (*Korennyye malochislennyye narody Severa, Sibiri i Dal'nego Vostoka Rossiyskoy Federatsii – KMN*)<sup>16</sup> (Rohr 2014; Donahoe et al. 2008). Today, only a few families in the northern part of the district still lead a nomadic or semi-nomadic life as reindeer keepers and hunters (e.g., Landerer 2009). The population of the southern part of the district has been characterised by more intensive

---

<sup>16</sup> Overall, 45 peoples are officially recognized as “indigenous small-numbered peoples of the Russian Federation” (Rohr 2014).

processes of assimilation due to 300 years of mutual impact between indigenous people and (mostly) Slavic settlers. Hunting has been the main factor uniting peoples with different cultural traits across time (Sirina 2010; 2006: 4).

As mentioned earlier, the place where Tokma developed into a Soviet settlement was not a new foundation of the early Soviet administration, but a place where the Evenki clans of the area used to hold clan ‘assemblies’ (*suglany*) (Sirina 2006: 74). In the early Soviet period, the Evenki campsite (*stoybishche*) was developed into the “Kolkhoz village Tokma” (ibid.)<sup>17</sup>. Up to the early 1960s, only a few (Russian) families permanently lived in Tokma (O.S.; P.F.). During the course of reinforced industrialisation of the North over the following decades, “newcomers” (*priezzhie*) from other parts of the Soviet empire moved in and quickly outnumbered the native population (ibid: 50ff). Back in the 1980s, Tokma was thought of as a flourishing settlement administered by a “village council” (*sel’skiy Sovet*). It was home to more than 200 people of diverse ethnic backgrounds, including Evenki, Russians – descendants of both old-settlers (*starozhily*) and newcomers (*priezzhie*) – Ukrainians, Tatars and others. The Soviet state was embodied by the local branch of the state hunting enterprise (*promkhoz*) that exercised (full) control over the economic and social life in the village according to a communist socio-economic blueprint<sup>18</sup>. The role of these Soviet institutions (*promkhozy* or *sovkhozy* – state enterprises) were appropriately labelled by scholars as an example of a “total social institution” (Stammler 2002: 60). Local narratives about life, organised by Soviet institutions according to Soviet principles that are publicly displayed by the residents of Tokma, are largely positive. There had never been a permanent road in place, but people were well connected to other settlements and district centres through state subsidized air transport that flew small airplanes regularly several times a week. Tokma inhabitants felt well connected with other places at that time (author’s fieldnotes; see also: Krasnoshtanova, Illmeier and Saxinger 2021).

When top-down attempts to reform the Soviet state (*perestroyka*) had failed and the Soviet Union disintegrated in 1991, remote northern populations had already

---

<sup>17</sup> Interestingly, the historical chronicle of Tokma does not mention the term *kolkhoz*. It only contains information about other, less rigorous, types of collective production units, such as *PPO* (*prosteishee proizvodstvennoe obshchestvo*), “simplest production association”, which was succeeded by *Promartel’* (*promyslovaya artel’*) “production artel’” that was reorganized to a *promkhoz* in 1965 (*Istoricheskaya spravka*).

<sup>18</sup> The assumption of overall social control by a “mighty” Soviet state was challenged by Ssorin-Chaikov (2003).

become fully dependent on state subsidies and services. The end of the centrally planned economy brought a drastic decline of living standards, motivating a significant amount of the population to leave the district (e.g., Campbell 2003; Vorob'ev 2004). People who moved in late were often the first to moved out in the 1990s, when villages like Tokma suddenly became isolated places due to sharply cut public transport services. Since then, demographic figures have continuously dropped from 230 in the early 1990s, to 61 in 2016, to 45 in 2018, continuing to decline up to the present day<sup>19</sup>. In 2016, the elementary school and the kindergarten in Tokma were still working. Both institutions closed down in the following year, when the families with the last children of the village moved to towns in search of better educational and job opportunities. The ethnic composition of the remaining people is still diverse.

As already outlined in the introduction, gender is a relevant social category. As a result of technical, demographic and cultural processes known as “gender shift” (e.g., Habeck 2016: 150-165), the lives of men and women significantly differ in regards to their economic activities and movement practices. The male population spends a lot of time on the move in their large hunting territories, in winter on snowmobiles, in summer on motorboats for fishing on the Nepa River. The women's scope of every day mobility is largely bound to the village, where they work in the public sector. Besides the above mentioned educational institutions, these are: the village administration, the post office, the medical point (*FAP – Fel'dshersko-Akusherskiy Punkt*), the meteorological station, the library, a culture house and a grocery store. The “airport” and the diesel power plant are run by men. Depending on the season, women also move beyond village boundaries: in winter for ice-fishing, which is not only a popular leisure activity but an important food source for domestic animals (dogs, chicken); in summer and autumn for berry and mushroom picking. When the trapping season comes to an end in spring, women sometimes join their husbands to their hunting cabins to clean up. These travels signify rather extraordinary events in their lives, which they seem to enjoy (A.T.).

In 2006, during the course of administrative reforms, Tokma lost municipal status, prompting them to get together with other villages of the southern Katangsky District subordinated under Nepa municipality (*Nepskoe munitsipal'noe*

---

<sup>19</sup> I use figures provided by Tokma's medical worker giving the number of people who in fact live permanently in the village. Official numbers of registered residents, provided by Tokma administration, are slightly higher.

*obrazovanie*). The current “rural settlement Tokma” (*Tokma sel'skoe poselenie*; henceforth Tokma village) still stretches over two kilometres along “Gordeev street”, the main (and only) maintained path of the village that runs parallel to the left bank of the Nepa River, but many of the wooden houses are vacant. The street is named after the long-sitting head of the “village council” (*sel'skiy Sovet*). The wooden houses are surrounded by various other single-storey wooden buildings (the kitchen building that is separate of the main building which is mainly used for sleeping, storage buildings, the steam bath, [former] stables, and henhouses) and kitchen gardens. Except during the high-water season in spring, the river slowly passes by the village several metres below its banks. On the right bank of the river, only a few houses are still in use, along with the meteorological station, the “airport” building and landing strip and the generator house. There is no bridge or stage crossing the river. In the ice-free season, people can cross the river only via boat. Today, life in the village is very still, except in summer, when the children and grand-children of the Tokma residents move in to spend their holidays in the village.

### 2.1.3. (Wider) Tokma region

Several hundred kilometres downstream from Tokma are the villages of Bur and Ika. Even further downstream, where the Nepa River meets the Lower Tunguska River, the larger village of Nepa is located, which holds the seat of a branch office of the district administration. Together, the four villages form Nepa Municipality, inhabited by 450 people (Passport Municipal Statistics). In Soviet times, all villages were locally administered by a “village council” (*sel'skiy Sovet*), which were reorganised as village municipalities in the post-Soviet period. Tokma municipality was dissolved in 2005 in an ongoing process of downgrading remote villages in the Russian Far North and “Regions equivalent to it”, namely for financial reasons (among others), since maintaining these villages is costly. Currently, there is only a “senior specialist” and her representative who deal with administrative issues on the order of the Nepa administration. The administrative centre of the wider Katangsky District, Erbogachen, lies several hundred kilometres north and has only a formal importance to these southern villages. It is practically unreachable, since direct flight connections were cancelled in post-Soviet times.

When using the term “Tokma region” in this thesis, I refer to the area of the former Tokma Municipality that complies with the hunting territory that is allotted to Tokma hunters. Its size is roughly 1.1 million hectares. Together with land that is allotted to the hunters of the neighbouring village Bur, this vast territory constitutes

the Tokma hunting commune (*Tokma Obshchina*), as I will explain in more detail below. The notion of “wider region” I apply to an area that goes beyond the boundaries of *Tokma Obshchina*, comprising the entire southern part of the Katangsky District and the bordering areas of the neighbouring districts Kirensk and Ust'-Kut. This description of space largely represents the emic perspective on the land. In the south, the River Lena as well as the Baikal-Amur Mainline (BAM) indicate the boundary.

Tokma, as the most southern village of the Katangsky District, was part of the Kirensk District until 1930. The village is closest to the two administrative and economic centres of the neighbouring districts, Kirensk and Ust'-Kut, and the industrialised zones along the BAM. Both towns are of vital importance for the villagers in terms of basic food supply, medical care, administrative and financial matters, or for transit to other places, as well as because their relatives live there. In winter, both towns can be reached by car when the winter roads are open. Tokma is connected by winter road with Verkhnemarkovo in 173 kilometres distance from where a permanent road leads to Ust'-Kut (Saxinger, Krasnoshtanova and Illmeier 2021). The Kirensk airport functions as a hub for all public air travel across the Katangsky District. Ust'-Kut on River Lena, as the so-called “Gate to the North”, is an important transportation hub for industry, due to its river port and the BAM that traverses Siberia from west to east (Saxinger et al. 2016).

#### 2.1.4. (Traditional<sup>20</sup>) Land use practices

During the Soviet centralised system of resource redistribution starting in the 1960s, the Katangsky District was determined to provide pelts, and to a lesser extent other forest products as well. Besides the locally rooted people, the native Evenki and Russian old-settlers (*starozhily*) – who have traditionally engaged in hunting with draft reindeer, fishing, and gathering – people from other regions also moved to the villages to work in this branch of the industrialised agricultural sector. In the post-Soviet period, the social status of hunting and fur production – once regarded as a pillar of a northern industry – was, according to local perceptions, downgraded to what is now seen as a “traditional” or “sport activity”, the first being widely associated with indigenous hunting communes (*obshchiny*). The former state hunters, who were working for the local branch of a Soviet state hunting enterprise

---

<sup>20</sup> See footnote 4 on the term “traditional”

(*promkhoz*), regret the loss of social and symbolic status of their once prestigious profession. The practical importance of hunting, fishing, and gathering increased tremendously in the crisis years of the 1990s, when state institutions closed and state supply-systems of goods and services crumbled or stopped completely. People had to turn to (more) “traditional” ways of securing their basic needs (Vorob’ev 2004). In view of the lack of other work opportunities in villages that are badly connected with more urban places, hunting and fishing provides the main source of food, and often the only source of income (from pelts).

### *Tokma Obshchina*

Since 2003, the hunters of the Tokma village have been organised in an *obshchina*, which is a communal holding<sup>21</sup> reserved for traditional activities (herding, hunting/trapping, fishing, and gathering) within a delineated territory (“ancestral land”) and with legally attributed indigenous status (Sirina 2006). Non-aboriginal people who were living in the region for 20 years were equally accepted as members of the *Tokma Obshchina*. Founding an *obshchina* allowed the hunters of Tokma to obtain the right to harvest “objects of wildlife“ (*obekty zhivotnogo mira*) (for fishing, no licences are needed) within the same territory as was previously managed by the *promkhoz*. The long-term licence was issued for 49 years. Furthermore, as a legal entity, an *obshchina* becomes a stakeholder in interaction with industrial companies.

Obtaining the legal status of an *obshchina* made Tokma hunters eligible for compensation payments by the extractive companies who exploit the land that is at the same time allocated to indigenous peoples for traditional forms of land-use (on this problematic constellation, see e.g., Sirina 2009). I will discuss compensation payments in chapter 2.4.2. “Entanglements with the industries”. Establishing an *obshchina* was a strategic decision made by the people of Tokma on the eve of an oil boom in the early 2000s (Tsyachnyuk, Tulaeva and Landonyo 2012). Licences were issued to oil developers for the exploitation of resources beneath the land, and to timber companies for resources on the surface. Hence, there are at least three legal parties with partly incompatible interests in the same state-owned land. The legislative base for resource exploitation by the oil and timber industries is incomparably stronger than that of an *obshchina*, whose rights are formulated only

---

<sup>21</sup> Obshchiny are either based on kinship (family, clan) and/or on shared territorial-neighbour relations (Fondahl and Poelzer 2003).

in vague terms (e.g., Sirina 2009; Rohr 2014). *Tokma Obshchina* is by far the weakest party compared to INK and the timber companies, but it is the only means the people, who live on hunting, have to protect their interests. “*The Obshchina protects us. Hunters themselves are without any rights*” (N.T.), one informant stated. Yet, with regards to other issues, there is no unified opinion among Tokma residents about this institution. In return for the benefits that the *Obshchina* provides its members on the basis of the financial support from the extraction companies, the hunters are obliged to hand out all pelts at a fixed price to the *Obshchina*, which organises the sale of the pelts, including negotiating the price with a few fur traders who travel to Tokma twice per season. With very few exceptions, all hunters of Tokma are members of the *Obshchina*.

In 2009, *Tokma Obshchina*, comprising a territory of about 1.1 million hectares of land, was joined by the neighbouring village of Bur, adding another 600.000 hectares. Overall, a territory of the size of 1.75 million hectares is allocated to *Tokma Obshchina* and divided into 53 individual hunting grounds. 23 hunters are registered in Tokma, 30 in Bur (2016). Yet, already by 2016, almost one third of the *Obshchina*'s land (500.000 hectares) were de facto lost to hunters due to devastation caused by the extractive industries, as stated by the president of the *Obshchina* in an interview. The exploitable hunting ground was reduced to 1.25 million hectares. Hunting grounds located directly on an oil field or that even bordered one, had to be given up. Such was the case with territories overlapping with the Yarakhtinsky and Dulisma oil fields (N.G.). The list of complaints by the people of Tokma in regards to the depletion of their land, in many cases their ancestral ground, is long (see below). Add to that their obvious suffering in view of the loss of biodiversity, resulting in a loss of income and subsistence security as well as their weak position vis-à-vis the industrial stakeholders and their social marginalisation by the state. At the same time, these industries and their infrastructures enable them to (still) carry on with their way of life, as I will lay out in chapter 2.4., thus pushing them into a painful ambivalence.

### *Hunting grounds*

Hunting is practiced in delineated territories allotted to individual hunters<sup>22</sup>. In one case, one allotment is shared by two men. In principle, the single territories have

---

<sup>22</sup> For the change from collectively used hunting grounds to their allotment to individual professional hunters in the course of Soviet Modernization see Habeck (2013 referring to Fondahl 1998).

stayed the same since the Soviet period. Evenki and old-settler families continue to master the same land as their ancestors, since these links between certain (Evenki) clans and Russian families, with stakes in certain plots of land that predate the Soviet period, were obviously considered when the land was newly delineated in the course of Soviet modernisation and rationalisation of land use in the North (see also Habeck 2013: 160ff). In the case of one old-settler family, the man hunts on the same plot of land for the fourth generation running (N.S.); two other hunters were saying that they represent the second and third generation of their families hunting in the same territory. Yet, I was also told about a change of an allotment that was seemingly enforced by a more powerful family against an Evenk family. Working in the same forest over generations, close ties between the men and “their” forest have developed. These connections seem to continue at least to some extent when looking at the younger generation that migrated out of Tokma. Often, the sons, who meanwhile live in towns, join their fathers for some time in the forest during the hunting season.

The individual hunting territories (*ugod'ya*) have an average size of 32,000 hectares, which is in principle the same size as it was in the Soviet era. They range from 20 (the closest) to 100 kilometres (the farthest) away from the village.



Figure 1. Map of Tokma Obshchina indicating individual hunting grounds. © Gertraud Illmeier

Every hunting ground is located along a stretch of river including several smaller tributaries. Often, the hunters’ main cabins are located at the confluence of a creek

in connection to the main river. The hunters with whom I had in-depth interviews hunt along the Rivers Chambeta or Kiya, northwest along Suringda, northeast of Tokma, or along Ber'ya, southwest of the village, to name just a few. These rivers' names were often mentioned in our conversations. The river names are also used as code for the individual hunters in radio communication during the mens' stay in the forest, which take place in the evenings on the hour, typically between 7 p.m. and 9 p.m. (E.K.). Besides the possibility to have human contact via radio, these connection lines serve as a security net, where the men assure each other that everything is all right.

### *Hunting seasons*

Hunting and trapping is organised in accordance with legislative regulations and seasonal and weather conditions, which largely determine the patterns of movement, nowadays facilitated by snowmobiles. According to the hunting calendar, the hunting season for pelt animals, which is eagerly awaited by the hunters, starts on the 15<sup>th</sup> of October. In the recent past, after the time of Soviet air transportation and ahead of the current period of snowmobile-facilitated transport, the men walked to their cabins as soon as the season opened. Nowadays, depending on their snowmobiles, the men can only depart when "*the rivers are frozen and there is enough snow*", as stated by informants. Snowmobiles need some 10 to 15 centimetres as a minimum of snow cover to drive on (T.P.). In the Tokma region, that much snowfall is typically achieved by the end of October, beginning of November.

Hunting in the Russian Federation is regulated by the state and control is executed by several institutions from federal to national levels. The hunting year is divided in compliance with natural phenomena into two main periods: the "period of little snow" (*malo snega*) that typically lasts from mid-October until the end of December, when hunting is accomplished with the support of highly specialised dogs. This period is followed by a "period of high snow" (*mnogo snega*) from January until the end of February (first quarter), when snow "reaches up to the knees or higher" (E.K.). In such deep snow dogs cannot run and chase sables anymore so they are left at home. In parallel, the season is also divided into four quarters that go in accordance with the calendar year. The legal hunting season for sable lasts from October (fourth quarter) until the end of February (first quarter).

<b>Species</b>	<b>Dates</b>
muskrat (used as bait for sable)	15 September - until freezing of rivers
pelt animals: sable, squirrel	15. October – 28 February
moose	1. November – 31. December
reindeer	1. November – 15. February
duck	9. May for 10 days and from the end of August onwards until they leave

Table 1. Hunting calendar according to the hunters of *Tokma Obshchina* (some hunters dated the beginning of the sable hunt to 20 October and the end of the hunting period of reindeer to early March).

Since the region was colonised in the 17<sup>th</sup> century, extensive exploitation of fur-bearing animals had exhausted the sable population and led to its disappearance in many regions across Siberia. As countermeasures, the Soviet state released the Barguzinsky sable, the most valuable of all sub-species of *Martens Zibellina* in the Tokma region around World War II. Muskrat, a species that originally did not exist in Siberia, was later imported from the American continent. Nowadays, it is primarily trapped and used as bait for the sable hunt. Before the re-introduction of the sable through the described administrative measures, hunting focused on squirrels (Sirina 2006). In this thesis, I focus on the commercial hunt of sable, which provides an important share of, in some cases the only, income of local households.

The practice of catching sable with metal traps was introduced some thirty years ago by state order to increase the yield rate (G.G.). Tokma hunters use primarily commercial foothold traps (*kapkany*). When steel traps are set, dogs are typically not used any more for hunting due to the danger that they might step into a trap. Consequently, dogs lost their importance for hunting. Their function largely shifted into being a companion of the hunter during his lonely stay in the forest. As mentioned in footnote 1, I use the term “hunting” and “hunter” also in the meaning of “trapping” and “trapper”. Traditionally, the native Evenki population hunted pelts animals only to satisfy their needs of warm clothing and covers for their portable skin lodges (*chum*) (Sirina 2006). As mentioned earlier, Evenkis of the Tokma region have been undergoing long and intense processes of acculturation and their hunting practices do not differ from non-indigenous hunters. However, among other Evenki groups, trapping is associated with non-native (Russian/Slavic) hunting techniques and disliked because it fosters unsustainable hunting and it is not considered to be “fair-play” towards the animal (Lavrillier, Gabshev and Rojo 2016: 115).

Besides steel traps (*kapkany*), which need to be purchased, the men use different kinds of self-made wooden deadfall traps (*lovushki*) and snares. Constructing these kinds of traps requires experience, manufacturing skills and time. It is a delicate business to optimise such a trap and find the best place to set it, since these traps are made to stay at a place for a long time. It is very frustrating for the men when they find these traps destroyed in the course of oil prospecting or industrial logging, as happens quite frequently. This is one of the reasons why being informed in advance about logging is so important for the hunters. When knowing about logging plans for a certain area, they remove the traps as a precautionary measure. A hunter strongly recommends to set this self-made kind of trap only along riversides, which are by law spared from logging (E.K.). To avoid losing traps of both kinds, and potentially spending many hours working in vain, the hunters also actively approach loggers in the forest to negotiate that they watch out for traps and save them if possible, either by removing them or saving the tree where the trap is set. These arrangements often work out, but not always.

#### 2.1.5. Resource extraction in the post-Soviet period and its environmental impact

After the first wave of industrialisation oriented towards diamond prospecting in the 1940s and 1950s, and a second longer period of industrial development in the 1970s and 1980s, today, the north of Irkutsk Province is undergoing a third wave of industrialisation (Sirina 2006). The current development occurs under conditions of a state-dominated capitalism and marks a shift in the economic orientation of the district from a Soviet northern agro-industry (hunting, pelt production, fishing, gathering) to extraction of renewable (timber) and non-renewable (oil, gas and others) resources. This shift has been reflected in the fading attention and public support by way of the administration of different levels for the – what is today – traditional sector that keeps small, remote villages such as Tokma going. The national economy of the Russian Federation heavily depends on revenues gained from the export of crude oil and natural gas. In the last years, more than two thirds of Russia's gross domestic product (GDP) was generated by this sector and the industries that are directly or indirectly linked to it (Perović 2017). Yet, other natural resources such as gold, tin, diamonds or coal remain important as well. Among the renewable resources the timber industry is very relevant.

From a macro-economic perspective, two large-scale projects have been the drivers of development in the Katangsky District since the early 2000s: the “Eastern Siberia-

Pacific Ocean oil pipeline” (ESPO) and the Vilyui highway (Krasnoshtanova 2019). ESPO led to the intensification of geological exploration activities and the development of new oil fields. Some years later, the gas pipeline “Power of Siberia” was constructed to direct natural gas from the Republic of Sakha (Yakutia) towards Asian markets. ESPO passes the transportation hub Ust’-Kut on the River Lena. The “Federal Automobile Road A 331 Vilyuy” is a long-term project planned to connect the Irkutsk Province with the Republic of Sakha (Yakutia) via the towns Tulun, Ust’-Kut, the diamond town Mirnyy, and Yakutsk, however, progress is slow (Krasnoshtanova 2019; Saxinger, Krasnoshtanova and Illmeier 2021).

In the Irkutsk Province, the number of identified potentially exploitable oil and gas fields increased from 11 in 2006 to 42 in 2018. About 15 oil fields are already actively operated, five of them are located in the southern part of the Katangsky District (Krasnoshtanova 2019). These figures illustrate the speed and scale of current hydrocarbon resource development in the north of the Irkutsk Province and gives us an idea about the intensity of exploration activities that had to be carried out to detect these resources. Yarakinsky and Ichedinsky oil and gas fields, both operated by the Irkutsk Oil Company (INK), are nearest to Tokma. On clear nights in the village, one can see the reddish shimmering sky over the Ichedinsky oil field when gas is flared.

While INK appears as a stable company, the timber sector is characterised by frequent changes. By 2018, TSLK (*Trans-Sibirskaya Lesnaya Kompaniya*) in Ust’-Kut and LDK Igirma (*Lesopil’no-derevoobrabatvayushchiy Kompleks Igirma*), a large timber processing complex in Novaya Igirma, 250 km south-west of Tokma, were the two leading companies in the timber sector operating in the region. In 2019, TSLK declared bankruptcy and LDK Igirma changed its name. Similar changes already happened in the past. Both companies were over time part of the same holdings and people in Tokma often use their names interchangeably. Local people suspect tax evasion behind this practice of frequently changing company names and ownership structures, which remain unclear to the public. This lack of transparency seriously hampers any attempts by local people to complain about grievances caused by the companies’ operations. The timber company runs one major access road to the Tokma region, which is kept in good condition during all seasons. The so called “Igirma Road” connects the Tokma region for the first time with the towns of the upper Angara river valley, which are connected by a side-line with the BAM. Smaller timber company roads have been rapidly spreading across the region to

open up new logging sites. While these roads can be used by ordinary people, INK oil roads are generally closed to the public (Illmeier and Krasnoshtanova 2022).

Under the impact of the activities of these companies and their infrastructures including roads, seismic lines, drilling rigs, pipelines, power wires, bridges, workers' camps, etc., the landscape of the Tokma region has been changing into a "landscape of development" (Porath 2002; Potapov et al. 2017). In view of the growing infrastructural networks of the industries, it is notable that transport infrastructure for civilian use remains poorly developed. Air transport is mostly limited to two flights per month throughout the year (three flights per month in summer), while transport on the ground is possible only as long as the winter road works. The residents of remote villages like Tokma stay excluded from the economic boom and hardly get jobs in these industries, which are organized according to a shift work model engaging long-distance commuters (Saxinger 2016; Saxinger, Krasnoshtanova and Illmeier 2021). They, however, are the ones who are directly exposed to the negative environmental consequences of industrial development – a situation that is well known from many resource regions in the world as "resource curse" (e.g., Haller et al. 2007; Tsyachnyuk, Tulaeva and Landonyo 2012; Southcott et al. 2019).

According to the observations of the taiga dwellers of the Tokma region, the activities of the oil and timber industries cause or contribute to the following problems:

- *substantial reduction of the forested area* as a consequence of extensive logging and more frequent forest fires<sup>23</sup> resulting in:
  - loss of habitat for wild animals;
  - game forced to change migration routes (wild reindeer has already largely disappeared from the Tokma region);
  - reduction of game and fur-bearing animals
  - destruction of the hunters' traplines and traps;
  - increase of wind;
- *decline of water level of rivers* causes lots of concern overall in the wider region; the reasons are seen in extensive logging and ignoring the water protection zone

---

<sup>23</sup> The observations of the Tokma inhabitants are supported by research. One study investigates "The influence of logging on the effects of wildfire in Siberia" (Kukavskaya et al. 2013) in three different regions in Siberia, one of it is the Angara region that borders the Katangsky District to the west. The study states that "the majority of fire ignitions are caused by humans" and that "fires often begin on logged sites" (ibid: 2). Logging methods (clear-cuts and other characteristics) that the report states for this region are the same as those that I observed in the the Tokma area.

of 500 metres off river shores, instead, logging as close as 200 metres to the rivers;

- disturbance of migratory routes of fish;
- *flooding in spring (during thaw period) and drying out in summer of rivers becomes more extreme* as a result of extensive logging along rivers and on the hills; the Tokma village was heavily flooded in 2013 and has since then been at the edge of being flooded several more times.
- *increased disturbance and noise pollution* through industrial activities, new infrastructures and higher number of outsiders in the forest (loggers, oil workers, people coming for leisure activities, fishing first of all):
  - frightens away wild animals
  - disturbance of animals' routines; a concrete danger much feared by forest dwellers are bears whose hibernation gets disturbed. These bears are considered very dangerous.
  - poaching due to the increased amount of industrial workforce in the forest and bordering with the industrial zone along the BAM in the south, poaching is a concrete threat
- *increase in forest fires* due to anthropogenic factor; higher number of people in the forest (loggers, oil workers, people coming for leisure activities) behaving irresponsibly; lack of adequate company policies and security measurements. There is hardly a hunter, whose land has not been partly destroyed by wild fires in recent years. In consequence:
  - disappearance of species;
  - destruction of hunting infrastructure such as hunting cabins and equipment
- *changing micro-climate* due to flaring of gas at the nearby oil fields and climate change

These environmental problems are a concrete threat to people whose livelihood depends on this environment: “*You can ask any hunter, how many ungulate animals were here. How many moose! Now, it is a problem to get a reindeer or a moose*”, one informant lamented, adding that “*today, there are more people in the taiga than animals.*” (N.G.). Wild fires can start by natural causes, however, they have become more frequent in recent years due to industrial exploitation of natural resources and the increased number of humans, who work for these industries, or, who use the industrial roads to get into previously inaccessible parts of the forest (e.g., Kukavskaya et al. 2013). Both industries carry out their operations without

sufficiently informing the local population in advance about their development plans. The stories told by the hunters, when they once more discovered freshly logged fields or new grids of seismic lines which unexpectedly emerged “overnight”, sound similar. Such experiences have become frequent in recent years and are a source of rage and grief. Besides the scale, it is often the speed by which industrial logging is carried out that leaves people puzzled:

*“They work day and night. Last year, I was in the forest, after three days I return – there was already an empty field, and nobody was there anymore! They had all [wood] moved out already. They are so fast! Like grasshoppers!”*  
(P.F.)

*„They are so fast! I came after New Year, before the New Year I had left. I was delayed for about 15 days for some reason. Either it was cold, either [...] I did not go. Then, I come, in the meanwhile, they have logged the whole mountain [laughing]. How incredible fast they are! And I did not even grasp them [...]”* (G.G.)

## **2.2. A historic perspective on (shifting) mobility infrastructures**

Throughout the 20<sup>th</sup> century, the spatial practices of the taiga hunters of the Tokma region were shaped by different kinds of routes and means of transport ranging from reindeer paths in the first half of the century, to helicopter routes in the second half of the century, to walking along various kinds of trails in the immediate post-Soviet period up to seismic lines at present. Mobility infrastructures played a crucial role in the incorporation and Sovietization of Russia's Arctic and sub-Arctic regions and its populations and fulfilled political purposes. They changed in accordance with political-ideological shifts and centrally made economic development plans in the seven decades of Soviet rule and due to the "disappearance" of the state in the immediate post-Soviet period (Campbell 2003; Anderson 2011; Habeck 2013; Schweitzer, Povoroznyuk and Schiesser 2017). In this chapter, I explore changing mobility infrastructures as a tool and result of Soviet modernisation policies throughout the 20<sup>th</sup> century and how they shaped local livelihoods. In accordance with the prevailing mode of transport at a certain time, I distinguish and discuss four periods in different intensity.

### **2.2.1. Walking on reindeer paths**

Over centuries, paths and trails were the main structures that facilitated the locomotion of Evenki families that migrated with their draft reindeer and dogs, partly over large distances covering vast areas (e.g., Habeck 2013). All Evenki groups engaged in the "northern triad" (Sirina 2006: 63) of hunting for fur and meat, fishing and reindeer herding (as well as gathering). These mobile practices generated respective forms of social organization and worldviews (Sirina 2010: 135). Then, with the Russian settlers, came horses to the region. Both kinds of animals were used in the Tokma region as draft animals in the forest-based economy and for travelling to other settlements up to the second half of the 20<sup>th</sup> century.

In the beginning, Soviet incorporation of the land was first of all a matter of bringing a huge space under control. This meant detecting its remotest corners and establishing ways of communication with political and administrative command centres at different levels (e.g., Campbell 2003; Vitebsky 2005; Anderson 2011; Habeck 2013). When in 1929, the "Kirensk expedition of the Siberian Land Administration" (*Sibirskoe zemel'noe upravlenie*) had reached the headwaters of the Lower Tunguska river basin, the expedition leaders noted in their report with a certain sense of frustration:

*“[...] the examined region is almost completely ‘without roads’ [...]. At some places, the vast forest areas that stretch between rivers and watersheds are intersected by rideable paths [...] The network of these paths is a quite confusing labyrinth of reindeer paths and rivers [...], these are the only connecting routes in this remote and cut-off corner. [...] To talk about other paths is not even worth it.” (Kopylov, Pogudin and Romanov 2009: 35-37).*

What was lowly evaluated by the critical gaze of a Soviet official assigned with the colonial task of reallocating land and fixing boundaries has constituted for many centuries the structures of movement, subsistence, transportation, trade and communication of indigenous forest dwellers. By wandering the land with their reindeer and dogs, the Evenki made it their home. As mentioned earlier, Ingold (2007) calls this mode of engaging with the land “wayfaring” along “paths along which life is lived” in contrast to “transport across a surface”. Contrary to the perception of tsarist, and later Soviet bureaucrats, Evenki mobility was not “a confusing labyrinth”, but structured by “particular economic circles that involved migration along certain routes” (Sirina 2010: 135).

Soviet officials surveyed the land and the people that were living there and collected meticulous information of the soil, vegetation and other important indicators of the physical environment as well as of the ethnic composition and socio-economic structures and practices, such as the amount of reindeer per households, etc. About ten years after the expedition of 1929 and several administrative reforms later, which were dramatically changing people’s lives, the region appears to have been under full control of the Soviet administration. At least, the historic documents related to the late 1930s that I consulted in the State Archive of the Irkutsk District (*Gosudarstvennyy arkhiv Irkutskoy oblasti*, henceforth GAIO) present this image of a top-down managed space. They contain detailed information of geographic locations of the newly established collective farms (*kolkhozy*) with either Slavic, or newly settled indigenous inhabitants or mixed groups and the length and quality of the routes by which they were connected with neighbouring “national councils” (*natsional’nye Sovety*) and the administrative centre in Erbogachen. For the kolkhoz “The Way of Il’ich” (*Put’ Il’icha*) in Khodolkit, an Evenki settlement further west of Tokma that was later amalgamated with Tokma, this reads as follows:

*“The distance to the national sovet [Tokma] along the river amounts to 35 km, along paths 22 km and to the district centre in Erbogachen along the river 925 km, along paths 410 km. As connecting paths here serve rivers and forest*

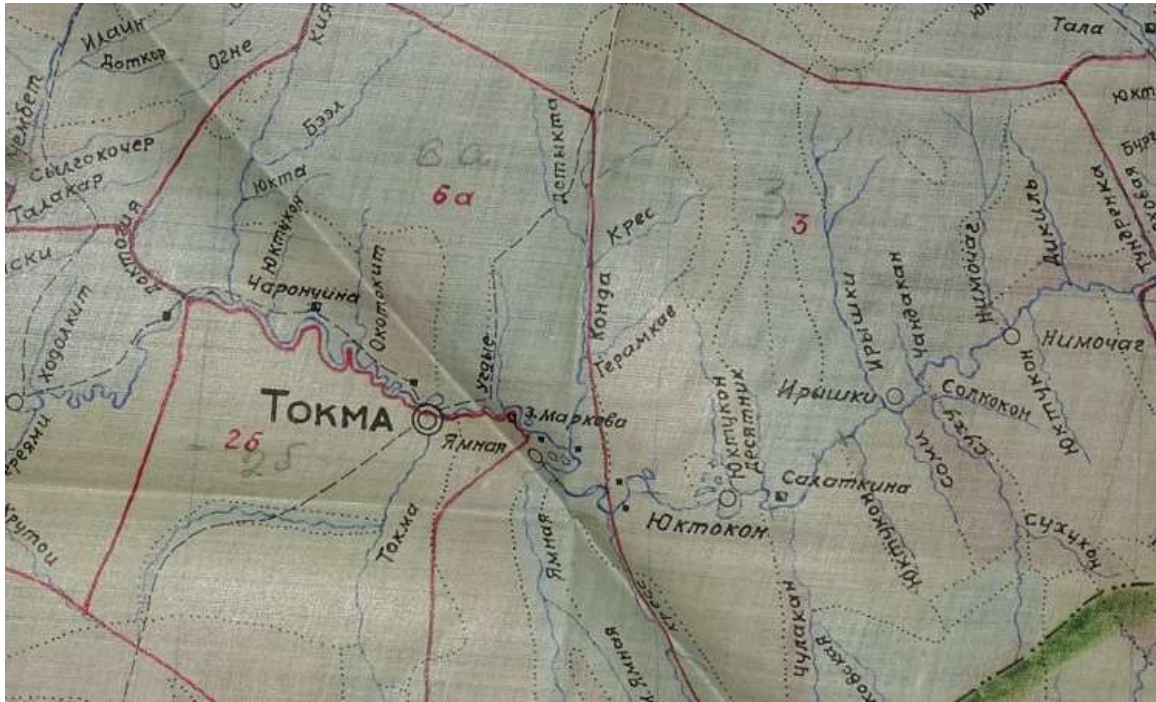
roads, along which one can move in summer only riding and in winter on sledges (Translated by the author).

Расстояние до нацсовета, рекой 35 километров, тропой 22 километра, а до райцентра с.Ербогафен рекой 925 км., тропой 410 км.. Пути сообщения здесь являются, бредки и лесные дороги, по которым летом можно проехать только верхом и зимой на санях.

**Figure 2.** Detail from the historical document “Project of allocation of hunting grounds of the Kolkhozy of Tokma National Sovet Katangsky” related to the years 1938-39. (GAIO. Fonds R-147. Op. 1. Ed. khr. 259). © Gertraud Illmeier



**Figure 3.** Map drawn by members of the “Expedition of the department ‘land allocation’ Irkutsk Obl. 30. Project of allocation of hunting grounds of Kolkhozy of Tokma National Sovet Katangsky District” (Proekt po zakrepleniyu okhotnich’ikh ugodiy za kolkhozami Tokminskogo natsionnal’nogo soveta Katangskogo rayona Irk. Obl.). (GAIO. Fonds R-147. Op. 1. Ed. khr. 260.) © Gertraud Illmeier



**Figure 4.** Detail of the map of the “Expedition of the department ‘land allocation’ Irkutsk Obl. 30. showing three long-distance trails (*dorogi*) (dashed lines) that connected the “national council Tokma” (*natsional’nyy Sovet Tokma*) with neighbouring national councils. From Tokma clockwise: one trail leading shortly downstream River Nepa before sharply turning towards north and north-east (in direction Bur via Urokan). One trail leading from Tokma towards south-west (via Icheda) in direction Ust’-Kut. One trail leading towards west along River Nepa until the river and settlement Khodolkit, from where it turns towards north-west. In addition, depending on the season, there was the water route on River Nepa towards the east, where it meets a trail at Volokon (before the river turns north) that leads to Markovo (the meanwhile abandoned old part of the neighbour settlement Verkhnemarkovo) and Kirensk. Most of the hamlets and small settlements along River Nepa were later closed, its inhabitants re-settled in Tokma or other places. The dotted lines indicate reindeer paths (*tropy*), typically going parallel to rivers. © Gertraud Illmeier

In the first decades of Soviet rule, developmental efforts were directed towards setting up agricultural production – dairy and livestock farming – but hunting, fishing and collecting wild herbs were an integrated part of a northern agricultural production unit and were practiced throughout. Walking (skiing), riding reindeer (or horses) or using reindeer-pulled sledges were the ways to get around until the late 1950s. The men walked to their hunting cabins, where they were to stay for several weeks, or even months. Food and equipment were brought on horses or reindeer and accompanied by guides. After the load was delivered, the guides walked the draft animals back to the village. The hunters stayed in the forest and accomplished their tasks solely by walking their trap lines or using skiers (Tokma respondents). Up to then, it was still the same types of routes as those described by the Kirensk Expedition in 1929<sup>24</sup> (Kopylov, Pogudin and Romanov 2009):

<sup>24</sup> Spelling (and transliteration) according to the source.

- old hunting paths (*starye okhotnichie tropy/argish*)
- reindeer paths (*olen'iy argish/olen'i tropy*)
- rideable mule tracks (*verkhovye v'yuchnye tropy*)
- rideable trails connecting more distant places, first of all administrative centres, for instance Tokma-Urakan-Bur (about 150km), or Tokma-Markova (about 150km) (*verkhovye dorogi/tropy*)

The historical chronicle of Tokma (*Istoricheskaya spravka*) that is kept in the office of the village administration contains barely six typewriter-written pages listing only the most important dates of the administrative and economic set-up of the village. The chronicle starts with the year 1926, when the first “Tokma Native Council” (*Tokminskiy tuzemnyy Sovet*) was installed<sup>25</sup>. Besides administrative issues, most emphasis is put on transport and supply of goods from the outside, thus, demonstrating the high practical as well as political significance of transport infrastructures for remote villages that were newly established in compliance with development plans and political intentions. It states that “from 1937 onwards, the mail was organized by horse transport through Preobrazhenka and Nepa”. It goes on to tell that in the 1940s “goods were brought to Tokma on horses and reindeer in summer and winter from Kirensk and Markovo”. Beginning with 1957, freight arrived “by water transport and airplanes”. Lower Tunguska and Nepa rivers have been navigable only in the “high water” season in spring. River transport on vessels (*barzha*) was important throughout the Soviet period. Keeping the Nepa River open for the vessels to pass is the reason why Tokma has never gotten a bridge that would connect the two shores of the villages. The cessation of river transport in the 1990s, triggered the rise of the winter road.

#### 2.2.2. Mechanisation of transport in the course of Soviet modernisation

In the period after Stalin’s death (1953), the Soviet modernisation agenda for northern regions accelerated. “Mastering the North” (*osvoenie Severa*) programmes aimed at enforced resource extraction and industrialisation in order to create an integrated single economic space as well as intensified sovietization of the people of the north living dispersed in small settlements (Ssorin-Chaikov 2003; Campbell 2003; Stammmler 2011; Schweitzer, Povoroznyuk and Schiesser 2017).

---

<sup>25</sup> Tokma chronicle dates this event to the year 1926, while other sources date the event to the year 1928 (Kopylov, Pogudin and Romanov 2009).

Modernization was directed by “scientific management” of traditional occupations fighting “primitive” and “non-rational” forms of traditional land-use and lifestyle (Campbell 2003: 110 ff). Converting indigenous nomads to a settled way of life was a goal and a prerequisite for the envisioned transformations that Soviet institutions enforced from the 1930s onwards in several waves and intensities (e.g., Habeck 2013). Measurements taken were the amalgamation of small villages, a process that had started in the 1930s under the framework of collectivisation and was enforced in the 1960s. Another measure with far-reaching consequences was the reorganization of production units according to a model resembling the working structures of a Soviet industrial enterprise. Collective farms (*kolkhozy*), which had focused on agricultural production like dairy farming and timber, were reorganized into state hunting enterprises (*promkhoz*), larger units that focussed on the provision of furs and raw meat on a large scale to the state. Since 1969, the southern part of the Katangsky District was allocated to *Preobrazhenka Promkhoz* with several sub-units, so called “hunting cooperatives” (*Preobrazhenskoe kooperativno-zveropromyslovoe khozyaystvo*) (Sirina 2006: 46). One of them was the hunting cooperative Tokma (*Koopzverpromkhoz Tokma*), colloquially and henceforce called *promkhoz*. It determined the economy and way of life of Tokma residents for almost thirty years before it was closed in the aftermath of the collapse of the Soviet Union (in 1992).

Parallel to the reorganisation of the agricultural sector (including hunting), the exploitation of natural resources in the northern regions was enforced since the late 1950s. After the “Great Patriotic War”, as the second World War is called in Russia, the Soviet state, being now in ideological competition with a large part of the rest of the world divided by the Cold War, needed all kinds of natural resources for continued development of heavy industry and militarisation. Intensive geological exploration activities started across the North in search of minerals and hydrocarbons (e.g., Stammeler 2011). For the Katangsky District, two waves of industrial development can be distinguished (Sirina 2006): the first was concentrated on diamond prospection in the late 1940s and in the 1950s. The second, longer wave in the 1970s and 1980s focused on oil extraction and was driven by the Angaro-Lensky-Geophysical Expedition (founded in 1960). The oldest seismic lines in the Tokma region stem from the early exploration activities in the 1960s. The first drilling occurred in 1969 between the rivers Diktogon and Kiya on the left river bank of Nepa (E.K.). Across the region, conserved oil wells remained from that time (Tokma respondents).

In the years between these two state induced industrialisation programmes, the means of transport that were used to bring the *geological expeditions* to their remote field sites completely changed. At first, draft reindeer and reindeer guides, which were mainly Evenki, were rented out on a large scale by the collective farms (*kolkhozy*) to the expeditions. With the introduction of air transport and other changes in the organisation of traditional activities, reindeer became obsolete and disappeared from the southern part of the Katangsky District (Sirina 2006: 47ff) – and with them the century-long tradition of reindeer keeping based on an intimate bond between deer and man and a mobile way of life (Vitebsky 2005). The top-down interventions in the name of modernisation and rationalisation changed every aspect of life of the northern populations. This is well documented for different indigenous peoples and regions in Siberia and beyond (e.g., Campbell 2003; Sssorin-Chaikov 2003; Saxinger, Schweitzer and Donecker 2016). For the native people in the Katangsky District it resulted in “forced assimilation” (Sirina 2006: 46).

### 2.2.3. Helicopter rides into the *deep taiga*

The economic and administrative reorganization of communities in the North was enabled by and entailed the introduction of state-organised mechanised transport. Draft animals were replaced by mechanised means of transport that required other infrastructures such as cargo-boats or a landing strip for small airplanes. Reindeer paths and trails were abandoned and became largely forgotten as time passed by. When I asked my interlocutors in Tokma about this, they had to think for a while before some of them could recall the old routes and paths.

*“It’s all overgrown now, we don’t hike anymore. All the trails are overgrown. Now we only drive on profili. Well, there are trails, of course, there are old ones. But they are overgrown now, no one walks on them anymore. They used to ride on reindeer there. These were good trails. Once, I even got as far as to Urokan on them.” (P.F.)*

Tokma got a landing strip for aircraft in the late 1950s. First, YAK-2 (ЯК-2), then the popular AN-2 biplanes and later helicopters were used for passenger transport, serving all settlements of the district three times per week and connecting them with the district centres of Kirensk, Ust’-Kut and Erbogachen. Helicopter flights also became the main means of transport of state hunting brigades to their assigned hunting territories in the forest. The *Promkhoz* ordered the helicopters, who came in from Kirensk or Ust’-Kut. In the decades leading up to the 1990s, transportation of

hunting brigades, their dogs, equipment and food taken to hunting grounds and back was organized by a mix of air conveyance and walking or skiing. As explained earlier, the hunting year was divided into two main periods in compliance with the first low, then high snow-cover and into four quarters in accordance with the calendar year (see chapter 2.1.4.). This schedule has stayed the same to this day. Mobility patterns and means of conveyance were as such (Tokma informants):

Fourth quarter (October – December): start of hunting season, time period of “little snow” (*malo snega*). Hunting brigades comprising two to three men were brought to their forest cabins by the helicopter where they typically stayed for one or up to one and a half months towards the end of the year. Each brigade had an allotted hunting ground with an average size of 32,000 ha. The hunters returned to the village on foot. This could be managed due to a higher number of cabins along the way to find shelter and stay overnight. In years when heavy snow came early, they had to leave the forest earlier to bring back the dogs. The men stayed in the village until early January. During this time, they mainly engaged in woodwork.

First quarter (January – February): Due to the high snow, walking far distances was not possible any more. The hunters were brought by helicopter to their cabins and were picked up at the end of the season, usually on February 22 or 23. Day and time of the arrival of the helicopter were agreed upon beforehand. During their stay in the forest, the men were walking or using skis. Each year, they had to make their trails anew across the unbroken snow cover, each day walking a little further. Thus, through repeated walking of the same route over time a trail of pressed snow was created.

#### 2.2.4. The first snowmobiles in Tokma in the 1980s

Snowmobiles began to appear in Tokma “*in the years before Perestroika*”, as informants often put it. In the beginning, they were only used within the village and its vicinity, not yet for the long(er) trips to the hunting grounds. The first snowmobiles of the Russian brand “*Buran*” were collectively used by the workforce of the *Promkhoz* (on the use of snowmobiles in other Siberian regions, see e.g., Stammer 2013). As the story of one informant suggests, the use of the *Buran* for the travels to the hunting grounds was triggered by bad weather and individual initiative:

*“That year, the weather was bad. The men were sitting at home and waiting. The helicopter was announced for 14 October. I meant to repair a hunting*

*cabin [...] Then, I decided – the snow was already half up to the knee. For the Buran all right. I take off. [...] Well, I am there, I came on the Buran. They are still sitting at home, imagine, I came on the Buran and am there since 14 October. The helicopter brought the men only on 30 October, when the snow was already higher than the knee [...] Well, so it was then. Afterwards, well, those who were close [whose cabins were close(r) to the village, notes the author] and trails were all right, and the snow sufficient, what to wait for? They went off, that was it. From then on it was done like this.” (E.K.)*

With the appearance of snowmobiles, the hunters gained more control over their mobility and became less dependent on the official transport system linked to helicopter flights ordered by the *Promkhoz* in accordance with production plans. This allowed a certain room for maneuvering for private hunting activities in parallel to the quota stipulated by the *Promkhoz* that had to be fulfilled by each hunter. Individual travels on the Buran became popular and were coordinated among small teams of hunters. Towards the start of the season, the men were – and this has remained unchanged to this today – impatient to go to the forest and start hunting. Having a snowmobile, they could go any time once the snow was deep enough. *Promkhoz* officials did not hold the men back from individually scheduling their trips, as long as they fulfilled the hunting quota and their village-based working obligations – hay making, logging and hauling fire wood etc. – in between the hunting seasons.

#### 2.2.5. Back on foot in the years of crisis in the 1990s

With the dissolution of the Soviet Union, a totalitarian state with a centralised system of resource redistribution was transformed into a market economy by means of “shock-therapy” with dramatic consequences for the whole country. Remote northern communities had fully relied on structures, subsidies and services that had been monopolised and provided by the state over decades. They were not prepared and had no immediate alternatives when this system crashed and the services were terminated. Years of economic decline and social crises followed and many people left the region (Sirina 2006: 177-178). Similar changes occurred across the whole north (e.g., Vorob’ev 2004). *Preobrazhenka Promkhoz* and its subordinated “hunting cooperatives” with *Tokma Promkhoz* being one of them, dissolved in 1992, leaving people in a limbo. With its closure, the institution that had been the motor of rural development and social and cultural life for the last three decades disappeared. In the times to come it was replaced by smaller enterprises based on

private, joint-stock or other forms of ownership, however they didn't prove sustainable (Sirina 2012: 174).

Public air transport, previously provided sufficiently and almost for free, was radically downsized or stopped completely, turning distant but well connected and integrated settlements into isolated places. Travelling opportunities suddenly became rare across the Russian North (Campbell 2003). At the end of the 1990s, regular flights were reduced to one per month in the south of the Katangsky District (Krasnoshtanova, Illmeier and Saxinger 2021: 23). The former state huntsmen were left without helicopter transfers to their large and far away hunting territories. By then, keeping draft reindeer was a thing of the past and the knowledge of reindeer breeding had been lost. There were some snowmobiles in the village, but people living in remote corners of the region did not have access to fuel or spare-parts for their snowmobiles nor could they afford them. Hunting and trapping continued, but the first became more a matter of subsistence, and both practices were exercised on foot then (see also Vorob'ev 2004).

#### 2.2.6. Resource infrastructures becoming transport infrastructures in post-Soviet Tokma

Since the 2000s, the still centrally determined economic orientation of the Katangsky District shifted from agricultural production (of which hunting was a part) to resource extraction, both, renewable (timber) and non-renewable (oil, gas, minerals). In parallel, the interest of a meanwhile (after the years of economic and social crisis in the 1990s) consolidated state (the Russian Federation) in sustaining remote villages like Tokma has continuously decreased. This is demonstrated by the loss of municipal status for Tokma and the other small villages in the south of the Katangsky District, as already mentioned. In the wake of the new resource boom, new actors have appeared that represent national or multinational corporations or financial institutions interlinked with neoliberal, global markets. From local viewpoints, these corporations are often expected to take up the same "city-(or village-)forming" role, as Soviet state enterprises once did. However, these expectations are often disappointed (Illmeier and Krasnoshtanova, 2022; Saxinger, Krasnoshtanova and Illmeier 2021).

In the post-socialist period, public transport has not yet reached the level of connectivity it was once at during the Soviet period, creating an issue of severe concern for the residents of Tokma. For several years now, air conveyance to Kirensk

has been offered three times per month during the summer holiday season, and twice per month the rest of the year. The other important civic means of transport is the winter road that connects the village from December to April with the regional centres. Its rise began in the 1990s, when frequent air transport as well as the cargo boat (*barzha*) that had supplied Tokma with the necessary goods once a year ceased to come to Tokma.

While public means of transport and inter-settlement connectivity have remained scarce in the post-socialist period, a tight network of corporate access roads to logging fields, some corporate roads to oil plants, and innumerable seismic lines have appeared in the Tokma region in the course of the ongoing resource extraction boom (Illmeier and Krasnoshtanova 2022). Katangsky District's overall remoteness and state of roadlessness (Siegelbaum 2008) have commonly been the most emphasised characteristics up to now. However, such representation seems inappropriate in view of the rapid build-up of industrial transport and other infrastructures that cover the region and tightly connect logging sites and oil drills with urban production plants. The changes in mobility-facilitating infrastructures is reflected in terminology and language. Terms that were used by the Kirensk Expedition in 1929 (see chapter 2.2.1.) are no longer part of the spoken language in Tokma. Reflecting the changes in available infrastructures today, the following designations are widely used:

- seismic lines or *profili* (see chapter 2.3.1.); new ones (*novye*) and old ones (*starye profili*)
- roads (*dorogi*); depending on further specification these terms can indicate routes with quite different features:
  - industrial roads such as forest roads or oil roads (*promyshlennye dorogi – lesovye dorogi* or *neftyannye dorogi*)
  - trassa, a main, broad access road, drivable year-round (*trassa*)
  - winter road (*zimnik*)
  - tractor road (*traktorovaya doroga*)
- trail (*doroga, dorozhka*)
  - Buran trail (*buranovaya doroga*); a trail that is established by driving a route on snowmobile

In the past, trajectories appeared through cyclical migration of reindeer and people. When this way of life was suppressed and disappeared, and the use of the land was organised according to substantially different values and rules enforced by the

Soviet state, air transport closed the spatial gap between the village and the forest. People were deprived of the need as well as the right and opportunity for their own initiative in organising their movements. When helicopter rides to hunting grounds ceased to exist in the wake of political upheavals the only way hunters could move in their vast territories was walking, which they could accomplish because they still had the physical strength to do so. In the current situation, the community, having grown older, is forced to find other ways to uphold the level of mobility that is necessary to manage their large hunting grounds. Newly established industrial infrastructures such as seismic lines provide this opportunity, yet, they not only have adverse environmental effects, but provoke new demands for resources which can be satisfied only through interaction with industrial stakeholders. In the following chapters, I examine seismic lines and their affordances for the hunting commune of post-Soviet Tokma and the multiple entanglements these affordances generate.

## 2.3. Seismic lines and their affordances

### 2.3.1. What are seismic lines?

Seismic reflection is the most widely used geophysical technique in hydrocarbon exploration, used to determine conditions of subsurface ground layers to identify oil and gas reservoirs. Along a straight alignment of lines, holes are drilled into the ground in regular intervals, where explosives are placed and ignited. The seismic waves generated by the detonations are reflected at acoustic boundaries between rock layers, similar to an echo, which are recorded by a piece of equipment called a geophone (e.g., OMV Group). The sensitive measuring instruments register any vibration, caused, for instance, by snowmobiles. For this reason, surveying is often carried out at night when there is the least amount of disturbance, as the hunters of Tokma have observed (V.N.).

On the maps of the Russian exploration companies that have been working in the Tokma region, the straight clear-cut routes are denoted as *profili* (*profili*), a term that is also used in colloquial language. In other technical literature that I consulted in the course of my research on the topic, the straight forest clearings as such were not denoted by a particular name (OMV Group). Here, the term “profile” appears to denote a display of seismic data along a line, either a so called 2D (two-dimensional) profile or, if data is extracted from a volume, a 3D (three-dimensional) profile (Schlumberger oilfield glossary). According to an informant at OMV, the terms “shotlines”, “seismological” or “seismic lines” are commonly used to describe the method and/or the seismic data that is generated. The information obtained is a “seismic profile”, which is also used to describe the method. This thesis uses both terms interchangeably – seismic lines and *profili* – for the straight clear-cut routes that are established to carry out a seismic survey.

Seismic lines put in place in grids are the enabling structure for a complex process of oil exploration by method of seismic prospecting. As such, seismic lines constitute an intended, but time-limited infrastructural system composed of social, environmental and technical components involving specialised geologists, loggers and technological equipment, tasked with generating the flow of (subsurface) data about fossil resources, as well as ideas and values (of oil, money etc.). In fact, the infrastructure is put in place for a short period of time, and if all goes well, for one-time usage only. The final results of seismic surveys are acoustic models of the earth subsurface. In order to get a three-dimensional image of the subsurface, lines are

made in regular grid-like patterns (the so called 3D method). The collection data phase is followed by a lengthy phase of data interpretation. It might be decided to drill oil wells for further testing when the prospected field promises to be profitable, but this can take several years (OMV Group, Oil & Gas Portal, Schlumberger Oilfield Glossary, Haller et al. 2007). Otherwise, after the exploration phase, the straight routes are typically no longer used anymore by the oil company, which allows these structures to be re-used by other actors.

### *Different kinds of seismic lines*

Tokma hunters differentiate three types of seismic lines in their region that differ in regards to the size of the grids and the technique by which they are made, which, consequently, produces certain features of the surface and the width of the lines as well as the time period when they were established. The most important distinction from the local users' perspectives is whether the lines are fully cleared from vegetation above and beneath the ground or not. Clear-cut logged lines correspond with a certain technique and size of grids in which the lines appear. The seismic lines which have been established in large numbers in recent years are associated with two seismic exploration companies that work for the Irkutsk Oil Company (INK), these are: Udmurtneftegeofizika (henceforth UNGF) and GEOTECH-Eastern Geophysical Company LLC (henceforce GEOTECH). According to peoples' observations, these companies often engage other subcontractors to carry out some tasks. Often, it remains unclear to them which company is operating in the forest at a given time or location.

UNGF is in charge of the large seismic lines made with bulldozers that fully remove the vegetation including subsurface vegetation (roots). This kind of clearing leaves an even, fully cleared ground surface. The scale of the grid they log is about four by four kilometres broad, each line being about four metres wide<sup>26</sup>. This kind of seismic line is best suited for driving snowmobiles, as all respondents unanimously declared: *“On these profili you can drive. They are even and on them you can drive and set traps”* (G.G.). The width of the grid of four by four kilometres does not heavily disturb the hunters.

GEOTECH logs seismic lines of much smaller scale with grids every 300 or 500 metres and each track having the width of *“about the size of a big tractor”* (E.K.).

---

<sup>26</sup> The presented figures reflect the hunters' observations and experiences with seismic lines and not technical standards which might be given in technical textbooks.

This type of seismic line has been a prevailing one in the last years due to the oil companies' reinforced efforts to find new oil reservoirs, as some people in Tokma believe. Others think that this kind of prospecting is done to find the best suited places for drilling, which means that a promising oil reservoir has already been identified (N.K.; P.F.). Logging the routes is accomplished without heavy machinery, trees are mainly sawn down and tree stumps are left behind, which make these routes hardly walkable, not to mention driving, as the hunters criticize: "*On these profili you can't drive the Buran and you can't walk. There are tree stumps everywhere.*" (G.G.). A thick snow cover is needed before one can drive on these lines. These clearings are unpopular because they don't afford driving. Moreover, the hunters are desperate in the face of the enormous amount of new seismic lines of this kind: "*Imagine, three profili per kilometre, this means millions of profili!*" the same informant lamented in dismay. Throughout this thesis, when respondents talk in a positive sense about *profili*, they always mean the fully cleared, large grids of seismic lines, never the smaller grids of not fully cleared lines.

The third type of seismic lines are the old *profili* that were made in the Soviet period. The very old ones go back to the time when oil prospection was launched in the region in the late 1950s, others were made in the period of intensified resource extraction in the second half of the 1980s. These seismic lines were made narrower and there are fewer of them compared to the new ones. These routes have become largely overgrown by shrub and would require clearing before they could be used for driving snowmobiles on them. Landerer (2009), who walked the taiga as an apprentice of migrating Evenki reindeer keepers in the central part of the Katangsky District, notes that besides "flooded areas, bogs, burned, already re-grown areas", "uncleaned *profil*" (ibid: 56) is the terrain that is hardest for walking. In the Tokma region, old seismic lines were partly incorporated in the newly appearing networks of seismic lines or company roads. One of the hunters once managed to convince a team of geologists to clean and re-use an old line instead of clearing a new one right next to it and "*waste forest*" (P.F.), as the man stated. The old seismic lines became largely obsolete as routes for transport, since the current wave of oil exploration has littered the land with freshly logged routes.

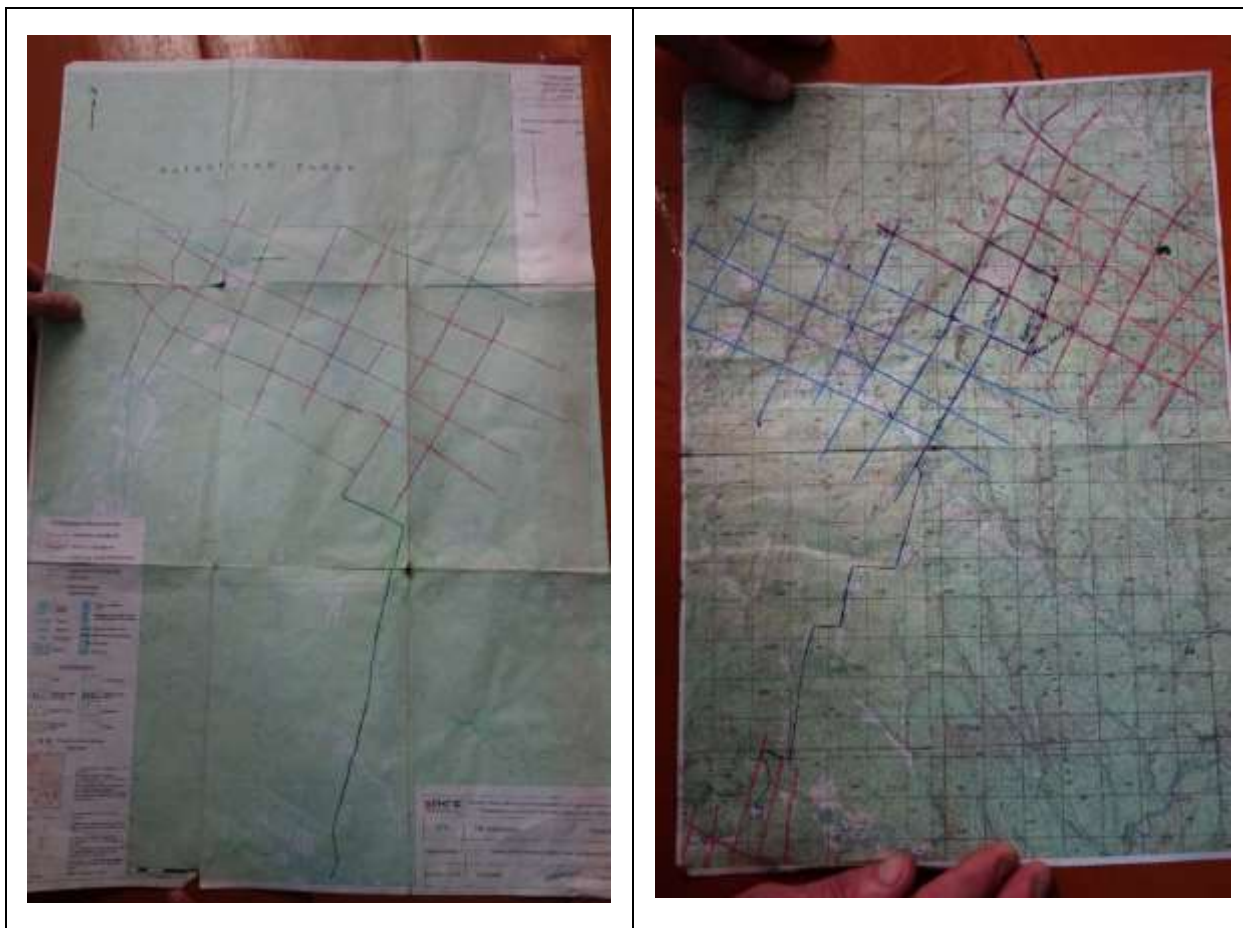
### *Corporate roads*

As outlined in the theoretical chapter (1.4.2.), on the basis of emic practice, this thesis differentiates between roads and seismic lines and treats them as two distinct concepts. Seismic lines and the company roads that have been built in the Tokma

area differ in their features, their functions and their meaning for the people of Tokma. With extensive logging, a growing network of private company roads have appeared. It facilitates the flow of timber from the forest to the processing plant in the town Novaya Igirma, 250 kilometres south-west of Tokma. The larger access roads are broad, have a solid gravel surface, are well maintained and used by large trucks with trailers laden with logs; typically, they go at high speed. As described in another paper (Illmeier and Krasnoshtanova, 2022), these roads produce particular sensual and social experiences. Driving a snowmobile on the hard surface of such a road shakes the whole body leading to a tensed body and state of mind. Snowmobiles are not constructed for such ground. Tokma hunters' snowmobiles, typically severely battered by many years of use, appear small and volatile and seem out of place on these large forest roads. This impression is intensified when a truck approaches and rushes by, leaving the snowmobile and its driver in a cloud of snow and ice. The tension that I could sense when driving with a hunter of Tokma on a snowmobile on one of the main logging roads immediately dispersed when we turned off the road, diving into the calm forest on smaller trails in thick snow-covered ground. It felt like a relief and we immediately cheered up.

### 2.3.2. A transformed landscape

Over the last years, extensive exploration activities have been carried out in the Tokma area and new seismic lines have been emerging every year, as these maps illustrate:



Figures 5 - 6. UNGF Maps indicating the establishment of seismic lines in the same territory in 2016 (map on the left) and in 2017 (map on the right, where the seismic lines established in 2016 are in blue, those from 2017, are in red). The three handwritten names on the map on the right are the names of the drivers of the bulldozers that the hunter noted down. © Gertraud Illmeier

Both maps (scale 1:100.000 metres) are from the company UNGF and show the same area along the Suringda River northeast of the Tokma village. The legend states that “the *profili* were made in the course of a seismological survey of the upper Nepa oil field by 2D method”, an area that coincides with hunting ground number 14 of *Tokma Obshchina*. In 2016 (map on the left), *profili* of a length of 345 kilometres overall were established in this area, followed up by another 189 kilometres of *profili* (in red) in the following winter (map on the right). Thus, within only two winters, new routes of a length of 534 kilometres were logged on this hunting ground.

Most of the hunters I had interviews with had such maps, which they had gotten from the workers in charge of clearing the forest in grids as preparatory work for seismic prospecting. Over the years, the hunters of Tokma have built up relations with these men, who live and work over months in the taiga, often under hard conditions. Handing out such maps is an informal practice. Except at the beginning of INK’s engagement in the region, when a public meeting with the residents of the

Tokma village was organised to inform them about the company's development plans, however, in recent years no public briefing has been taken place and people lack information about what is happening on their land. The flow of information between INK and *Tokma Obshchina* is limited to direct contact between the company and the *Obshchina's* president, who passes the information on to the individual hunters.

Seismic lines are not a new phenomenon in the Tokma region. As already mentioned several times, the first seismic lines appeared in the 1960s, and again in the late 1980s. However, prospecting then was incomparably smaller in scope and scale than it is today and the environmental impact was less rigid. Within the short time period of about ten years, seismic lines have become a distinctive feature of the landscape. Generations of wandering Evenki were engraving winding paths into the land by conforming to the features of the natural environment, bypassing natural barriers (Sirina 2006; Landerer 2009). This way, paths emerged in adaptation to the natural surface topography, a practice common across all sub-Arctic regions (e.g., Nelson 1973: 182-183). In contrast, the straight, clear-cut aisles of seismic lines slice the forest into regular quarters, shaping it in a regular geometrical pattern that is alien to the natural topography. However, as I will explain below, such landscape, severely altered by an industrial infrastructure, also comprises new qualities which hold new potentialities (as well as constraints) for humans and other-than-humans, who dwell in this landscape. Besides the natural space, seismic lines reconfigure landscapes of memory when they intersect with places occupied by an often long and multifaceted human history, as is the case with the already mentioned place Khodolkit, named after a river of the same name that flows into Nepa River west of Tokma. The former Evenki campsite (*stoibishche*) was first declared a Kolkhoz village, and when closed its inhabitants re-settled in Tokma according to changing Soviet development plans (Sirina 2006). In its vicinity, burial places of shamans are located that often have saved the place from wild fires, as I was told by the holders of the hunting ground this place is located in. Today, new stories of encounters with loggers and geologists are woven into the social fabric of this place.

Seismic lines are a crucial, but not the only factor of change that has transformed the Tokma region into a "landscape of development" (Porath 2002). In fact, local people see large-scale industrial logging and wild fires, both resulting in rapid and significant loss of forest covers well as the habitat of wild animals on which they

subsist or gain income from selling their furs, as the main drivers of environmental change that also adversely contribute to climate change (see chapter 2.1.5.).

### 2.3.3. Perceiving the environment while travelling the land

With very few exceptions, the whole male population of Tokma engages in hunting and trapping, which are essentially mobile activities. Most of the men are former employees of the state hunting enterprise (*promkhoz*). They have been working in their profession for three, four, five decades or even longer, mostly mastering the same plot of land. Today, many of the men have grown old, but they still spend a large part of their time in the forest and are eager to hunt out of a mix of economic necessity as well as pleasure and because it is their way of life. During this life-long engagement with a certain part of the land by travelling it along trails – those that were laid by generations who dwelled here before them and those that they made themselves – as well as seismic lines, the hunters have accumulated experience and intimate knowledge of the environment and have developed a strong sense of belonging to the land. They have made their hunting grounds (*ugod'ya*) their homes to an extent that they have problems understanding a question on how they get around and navigate in the forest:

*“How I navigate? What about orientation? I live there like at home. [...] I know everything, drop me somewhere with closed eyes and I anyway know where I am. [...] It is like home, like my garden. Imagine, for 35 years I have been exploring everything there. As with the garden, the same with the forest. I know, who lives where, where the moose lives, the reindeer.” (P.F.)*

The intensive engagement with the land is realised first and foremost by travelling it by various kinds of routes. Moving under the free sky of a vast land in often harsh weather conditions and at extreme temperatures, Tokma hunters are exposed to intensive sensual experiences. They need to continuously and attentively engage with the properties of the environment in which they move, such as the texture of snow, the thickness of the ice cover on a river, etc. to make the right decisions for reasons of personal security as well as to get a good yield from hunting and trapping. Ingold (2000) emphasizes that movement is critical in perceptual engagement with the environment. It is through this sensual perception and immediate bodily experience that the affordances of the environmental surrounding open up to humans (Ingold and Kurttila 2000: 189). I see this position supported by the empirical findings presented in this thesis.

Stammler (2009; 2013) looked into the ways of how different modes of transport – he compared driving a reindeer sledge with driving a snowmobile in the case of reindeer herders of the Yamal peninsula – impact upon human perception of the land and snow. In comparison, through reindeer-facilitated transport, herders gain more detailed and intimate knowledge of a – compared with snowmobile facilitated mobility – more confined area, while, the latter enables knowing a larger space and more remote areas, albeit less intimately. Stammler indicated that it is through the skills and knowledge the respective person needs to acquire and apply that generates such kind of perception. I think this account can be well complemented by an affordance perspective because, as I argue throughout this thesis, the perception of the environment is largely determined by what it affords to a person in a particular situation. Depending on how and by what means a person moves, his or her interests change and, thusly, whether the environmental affordances are evaluated as a welcome offering or a constraint. I will elaborate on this further on.

A hunter needs to understand the environmental affordances in a double sense: on the one hand from his own perspective, where the focus might be put on issues of safety when travelling at 30, 40 or more degrees below zero, or even at speed. On the other hand, from the perspective of the wildlife, in particular when it is about a potential prey. In a situation of hunting (and not only tracking or observing), the environmental offerings to the animal afforded to the hunter, who aims at catching the animal, as well under the precondition that the hunter knows the animal and its needs and habits well. Knowing the animal's needs, a hunter's perception of the affordances offered by a particular environmental setting means recognizing and understanding what made an animal move in a particular direction, why it tends to have a rest at a certain spot and time, etc. Morizot (2020: 100-101) describes tracking a wolf this way: "The emotion of the other (the wolf, note by author) is understood when one perceives what he sees *through his eyes*; in order to follow his trail one has to *position oneself in his skull* to understand his intentions, must walk with his paws to understand his locomotion." [emphasis in original]. (Translated by the author).

#### 2.3.4. Tokma hunters' engagement with seismic lines

Over the last ten years, seismic lines have become a distinctive feature of the landscape of the Tokma region. The industrially transformed sub-Arctic landscape provides affordances that impact upon the people who make use of the land by intensively travelling it when hunting and trapping. Seismic lines have come to

largely shape the local hunters spatial-temporal experiences and their methods of orientation. They channel the hunters' movements, impact upon their economic practices and indicate the boundaries of their hunting grounds. They also have an impact on wild animals' behaviour and consequently on the hunting/trapping methods to some extent. No hunter I was talking to was indifferent in regards to seismic lines.

### *Landmarks*

Rivers have been playing a major role in the practical and spiritual life of all Evenki groups (Sirina 2012: 379ff). They have significance in the formation of people's territorial identity (Povoroznyuk 2014). In a fairly level landscape like the Lower Tunguska river basin and in the Katangsky District as a whole, knowing rivers and the direction of their flow is particularly important (Sirina 2006: 80). Among other topographically significant points of orientation in the Tokma region is the Karkarun mountain range with its highest peak Kovrizhka (869 metres above sea level) and two elevations, both called "white stone" (*belaya kamen*). Besides these natural landmarks, seismic lines made in grids of right angles have become important markers for orientation. Whenever I asked a hunter to explain a certain location in the forest or a certain route, *profili* were a frequently used point of reference besides rivers and – to a lower extent – other landmarks. The men explained a route by saying how many seismic lines they needed to cross or go along: "We go four kilometres along *Nepa*, then we turn on a *profil*, along that *profil* we go until River *Kiya*" (E.K.). Overall, this hunter has to cross six *profili* to reach his cabin. One younger man, who became a huntsman of *Tokma Obshchina* only some years ago, was less confident in knowing the land. For navigation, this man strongly relies on the grids of seismic lines, which are indicated by numbers, where the lines of a square intersect (D.P.). Seismic lines seem to have largely replaced natural landmarks indicating territorial boundaries between hunting grounds, which, consequently, have also slightly changed the course of these boundaries. Seismic lines have come to define the hunters' relation to the land to an extent that they feel the need to emphasise their ability to orientate independently of seismic lines:

*"In the past, there were no profili at all. Only since a couple of years they make profili. Today, the boundaries also change. I walked without profili. I oriented by the forest, even in dark forest. Not once I got lost. At night with covered eyes, I find my way."* (V.N.)

In parallel to their supportive role in navigation, seismic lines, which, from the hunters' perspective typically appear suddenly and without previous announcement, can have the opposite effect. Due to the rapid speed and scale by which new lines appear and change a once familiar piece of land, they can confuse a traveller, as Landerer (2009) has observed in her study area, although this state of mind typically does not last very long.

### *Moving on seismic lines*

Besides snowmobile trails (*Buranovskie dorogi*), seismic lines are the most important routes that facilitate the movements on the vast land that is managed by the hunters of *Tokma Obshchina*. Deviations from this meanwhile standard infrastructure are often verbally signified. In conversation with one hunter, he emphasised that on the way to his hunting cabin, over a length of 12 kilometres, there are only trails, no *profili* (N.T.). He felt it was worth mentioning this because, obviously, it has become something untypical. Once seismic lines are there, their affordances can hardly be ignored. In an unruly landscape even the slightest sign of a trail deploys a strong pulling force, as the author of this thesis knows from personal hiking experience of these routes.

Throughout time, the hunting territory of *Tokma Obshchina* has been covered by a multitude of different kinds of paths, trails and lately, increasingly seismic lines and corporate roads. Depending on their actual interests, the hunters apply different modes of movement and choose between different kinds of routes. According to my observation, all different kinds of routes, including seismic lines, are used in both modes of locomotion that were distinguished by Ingold (2007): as routes of "transport connecting points of a network" as well as through "wayfaring" when the hunters are attentively engaging with the environmental surroundings. For commuting between the village and the base cabin during the winter season, hunters often prefer taking the fastest routes, which can be travelled easily. These are the frozen rivers and the *profili*, which significantly reduce the distances. Following the meandering rivers would take much longer. "What is 50 kilometres on the snowmobile along *profili* in winter, is 200 kilometres along the river in summer", as one hunter explained (F.P.). Besides seismic lines, trails continue to be used. "Today, we go along *profili*, but, we use trails as short-cuts. One is faster on the trails", another hunter states (D.S.) (taking into consideration that the large grids of seismic lines are four by four kilometres broad, note by author). These and other examples illustrate how the men create their own realms for movements by making use of the

affordances of different types of trails according to their needs. They engage with and modify the given natural (topographical) and built structures (seismic lines) and they create their own paths and trails.

Hunters of Tokma Obshchina & other economic activities/income	# of hunting ground on the map & main river	Size of hunting ground	# of cabins (in use)	Distances village-hunting cabin & between cabins (in winter)	Time spent in forest/Rhythm of commuting
<b>D.P. and G.V.</b> D.P. has a job in the village; relatively new in hunting; G.V. pensioner; doesn't live permanently in Tokma	3		2	100 km north of the village	3 months in the forest, from 15 October - mid of December (D.P.)
<b>V.T.</b> pensioner; former state hunter	4	65.000 ha		64 km from Tokma to the boundaries of the hunting ground; 100 km to it's very end	10 days in the forest
<b>E.K.</b> pensioner, former state hunter	11 r. Kiya	25.000 ha	3	Tokma-base cabin: 42km base-cabin - cabin 2: 20km cabin 2 - cabin 3: 11km	goes every 7 or 10 days to the forest, stays there 2-3 days
<b>R.K.</b> pensioner, moved to Tokma in 1989, worked as state hunter	12 r. Beel'			Tokma - base: 32 km base - cabin 2: 22 km cabin 2 - cabin 3: 17 km	1 week in the forest, 2-3 days in the village
<b>P.F.</b> has a job in the village, former state	14 r. Suringda	30.000 ha	3	Tokma-base cabin: 50 km; between cabins: 12 km	
<b>D.Sh.</b> pensioner; former state hunter	16		4	Tokma - the nearest cabin: 42 km, to the cabin furthest away: 60 km	10 days in the forest, 5 days in the village
<b>N.T.</b> pensioner; former state hunter	18			Tokma - base cabin: 30 km in the 2016 forest fire, cabins burned down	
<b>G.G.</b> pensioner; former state hunter	20 r. Nepa	15.000 ha	3	Previous plot: 100 km from village; now: 20km Tokma - base cabin: 25km, base - cabin2: 40km, cabin2 - cabin3: 65 km	commutes once per week: 4 days home, 3 days in the forest
<b>N.V.</b> one of the younger hunters; no employment, lives only	23 r. Ber'ya	17600 ha	3	Tokma - base cabin: 18 km	Oct. - late December lives permanently in the forest

Table 2. Movement patterns and hunting infrastructure of some hunters of *Tokma Obshchina* during the winter hunting season.

Table 2 presents an overview of the movement patterns of some of the hunters of *Tokma Obshchina* in the winter hunting season and indicates parts of their hunting infrastructures by providing (a) the number and; (b) the size of the individual hunting territories according to the map of *Tokma Obshchina* (see figure 1); (c) the number of cabins a hunter uses (every hunter has one larger and more comfortable base cabin where he lives and two or more smaller and simpler cabins, which are

used as shelters and to store equipment), as well as; (d) the distances between the village and the base cabin, and; (e) the rhythm of commuting.

There are several reasons for the differences in the time spent in the forest and the village. Hunters who commute more frequently, typically have obligations in the village, either at the workplace or at home. The men who are employed in the public services (at the meteorological station or the airport) can only stay longer in the forest when they find a substitute who replaces them at their place of work, which is difficult in a small village like Tokma. Physical and health issues (also of family members) are the most typical reasons for shorter stays in the forest.

### *Setting traps*

Seismic lines not only offer open routes through the forest, they are also used as traplines on their own. While in the Soviet period, various kinds of fur-bearing animals were systematically hunted (squirrels were an important species in this regard). Nowadays, the market accepts only sable. Today, trapping is the predominant method of hunting sable applied by the members of *Tokma Obschchina*. In previous decades, during autumn/early winter, sable was chased with dogs and shot. Today, Tokma hunters mainly use foothold steel traps (*kapkany*) to catch the animals. Traps are set along a trail (or other route) where the migratory routes of sable are as well as places where the animal lives. Sables prefer moving along ridges and valleys and places close to creeks and rivers. Furthermore, they like old dark forests with heavy canopies overhead, in particular spruce trees with dense undergrowth (Tokma hunters; Nelson 1973; Rideout 2013;).

The trails (*putiki*) are walked or driven along on snowmobiles. Depending on the physical condition of the individual hunter, he might prefer traplines that can be easily accessed, meaning, where he can drive to. Seismic lines make previously dense parts of the taiga more accessible and ease the access to traplines. Most of my interlocutors prefer traplines that can be accessed on the snowmobile. The place where a trap is set is often indicated by a stick. These are small signs, noticeable only to the trained eye. Traps are set no more than seven to ten metres off the trail (E.K.). The hunter slowly drives the traplines and stops at each spot to check the trap, which is often installed next to an (old) tree. He gets off the snowmobile, whose engine is often left running, and walks a few metres off the trail to check whether the trap holds an animal. Depending on the season and the snow conditions, he can

sink up to his hips into deep snow as soon as he leaves the pressed snow of the trail, thus, illustrating the significance of trails for land-use in a northern forest.

Traps need to be checked frequently to avoid that mice, foxes, wolves or wolverines take advantage of the quarry and feast on it. Most important for the hunters is that the fur does not suffer. As a rule, the hunters aim to check their traplines once per week or ten days. Consequently, trapping requires a high level of mobility. Nowadays, for the hunters of Tokma, this level of mobility is ensured by seismic lines and snowmobiles.

### *Seismic lines and wild animals*

Logging the lines for seismic prospecting, in particular by use of bulldozers, is a tremendous disturbance for wild animals, as the head of *Tokma Obshchina* explained:

*“When they make profili, they beat them with bulldozers in winter. Over a length of 40 km; it is like in war! The trees are cracking, such a crash! Moose flee at breakneck speed! It is horrible!” (S.G.)*

All animals are not alike in how they react to the disturbances caused by the industries or in regards to seismic lines. It seems that seismic lines have the same ambivalent effect on the animal world (for the most part) as they have for humans. Moose seems to have adaptation abilities much like humans in this situation: *“Moose fear roads, now they adapt [...]. People change, and animals too. They adapt, get used to it”*, one huntsman stated (V.N.). Wild reindeer, however, are very sensitive and have largely already abandoned the region as the people of Tokma deeply regret. According to their observations, the main migration routes of wild reindeer have moved further north, where the region is still less affected by industrial development.

However, wild animals also take advantage of the affordances of cleared routes cut for seismic prospection. There are different reasons why different species use human-made routes as the author knows from self-made observations and respective literature (e.g., Gese, Dowd and Aubry 2013; Morizot 2020): In winter, it can be a matter of survival for wild animals to expend as little energy as possible (except in situations of danger), which is why they often enjoy paths that are easy to wander along to get a rest. Animals use human-modified environments such as snowmobile trails in strategic ways, as was explored for instance by Gese, Dowd and Aubry (2013) for coyote in Canada, who increasingly used snowmobile trails as snow

depth off-trails increased. This is why one and the same trail, be it human-made or originated from other animals, are often used by different species. Quoting Yuri Vella, an indigenous activist fighting the encroachment on his land by Lukoil in the Mid-Ob region of Western Siberia, Niglas (2011) states that Vella's reindeer like to walk along an oil-road, which makes it easy to find them as their tracks can be easily followed on the sandy road (ibid: 56). Wolves in general prefer routes that promise the least possible barriers (Morizot 2020:17). Easier access to food can be another reason why cleared routes with less snow-cover can attract animals. The affordance of open corridors are appreciated by sables, foxes, and other animals that feed on mice as well, since these routes offer a better food supply, at least in the immediate time period after logging. In winter, reindeer need to scrape the ground to find lichen. A lower snow-level along cleared routes can ease the access to this important food source, as Vorob'ev (2004 29) observed. However, not only the depth but also the properties of the snow cover are relevant and largely depend on the temperature. Rapid alterations of (relatively) high to low temperatures can lead to ice enclosure of the ground vegetation, making it inaccessible for reindeer and other ungulates (e.g., Lavrillier, Gabshev and Rojo 2016). Carnivorous animals (e.g., wolves, foxes, martens) appreciate openings as stages where they tend to mark their territories to make their claim better visible (Morizot 2020: 9). Sable, the fur animal Tokma hunters are most interested in, is attracted to freshly logged seismic lines, especially when they were beaten by bulldozers: *"Of course, profili disturb the animals. But, sables love walking along fresh profili. When bulldozers turn up the ground, they feed well on roots and mice"* (V.N.). The hunters get a lot of information out of the tracks on the routes about the whereabouts and behaviour of the animals<sup>27</sup> and they set their traps close to or along paths and seismic lines.

---

<sup>27</sup> After each hunting season, the hunters are obliged to systematically count the tracks they have come across and send the data to the Hunting Inspection (Служба охраны объектов животного мира). On this base, the culling quota for the following year is determined.



Figures 7 - 8. Animal tracks on snowmobile trails. © Gertraud Illmeier

A landscape transformed by intensive seismic prospecting impacts upon the wild animals' spatial habits as well as on the practical effectiveness of game management regulations. The legally stipulated recreation zone of 1.5 kilometres along the boundaries of individual hunting territories (including the same zone in the bordering hunting area, which allots to a recreation zone of three kilometres overall), got blurred because of seismic lines, which are installed according to another logic that does not consider these or other regulations representing other interests. The squares of land that appear through seismic prospecting in grids of four by four kilometres, seem to have come to replace these belts of recreation zones. Since the hunters mainly move on snowmobiles and hardly walk the forest any more, the land inside the grids formed by seismic lines constitute a new kind of reserve for the animals, largely untouched by the hunters, as one informant declared (E.K.).

#### 2.3.5. The affordances of seismic lines: opportunities and constraints

As emphasised in the theoretical chapter of this thesis, affordances understood as a relational concept shall not be mistaken as benefits per se. The affordances of seismic lines contain the potential for both opportunities and constraints, depending on the perspective of the perceiver, be it human-like or other-than-human. It was explained earlier that there are two kinds of recently established seismic lines in my study area: broader ones (about four metres across), where all vegetation is removed from the surface as well as sub-surface, and narrower lines, where only the surface

vegetation is removed. Seismic lines made without fully removing the vegetation constitute constraints for mechanised mobility as well as for walking, as my informants stated and further confirmed by Landerer (2009), who experienced seismic lines by walking on them (and other kinds of trails). Without a thick snow cover, tree stumps, branches and other remains of cut vegetation can damage the snowmobiles and are dangerous for the hunters. Yet, when taking an other-than-human perspective, as explained in the previous chapter, open strips of land are interesting for several species who use them in varying intensity – carnivores more intensively than ungulates.

Old seismic lines, overgrown with thick brush, are not favourable for mechanised transport and would require exhausting clearance efforts. Yet, it is these overgrown corridors that are known by the local people as the kind of trail that is much preferred by bears (D.S.). Hence, from a human perspective, this kind of trail not only hampers movement but also holds an additional constraint, namely the risk of encountering a predator animal. Reindeer-keeping Evenki in the Tetya region of the Katangsky District fear *profili* because they are the preferred routes of wolves, the most dangerous predator for their reindeer (Landerer in private conversation with the author, 2019).

The first kind of seismic lines, forming clear-cut corridors, hold the greatest benefits from the perspective of local people who rely on a mobile way of life. The affordances of large fully cleared seismic lines bring a number of opportunities that hold crucial benefits for the local community, at least in a short-time perspective. Following, is a summary of these benefits:

- Reduced workload

The greatest relief these lines bring about is that the men don't need to clean trails from overgrowth anymore, as was emphasized by every informant I was talking to. Clearing old *profili* overgrown by bush to make them drivable for snowmobiles means a physical hardship that hunters with health impairments could not accomplish anymore. Instead, all the men enjoy the enormous relief of work seismic lines have brought, as is evident in the following statements of informants:

*“Profili are good for us. They make it much easier for us. No need to log and saw.” (R.K.)*

*“If there would be no profili, we would need to clear routes ourselves. Trails are overgrown with shrub within five, six years and only a small track is left for the Buran. Another problem is, when snow comes early, wet snow that freezes, trees bow onto trails.” (D.S.)*

The immense importance of routes that don't need to be cleared any more is also demonstrated by the often hearty complaints related to the debris that remains after clear-cut logging, which constitutes a physical barrier for driving snowmobiles. I could observe such a situation on the day trip to the forest, which gave me an idea of the physical hardship involved in clearing trails for mechanised transport. We suddenly had to stop because the trail was blocked by piled-up frozen soil and timber residue, material that was thrust aside from a freshly logged field. The hunter had to work hard to dig and shovel a path as broad as necessary so that the snowmobile could pass through.

- Open and even – drivable – routes

The great appeal of clear-cut *profili* is that they offer open routes, which allow easier and faster travel in difficult terrain and make the forest, the base for people's subsistence and income, more permeable. These routes are applicable for mechanised transport on snowmobiles. Open routes in a landscape rich in forests provide the important affordance of a better view, which is a relevant advantage in navigation and when looking for prey. In combination with snowmobiles, on which the hunters kneel to achieve a slightly elevated position, they obtain an even better view. Seismic lines made by method of removing full vegetation often provides a rather even ground that affords mechanised transport in this fashion. On winding, uneven trails it is much harder to control the heavy snowmobile, which can weigh up to 300 kilograms and sometimes more when pulling a sledge. From time to time even the most experienced hunter can face problems in controlling the vehicle, as I myself experienced. For example, on an uneven and slippery trail (*Buranovskaya doroga*), the snowmobile tipped over, spilling me and the skilled driver to the ground where I was immediately afraid that it could smash my leg which ended up under the vehicle.

- Increased potential for income

The large amount of seismic lines open up a larger territory for trapping. Time is an important factor in a sub-Arctic environment, where the climate is harsh and daylight is short during the winter hunting season. The clear-cut corridors across

the forest enable the hunters to commute more frequently, check the traplines more often, re-fill the traps with new bait, and thus, promise a larger catch and more income. Yet, the yield rates in sable pelts depend on other factors as well and is not strictly a matter of the size of a territory. It would be impossible for the commune to utilise the distant and large hunting territories to the extent they do today without the routes logged for oil prospection.

Affordances of seismic lines offer opportunities, whose wider implications nevertheless can have negative effects for the local community. The opportunities of open drivable routes across previously inaccessible land afford not only the mobility of the hunters of Tokma, but those of other parties as well. *Profili*, as well as the roads of the timber companies, have made the taiga accessible for people from outside who are interested in the forest and its resources. Besides the oil workers and loggers, there are, first and foremost, the fishermen from the towns in the wider region, there are recreationists, and also poachers. Seismic lines make the deep taiga accessible not only in winter but also in summer by use of all-terrain vehicles, like a Russian civilian tracked vehicle (*vezdekhod*) with its disastrous consequences from destroying the topsoil, as lamented by informants (S.N.). Even though a *vezdekhod* can access difficult terrain without any kind of route, the plenitude of seismic lines invites further and more wide-spread use of these vehicles.

#### 2.3.6. The ambivalence of seismic lines

As illustrated above, seismic lines come with affordances that benefit humans and animals in certain ways while being harmful to them in other ways. Leaving their immediate effects aside, the people of Tokma express ambivalent attitudes and emotions in regards to seismic lines. The highly practical significance of seismic lines as an important infrastructure for the hunters' travels is overshadowed by feelings of discomfort, particularly in view of the direct and indirect adverse effects of seismic lines and other industrial infrastructures on the environment, as described earlier (chapter 2.1.5.). Some hunters emphasize the importance of *profili* for local livelihoods and praise them as "*a blessing!*" (R.K.). Others view them more critically in light of the advancing depletion of the land, expressing deep concern and sorrow. The following statements of informants illustrate the ambivalence Tokma hunters got caught up in with regards to seismic lines:

*"Profili are not only bad. They help, because the (old, note by author) trails are already overgrown, everything is overgrown and they made new, clean*

*ones. This makes it of course easier. For the hunter it is much easier, but on the other hand [...] I don't know how it is in the other territories, but, in my territory, I meet them [the people who make the profili] constantly.” (P.F.)*

*“So, I went along their profil’, a fresh and clean one. I set my traps along their profili. On the one hand, this is good, but on the other hand, again, it is bad!” [...] “There are so many new profili! They have all dug up the whole taiga! So where the profili are made, there is no living forest left. At places, every 500 meters there are grids. Every 500 metres grids, grids, grids! Last year they messed up my place, ploughed up everything with profili. This year, they come again, and it will be the same again. Everywhere only profili. And there, in the south, I don't even want to talk about it. There, it's the end, already, everything is finished!” (N.G.)*

The hunters evaluate the affordances of seismic lines differently, but not making use of them would not make sense either. Because of their affordances, seismic lines cannot be ignored. The prevailing opinion is that seismic lines have become a necessity for the hunters of Tokma to carry on with their mode of existence. Above all, they assess the affordances of seismic lines – their opportunities and constraints – according to whether the route supports driving the snowmobile or not. There are fully cleared *profili* affording mechanised mobility, and others which cannot be used for this purpose. The latter represent only constraints, which is regarded as a worst case scenario: it only brings forest destruction without any positive side-effects for the people who live off the forest and its animals.

The people of Tokma appear resigned to the overall situation. They regard their hunting area as lost to industrial exploration and anticipate a future without forest and wildlife – and without them. Some articulated their suffering in view of an assumed lack of future and openly displayed feelings such as rage, deep frustration and depression. Others demonstrated a more pragmatic attitude, hinting that they would strive “to get out their share” (of sable furs, note by author) before the industries get hold of the entire forest.

*“Now, the last forest burns down and we too will die.” (G.G.)*

*“It is the end, the village is dying. ... I only wish that they would leave the forest alone and would leave us in peace, that's all. So that we can still hunt in peace on what is still left and that you don't arrive in the forest and have*

*to search your traps and start from scratch. I have been doing this for 30 years, and they immediately destroy everything in one year. What is left, is for about five more years of hunting.” (P.F.)*

*“The wild animals go away, and the hunters need to leave as well from this land.” (N.G.)*

## **2.4. The (unintended) consequences of oil infrastructures**

### 2.4.1. The significance of snowmobiles

The significance of seismic lines cannot be understood without understanding the significance of the snowmobile for the hunters of Tokma. Today, every hunter masters his hunting ground with the help of a “*Buran*”, the most popular Russian model of snowmobile. Most men own one or two vehicles; in a few cases, two men share one snowmobile. The brand “*Buran*” has been produced since the 1970s in Rybinsk, a town at the Volga in the European part of Russia. It is the most widespread type of snowmobile in the Russian North. The snowmobile is equipped with one ski (in difference to snowmobiles with two skis used in other northern regions) which makes the vehicle more flexible and manoeuvrable and thus fits the environmental conditions of a northern forest well. Its weight is 280 kilogrammes, though together with spare parts that are stored under the seat it can reach up to 300 kg. It can pull three barrels of gas condensate per 100 kilogrammes (E.K.), roughly the same weight as the vehicle itself.

Snowmobiles have become the most important means of local transport during winter in the Tokma region as well as many other regions across Siberia, but by no means all of them. On the one hand there is the issue of terrain and landscape, and on the other hand there is the (political) history of mechanised transport in the Russian North (Stammler 2013; 2009: 58). The rather low relief with only slight elevations in the headwaters of the Lower Tunguska river basin affords the use of snowmobiles, which is not the case in more mountainous terrain (Vitebsky 2005: 206ff). This is also confirmed for other northern regions, for instance, the North-American context (Nelson 1973: 160, 170, 177ff). The taiga landscape there, with its dense forest vegetation, does not support mechanised transport nearly as well as, say, the open, treeless tundra, for obvious reason. In the past, only rivers (frozen, or in the ice-free season in spring) provided conditions for mechanised ground transport in the absence of roads. In a landscape being transformed into a resource frontier, seismic lines and corporate roads of the industries offer plenty of cleared corridors through the forest for the use of vehicles such as snowmobiles.

In 2018, there were five cars overall in Tokma (not all of them were functional) and several tractors, which have been in use for many years. The cars are used for travels outside Tokma on the winter road that operates from late December until April, tractors for hauling fire wood. Snowmobiles facilitate transport within the long

stretched village itself, and to commute between the village and the hunting grounds. This is true only for the male population, the women of Tokma typically do not drive snowmobiles and are walking within the village, except when they are driven on snowmobiles by their husbands or male relatives to the river for icefishing in winter. Depending on the distance to the hunting ground, the frequency of commuting, the types of routes (trails, seismic lines) and other factors like weather and snow conditions, a hunter drives a minimum 1,000 to often between 3,000 and 4,000 kilometres per season. One informant laughingly said that during the 20 years he has owned his Buran he was driving more than 62,000 kilometres, “*one and a half times around the equator.*” (E.K.)

The men use their snowmobiles in the following ways:

- driving while sitting, kneeling on the snowmobile seat or standing, thus, obtaining a wider view;
- using it as an outlook, observing the area, watching out for animals by kneeling on the seat;
- hauling a sledge with important equipment: barrels of fuel, shovels, a spare engine, etc.;
- storage of important tools under the seat;
- resting by (preferably) kneeling on the seat;
- loading accumulators (energy storage device) to have light in the cabin;
- making a quick fire with the help of the Burans’ fuel by soaking a cloth in the tank and using it as a fire starter (can be a matter of survival in severe winter cold).

A Buran represents much more than simply a means of transport. A Buran is “*the closest partner of a hunter*” (P.F.) in the forest and is attributed with human qualities. The intensive interaction of the hunters with their snowmobiles has a strong affective dimension. Every man knows the date he got his first Buran by heart. One man explained the affective dimension of a hunter’s relationship with “his Buran” as the mutual dependency of man and machine: under the harsh climatic conditions, where temperatures can drop as low as minus 50 degrees, the life of a hunter can depend on a well working, “*reliable*” snowmobile. Hunters “*give back*” to their snowmobiles by way of maintaining them well. One informant described this relation of reciprocity as such:

*“As you approach him, so he will treat you. The way you care for him, so he will drive you! How can you not trust him? It means you don't believe yourself. He's a very good friend. He's a partner, he is everything” (P.F.).*

#### 2.4.2. Entanglements with the industries

Snowmobiles need fuel and intensive maintenance and, frequently, spare-parts. Yet, none of those are easily accessible in a remote region, nor affordable by people who engage in traditional forms of land use. For Siberia, ethnographies from different regions address the dilemma people have in securing the needed or desired amount of fuel and spare parts necessary to make or keep their snowmobiles functioning (Landerer 2009 and in personal conversation with the author 2019; Niglas 2011: 48; Stammeler 2013; Vorob'ev 2014; Mertens 2016). The sufficient supply of snowmobiles and fuel in the Tokma village is directly linked to the industrialisation of the region. The two enterprises that lease the land – the oil company INK and the timber company LDK Igirma – committed themselves to support Tokma and other indigenous hunting communes (*obshchiny*) in the areas where they operate. In formal terms, *obshchiny* are legal tenants of the land classified as the “Region of High North”. This way, the political-legislative constellation can allow local hunters of marginal social status to become stakeholders vis-à-vis extractive industries.

Both companies signed “agreements of socio-economic development”, which are referred to as “contracts” by the president and members of *Tokma Obshchina*, but are denoted as “social and charitable programs” in the formal document and on the company’s website (INK Sustainable Development 2022). They provide fuel and hunting licenses (INK) as well as payments in cash (LDK Igirma) – locally understood as compensation for reduced income due to the loss of land useable for hunting. Money that the hunters largely invest in their snowmobiles, first of all for the purchase of spare-parts and also for the transport of fuel. Motor-boats, which are the main means of transport in the snow-free season and crucial for subsistence fishing, need fuel and maintenance as well, yet they require less care (Mertens 2016: 14) and do not carry the same symbolic significance as snowmobiles in Tokma.

The agreement between TSLK (later LDK Igirma) and *Tokma Obshchina* stipulates an annual payment of one million roubles, which seemed to be a respectable sum when the agreement was signed. Meanwhile, the members of the *Obshchina* regard this amount as insufficient in view of the destruction caused by large-scale logging. TSLK promised to increase this sum, once the planned timber processing company

in Ust'-Kut started working, however, the company instead split up into several units (today's contractor is LDK Igirma) and the amount remained the same to this day.

INK signed an agreement with *Tokma Obshchina* to comply with its Corporate Social Responsibility (CSR) programme to prove eligible for credit from the European Bank for Reconstruction and Development (EBRD), which is also a shareholder of the company (Saxinger, Krasnoshtanova and Illmeier 2021). INK provides financial support related to traditional activities, first of all for purchasing the required hunting licences for sable and ungulates as well as for other needs of the people. Support is provided only upon request by the head of the *Obshchina*. Most important to the people of Tokma is the supply of gas condensate for snowmobiles, which they get “for free” as the INK website states. In 2021, gas condensate was provided to four indigenous hunting communes in the south of the Katangsky District (INK Sustainable Development 2022)<sup>28</sup>, valued at 2,7 million roubles by INK themselves. However, the local population points out that gas condensate is a by-product of the company's own oil-fields and that it could not be commercially sold because INK lacks the required licence. With payments for hunting licences and provision of gas condensate, the oil company secures two factors that are critical for the current economic practices and way of life of the people of Tokma.

Tokma hunters aim to catch between 35 and 50 sables per season. As an example, for the season 2017/2018, one hunter received licences for 45 sable, two moose and one wild reindeer from the *Obshchina*. Given the prices for licences (Table 3), obtaining this many licences would cost this man almost 9,000 roubles if he had to pay it himself<sup>29</sup>.

<b>Species</b>	<b>Price per licence(RUB)</b>	<b>Amount needed</b>	<b>Costs in RUB</b>
sable	120	45	5,400
moose	1,500	2	3,000
reindeer	300	1	300
TOTAL			8,700

Table 3. Prices of hunting licenses in 2017

<sup>28</sup> In fact, there are two indigenous hunting communes (obshhiny) in southern Katangsky District comprising four villages (Tokma and Bur form one, Ika and Nepa the other obshchina).

<sup>29</sup> The exchange rate of RUB to Euro in September 2018 was 100 RUB = 1.44 EUR.

However, the number of traps set out is typically much higher than the number of licences obtained and can potentially amount to 200 metal traps<sup>30</sup>. When more sables are caught than licences obtained ahead of season, the missing licences are ordered afterwards, as I was told.

Over the past years, financial support was also provided by the two companies to all households of Tokma as mitigation of damages caused by flooding, a new roof for the school-building, telephone wires, and for special medical treatment of a hunter.

### *Fuel*

Snowmobiles require fuel, which *Tokma Obshchina* receives from the oil company INK as part of its corporate social responsibility policy. In fact, the *Obshchina* hunters receive gas condensate (*gaskondensat*, or *kondensat*) from the Yarakhtinsky oil and gas condensate field, the closest oil field to the Tokma village. Condensate is lower in quality than regular fuel sold at petrol stations. In difference to imported snowmobiles, a “Buran” can work on gas condensate but it puts a strain on the engines and increases repair needs, which is why talks about condensate always come along with sarcastic comments by the men. Yet, there are also advantages of this type of fuel, such as that it does not need to be warmed up at extreme low temperatures (E.K.). The transport of gas condensate to the village is not covered by the agreement with INK. The *Obshchina* has to rent a costly truck and each hunter has to pay 1,000 roubles for each barrel (200 litres) of gas condensate he orders. Typically, the men order between five and ten barrels, hence, they pay between 5,000 to 10,000 roubles for transport. The bulk of the fuel is stored in the village, but a certain amount is brought to the hunting cabins so the hunters have fuel available at the spot. However, storage of fuel in the forest bears a risk in regards to wild fires, which have become more frequent in the last years. Every hunter needs to make a balanced decision ahead of every hunting season about the storage of the condensate.

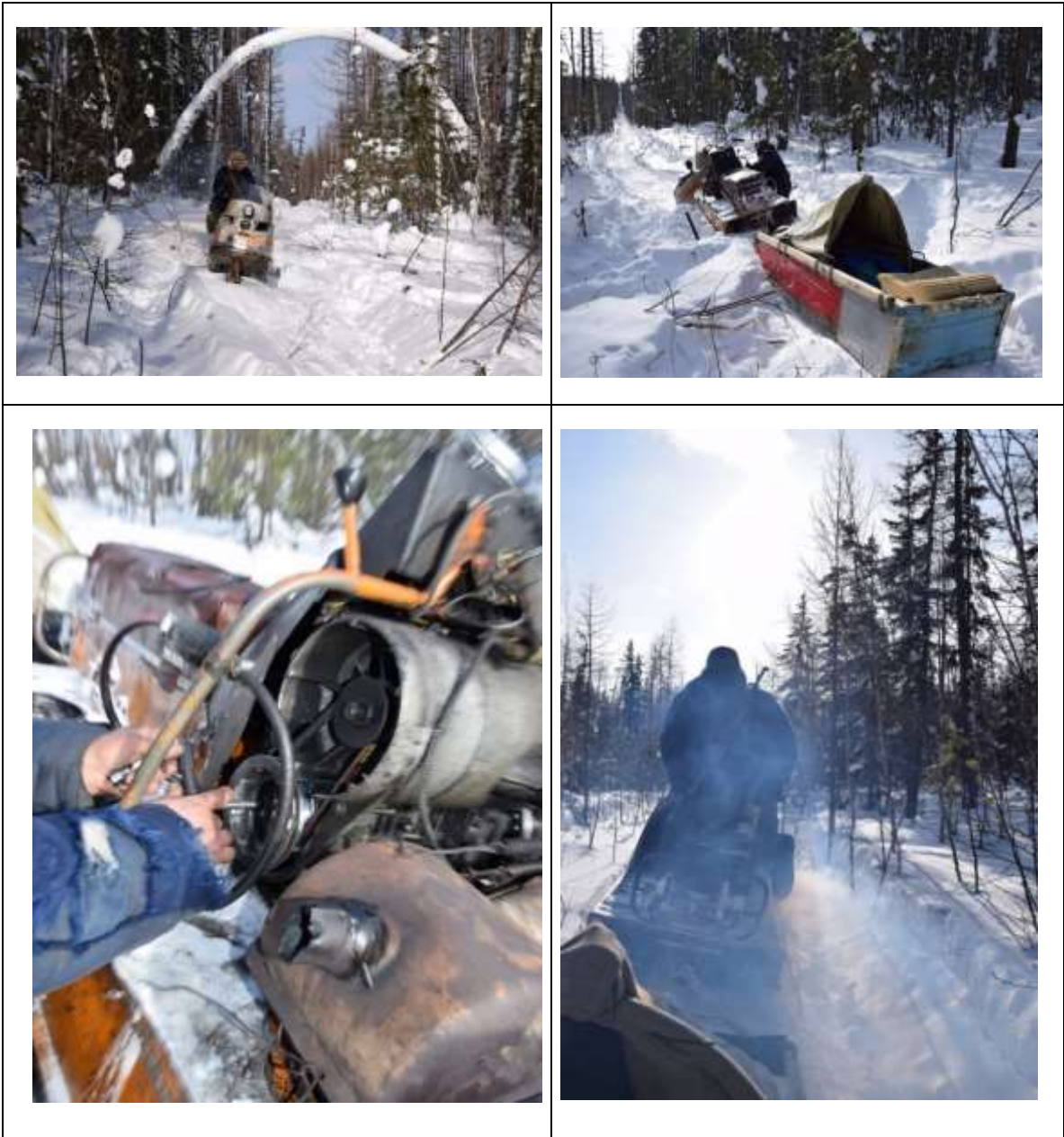
### *Spare parts*

Except the rather short summer period, hunters are busy throughout the year in keeping their snowmobiles in good shape. As stated, a Buran requires attentive treatment. The instructions remind the user that the engine needs a rest after every

---

<sup>30</sup> Interestingly, Nelson reports the same amount of traps for “the best trappers” (150 – 200 traps and perhaps 30 snares) among the Alaskan Kutchin (1973: 154).

70km so it doesn't overheat. In extreme cold, the drive belt needs to be removed overnight and be preheated in the morning before use, as I myself observed during my stay in the forest. Mertens (2016) comparing repair time with time spent on usage of snowmobiles gives a ratio of 13 hours of repair to 96 hours of usage time (ibid: 14). In comparison, no other "form of transport" typically used in the north (he compared boats, reindeer, walking) needs so much time invested for repairs as snowmobiles. Ethnographies of other northern regions contain similar accounts on the high time-investment required by snowmobile facilitated transport (e.g., Nelson 1973: 177ff; Stammler 2009: 57).



Figures 9 - 12. Fixing the snowmobile along the way. © Gertraud Illmeier

Closely engaging with the vehicle is a necessity because the men need to repair their snowmobiles themselves. They need to be able to describe a problem in detail to the trader, where they order spare parts. Each hunter of Tokma possesses intimate knowledge of the technical properties of his snowmobile. Spare parts are an issue permanently occupying the minds of the hunters for logistical reasons – they need to think a year (or hunting season) ahead because the order and delivery of spare parts needs quite some time – and because they are very expensive: “*Hunters ruin themselves because of spare parts*”, as the head of Tokma Obshchina stated. Another informant reflected on the Buran this way:

*“The Buran for the hunter is a blessing and a sorrow [...] He feeds the hunter and does anything [what is needed for the hunter]. [Why a blessing and a sorrow] – because almost all earnings from hunting, go into spare parts for the Buran. [...] The vehicles are old and need constant repairing. We have Buran, but not new ones. We cannot buy new snowmobiles, like those you can see on TV, like those Yamaha, or how they might be called. We don’t buy them since we don’t have the money. Where should we take it from?” (R.K.)*

These lines bring Pelto’s (1973) study on the “snowmobile revolution” to mind. Here, the author argues that the change from reindeer to snowmobile-facilitated mobility of Skolt Lapp Reindeer herders in North-Eastern Finland in the 1960s brought dependency from external energy resources (fuel, spare-parts), drawing people into a globalized cash-economy which entailed far reaching social change. Pelto called this process “de-localisation”. However, this thesis is not the place for immersing deeper into this renowned as well as criticized study (Ingold 1976). The historical, political and socio-economic context of my case differs in many respects, because the introduction of energy sources from outside the community occurred under the specific framework of a Soviet modernisation programme and command economy (e.g., Stammler 2009). Yet, establishing a dependency of local communities on these external resources was the result in both cases.

The men order spare parts via phone or email (often with the support of younger family members who live in towns) at traders they have typically known and trusted for a long time. The items are sent either via mail (by helicopter) or delivered in person thanks to individual arrangements with relatives or other townspeople who come (mainly) for ice-fishing to Tokma. Besides products, spare parts and gasoline are the most essential goods the people of Tokma need – and often exchange them for meat or other forest products (Illmeier and Krasnostanova, 2022: 204). Other

men have spare parts on their “shopping list” when they depart for their – in most cases - annual rides on the winter road to Kirensk or Ust'-Kut.

#### 2.4.3. Changes induced by seismic lines entangled with snowmobiles

The currently displayed rhythms of commuting as depicted in table 2 by extensively travelling seismic lines have significantly changed in comparison with the past, when neither seismic lines were there, nor snowmobiles available to the hunters of Tokma. Due to the combination of new routes along seismic lines and mechanised transport on snowmobiles, the hunters can organise their work more flexibly, stay shorter periods in the forest and commute more often. Furthermore, larger territories can be processed than what would previously be possible by walking. As an example, the time spent to reach a cabin 50 kilometres away has been reduced from 10 hours walking to three hours driving the Buran:

*“It was normal to walk. We were young then. On 7th November, we were walking to the village. It was a holiday then. So, we run from the winter cabin to Tokma to spend the holiday there and then back. On foot. [...] 50 kilometres. We needed 10 hours. We were young and strong, so we were walking.” (P.F.)*

*“My hunting ground is not far, the same as with Zhenya, 50 kilometres. I only need three hours on the Buran to get there.” (P.F.)*

As the case of one hunter illustrates, seismic lines in combination with snowmobiles have brought major changes upon the lives of the hunters:

The respective man (D.P.) is one of the few hunters of a younger age, who began working as hunter only in the post-Soviet period. Together with a retired professional former state huntsman he shares an allotment that is located 100 kilometres far up north from the village. Until a few years ago, his mode of transport was solely walking as he did not own a snowmobile. To overcome the distance of 100 kilometres, he spent five days walking (on skis), staying overnight at different cabins along the way. For the autumn hunt, he left on October 14 to return to the village only by mid-December, staying alone for three months in the forest. After the New Year break, he would again depart. Three years ago, he bought a used Buran, which he shares with his partner. His travel time was reduced from five to two days. On the way, he spends one night in the cabin of his neighbour and

continues the day after for another five hours before he reaches his cabin. This hunter appreciates the seismic lines he drives along for making his travels significantly shorter as well as for easier orientation.

Tokma hunters can no longer imagine pursuing their occupation without the snowmobiles and seismic lines. The hunters of Tokma need both to continue their preferred way of life. They could not manage the territory without the network of open, clear-cut routes of seismic lines and the snowmobile. Both have become a precondition to carry on with a “traditional” way of life in Tokma.

*“I cannot imagine without Buran. If there would be no profili, how would one be able to go on the Buran? Profili have more pluses than disadvantages.” (E.K.)* The same man stated at another occasion that *“without Buran, this is not a hunter anymore”*.

### 3. DISCUSSION AND CONCLUSIONS

This Master's thesis has called attention to seismic lines, a widespread, yet understudied, oil infrastructure in the study region as well as other resource frontiers across the Russian North, put in place to prospect crude oil reserves by method of seismic reflecting. The ever-emerging logged routes pervade the boreal forest, the traditional hunting grounds of the indigenous and non-indigenous inhabitants of the Tokma village, with a dense grid of open, starkly straight corridors, transforming it into a "landscape of development" (Porath 2002). They are controversially experienced and evaluated by the local hunters, who intensively travel this land to subsist on its natural resources and trap sable for the sale of their furs. According to the overall research question, I have sought to understand *the impact of oil exploration and its infrastructures (seismic lines) on the livelihoods of taiga hunters of the Tokma village in Eastern Siberia.*

Placing my case into a larger historical context, I have demonstrated how local mobilities and the (infra-)structures that facilitated the respective movements at different times have been subject to almost continuous change throughout the Soviet period and up to the present. The people of Tokma have experienced these changes in their daily lives. While in the Soviet past these changes were politically intended and directed in certain ways, while today, they are not, as I will elaborate in more detail further below.

I have analysed seismic lines as an infrastructure put in place for the purpose of securing the flow of geological data of subsurface ground layers. The straight clear-cut routes in grid-like patterns are a crucial component of an infrastructural system where entangled environmental, technical, and social components generate data that is further processed and assessed. Seismic lines mark the beginning of complex processes involving phases of preparation, exploration and analysis, which can potentially be continued through drilling and extracting, executed by an industry that constitutes large systems stretching over vast geographies and involving long timespans (REXSAC). Through these infrastructures, remote places like Tokma and its marginalised population become interlinked with national interests and global markets driven by neoliberal values, however, kept largely apart from financial and other profits gained.

Due to the complexity and the many scales by which infrastructural systems involving "materials, practices and meaning" (Carse 2012) appear, anthropological

scholarship offers quite a range of definitions of infrastructures. Relating seismic lines to this debate, I have proposed to think of them as an “environmental infrastructure” (ibid.), arguing that seismic lines appear as a feature of an industrially-altered landscape combining natural and artificial elements, yet, without involving anything built. I have emphasised that these – the technical, social, as well as environmental – components that together make up seismic infrastructure are entangled to an extent that they cannot be separated from each other.

As the term infra-structure suggests, infrastructures are seen as subordinated support systems to sustain certain functions and services of a “higher order” (Carse 2012; 2017). The purpose of seismic lines is to enable seismic reflection. Yet, as my case study shows, infrastructures can take effect in ways other than anticipated. Landerer (2009) has described the force infrastructures can hold as “agency”. Alternatively, in this thesis, I have proposed a relational affordance concept for analysing seismic lines and their re-use by the people of Tokma, since this concept is very suitable to focus on human-infrastructural relations, as I have argued.

Affordances are understood as the potentialities – opportunities and constraints – offered by the environmental surrounding that is natural or built, or a mix of both, as in my case to a perceiver. As a relational category, affordances are realized through human (or other-than-human) perception, experience and evaluation according to his or her particular interests in a given situation. As such, the concept indicates that in human-infrastructural relations both sides mutually impact upon each other. Affordances as used in this thesis are perceived and interpreted in an indissolubly state of body and mind. The great advantage of a relational affordance concept, in my view, is that it allows one to study the interaction between humans and infrastructures directly and not only through the detour of their implications. Tied to sensual perception, the concept reveals a human embodied experience of a natural-built – in the sense of artificially changed – environmental surrounding. Such an environment, changed in compliance with industrial requirements, has become typical for resource frontiers such as the Tokma region. At the same time, public discourse in Russia about Tokma and other similar places in the “Far North” still hangs on an image of pure, even pristine, nature and people unaffected by modernity. This is not only the case in more distant urban places, but even in the towns and settlements in the neighbouring regions of Tokma.

My study has discussed three types of seismic lines with major qualitative differences that provide different affordances to Tokma hunters, who experience these lines in their daily work in the forest during the winter season. Clear-cut lines with fully removed vegetation provide open routes through the forest, which afford mechanised movement. Lines that leave tree stumps behind, impede all kinds of movements be it on foot or by vehicle. Old seismic lines that were installed several decades ago are overgrown by bush and have largely become obsolete as there are plenty of new, clear-cut seismic lines to be used instead. Hence, the affordances that these three types of seismic lines offer to the hunters of Tokma differ substantially. Given that the hunters' interest is first and foremost tied to issues of their mobility, only the clear-cut type of seismic lines provide conditions that support their movements, which has come to be facilitated by snowmobiles.

Answering my first sub-research question, I conclude that the affordances of an environment altered by seismic lines offer both opportunities as well as constraints to the hunters and their particular interests. Clear-cut, sharply straight, often level seismic lines offer ready-to-use corridors across the forest and their hunting territories. These seismic lines save the elderly men from the physical hardship and workload of clearing trails themselves, which they could hardly accomplish any more. They afford access to the forest and make the unruly taiga landscape more permeable. Furthermore, they afford faster locomotion. Overall, they provide good conditions for the use of vehicles. The other types of seismic lines, which are not clear-cut, are experienced as severe constraints for the hunters' movements. In view of the immense importance of mobility for traditional economic practices, they are negatively evaluated.

Building an argument on affordances that come into being through the interplay of the offerings of an environmental infrastructure and human interests, entails the question on the wider implications of these infrastructures and their affordances. Given the opportunities of seismic lines appearing as open corridors across an unruly Sub-Arctic environment, they not only allow, but "call for" certain ways of moving, namely for mechanised transport, which cannot be ignored by people whose livelihood is drawn on exerting a high level of mobility.

As mentioned earlier, Landerer (2009) cautiously suggested to understand the force exercised by a place or trail as "agency", arguing that by "encouraging" or "compelling" a hunter to stay or depart, a trail or place "controls the man's

behaviour” (ibid: 48), thus, displaying “agency”. From a relational affordance perspective, the force of a particular environment (or infrastructure) depends on a person’s interest in a particular situation. Affordances cannot be generalised, but are situationally realised. The advantage of the affordance concept, as I have been using it, is that it is based on the principle of relationality between an environmental property on the one hand and a perceiver on the other hand. This seems to be a good model for describing interaction (hence relation) between humans and their immediate environmental surroundings. In my understanding, Landerer aimed at challenging the notion of affordances as something “existing as inherent potentials of the object”, which she ascribed to an early publication of Ingold (1992). I don’t know this publication, however, in his more recent publications (Ingold 2018, 2000), Ingold takes a sharp stance against portraying the environment as containing “fixed, invariant” properties (Ingold 2018: 42). On the contrary, he argues for a radical dynamic model of the world that is always in the process of becoming.

The argument sustained in this paper is that by providing open, clear-cut corridors through the *taiga*, seismic lines strongly afford the use of vehicles and thus evoke demands and foster new entanglements that reconfigure local mobilities and livelihoods. The opportunities seismic lines offer are, under the local conditions, best met by snowmobiles. Yet, due to their constant requirement of fuel and spare-parts, snowmobiles can hardly be sustained by economically and socially vulnerable people like those living in Tokma.

As I have shown in the historical overview on transport infrastructures in Tokma, snowmobiles were available to people thanks to external support - in the Soviet past this was the state. Snowmobiles appeared in Tokma in the period of Perestroika in the late 1980s, when more private initiative was possible, before it again lost importance in the economically difficult years of the 1990s. In the post-socialist era, in absence of state support or other alternatives in the Russian North, access to fuel and spare-parts, which are needed to keep snowmobiles functioning, can only be gained through the resource companies that operate in the region. By founding a hunting commune (*obshchina*) with legal indigenous status in the early 2000s, the hunters of Tokma obtained the right to request support (compensation) from the extractive industries. They use this right to secure their livelihood – through obtaining hunting licences – and their snowmobile-facilitated mobility – through obtaining gas-condensate. Tokma hunters have become closely entangled with the

industries to secure the means required to make use of seismic lines – snowmobiles, fuel and spare-parts.

The current practices that have developed around seismic lines, the wide-spread oil infrastructure, and the new entanglements and dependencies they entailed were neither anticipated by the oil company that put them in place, nor by the state that created the political, legislative and administrative framework for large-scale resource extraction in the Russian North. The use of seismic lines by local people are, to my knowledge, unaddressed in the annually negotiated socio-economic development agreements between the oil company INK and the hunting commune. Nor could I trace any signs that these infrastructures that have become so important for the community are discussed in (the rare) personal interactions between the two parties. I see this as connected to the temporality of this particular infrastructure that is, by design, one-time usage only. Prospecting is a very accurate procedure, but accomplished in one act, given that everything goes well. Once the prospecting teams have driven all lines and gathered data the purpose of seismic lines has been fulfilled and they typically are not needed any more, at least not for this purpose for the foreseeable future. This short-term, although crucial, usage of oil prospection infrastructure enables the re-use of it by local people according to their needs and interests. The function of seismic lines as an infrastructure of the oil industry ends here, while their “second life” as a mobility infrastructure of the hunters of Tokma begins.

The men have successfully incorporated the new infrastructures in their hunting routines and have developed a meaningful practice around them in accordance with their needs. This way the people of Tokma have demonstrated high adaptability to change induced from the outside and exercised strong agency in negotiating this change. Displaying a pragmatic attitude, people have found ways they can continue their particular way of life, tied to mobile practices the community depends on economically as well as in regards to their cultural identity. Davydov (2017) has observed the same pragmatic attitude in regards to change among indigenous hunters and reindeer herders in the northern Baikal region and Zabaykal'e. According to the author, any kind of structures, be they constructed by people themselves (for instance fences, storage platforms) or put in place by development projects (bridges, roads) are adapted and modified in ways that support people's mobility. Relating my observations to these insights, I shall add and emphasise that the observed pragmatic stance of the people of Tokma represents only one of a mix

of dispositions with regards to the ongoing industrialisation of the Tokma region. Distress and hopelessness in view of the environmental degradation entailed by industrial infrastructures and activities are also discernible and were at times openly expressed.

Seismic lines and snowmobiles in combination have profoundly changed local movement patterns and economic practices within only a decade. They have changed the spatial and temporal experiences of the hunters and their engagement with a landscape that at large has been transformed into an environmental infrastructure. Snowmobile rides along seismic lines make trips to the forest faster, of shorter duration, enabling more frequent commuting between the village and the forest. Due to the increased opportunities for movement, an extended territory can be economically utilised. In short, snowmobile-facilitated mobility on seismic lines have made the lives of the elderly men substantially easier and more promising in terms of income through the sale of pelts.

Mechanised mobility has become critical to secure the livelihoods of the two dozen elderly hunters and their families of the Tokma hunting commune (*Tokma Obshchina*) comprising a territory of roughly 11,000 km<sup>2</sup>. In fact, by providing two essential resources – (in comparison) easily drivable routes and snowmobiles that run on fuel received from the oil company INK, and function thanks to spare-parts bought with money from compensation payments by the logging company, these industries contribute to the sustainability of what is locally and in public discourse denoted as “traditional livelihood”. On the reverse side of the coin are environmental degradation and depletion of game, which, as Tokma inhabitants deeply fear, will put an end to their way of life in the long run.

The industries and their infrastructures have become an ambivalent resource for the people of Tokma, which draw them into multiple dependencies from the outside. As in other regions across the globe affected by resource extraction, the people of Tokma got caught up in a paradoxical situation: increasingly relying on industrial infrastructures and support to sustain their traditional livelihood, while these infrastructures simultaneously destroy the environmental basis of the community.

## 4. NOTES

### Notes on informants

For the sake of anonymity, the names of my informants are not given in full. I use only the letters of the first and the family name, leaving out the fathers' name (E.K.; N.K.; V.N.; P.F.; G.G.; N.G.; R.K.; D.S.; N.T.; D.P.; Z.N.; T.P.; L.G.; A.G.; O.S.).

### Tables

<u>Table 1.</u> Hunting calendar according to the hunters of <i>Tokma Obshchina</i> (some hunters dated the beginning of the sable hunt to 20 October and the end of the hunting period of reindeer to early March).....	70
<u>Table 2.</u> Movement patterns of (some) hunters of <i>Tokma Obshchina</i> in the winter hunting season.....	98
<u>Table 3.</u> Prices of hunting licenses in 2017.....	111

### Figures

<u>Figure 1.</u> Map of <i>Tokma Obshchina</i> . © Gertraud Illmeier.....	68
<u>Figure 2.</u> Detail from the historical document “Project of allocation of hunting grounds of the Kolkhozy of Tokma National Soviet Katangsky” related to the years 1938-39. (GAIO. Fonds R-147. Op. 1. Ed. khr. 259). © Gertraud Illmeier.....	78
<u>Figure 3.</u> Map drawn by members of the “Expedition of the department ‘land allocation’ Irkutsk Obl. 30. Project of allocation of hunting grounds of Kolkhozoes of Tokma National Soviet Katangsky District” (Proekt po zakreplenyu okhotnich’ikh ugodyy za kolkhozami Tokminskogo natsionnal’nogo soveta Katangskogo rayona Irk. Obl.). (GAIO. Fonds R-147. Op. 1. Ed. khr. 260.) © Gertraud Illmeier.....	78
<u>Figure 4.</u> Detail of the map of the “Expedition of the department ‘land allocation’ Irkutsk Obl. 30. Project of allocation of hunting grounds of Kolkhozoes of Tokma National Soviet Katangsky District” (Proekt po zakreplenyu okhotnich’ikh ugodyy za kolkhozami Tokminskogo natsionnal’nogo soveta Katangskogo rayona Irk. Obl.). (GAIO. Fonds R-147. Op. 1. Ed. khr. 260.) © Gertraud Illmeier.....	79
<u>Figures 5 - 6.</u> UNGF Maps indicating the establishment of seismic lines in the same territory in 2016 (map on the left) and in 2017 (map on the right, where the seismic lines established in 2016 are in blue, those from 2017, are in red). The three handwritten names on the map on the right are the names of the drivers of the bulldozers that the hunter noted down. © Gertraud Illmeier.....	92
<u>Figure 7 - 8.</u> Animal tracks on snowmobile trails © Gertraud Illmeier.....	102
<u>Figures 9 - 12.</u> Fixing the snowmobile along the way. © Gertraud Illmeier.....	113

## 5. BIBLIOGRAPHY

### Archival references

Gosudarstvennyy arkhiv Irkutskoy oblasti (GAIO). Irkutsk.

Fonds R-147. Op. 1. Ed. khr. 259, 260

Ekspeditsiya otdela “zemleustroystva” Irkutskovo Obl. 30.

### Secondary and tertiary sources

Istoricheskaya spravka Tokminskogo sel'skogo Soveta narodnykh deputatov Katangskogo rayona Irkutskoy oblasti. [Historical reference of the Tokma village council of people's deputies of the Katangskiy district of the Irkutsk oblast].

Копылов И. П., Погодин А. А. and Романов Н. Я. (2009) “Промысловое хозяйство туземного и русского населения в верховьях Нижней Тунгуски”. [The hunting economy of the Tungus and Russian population in the headwaters of Lower Tunguska]. Sirina, A. A., Ragulina, M. B. (eds.). Irkutsk: Izdatel'stvo Instituta geografii im. V. B. Sochavy. SO RAN.

### References

Administration of the municipality “Katanga Rayon”. (2014). Municipal Program “Support and Development of small and medium enterprises of the municipality Katanga Rayon”. Erbogachen 2014.

Anderson, D. G. (2011). The Polar Census and the architecture of enumeration. *In*: Anderson, D. G. (ed.). The 1926/27 Soviet Polar Census Expeditions. New York: Berghahn, pp. 1-32.

Appel, H., Anand, N., and Gupta, A. (2018). Introduction. Temporality, Politics, and the Promise of Infrastructure. *In*: Anand, N., Gupta, A., and Appel, H. (eds.). The Promise of Infrastructure. A School for Advanced Research Advanced Seminar. Durham and London: Duke University Press, pp. 1-38.

Aporta, C. (2009). The Trail as Home: Inuit and Their Pan-Arctic Network of Routes. *In*: Hum Ecol 37: 131-146.

Aporta, C. (2004). Routes, Trails and Tracks: Trail Breaking among the Inuit of Igloolik. *In*: Études/Inuit/Studies, 28(2): 9-38.

Argounova-Low, T. and Prisyazhnyi, M. (2015). Biography of a Road: Past and Present of the Siberian Doroga Lena. *In*: Development and Change 47(2): 367-387.

- Argounova-Low, T. (2012a). Narrating the Road. *In: Landscape Research* 37(2): 191-206.
- Argounova-Low, T. (2012b). Roads and Roadlessness: Driving Trucks in Siberia. *In: Journal of Ethnology and Folkloristics* 6(1): 71-88.
- Bennett, M. (2018). From state-initiated to Indigenous-driven infrastructure: The Inuvialuit and Canada's first highway to the Arctic Ocean. *In: World Development* 109: 134-148.
- Brandisauskas, D. (2012). Making a Home in the Taiga: Movements, Paths and Signs among Orochen-Evenki Hunters and Herders of Zabaikal Krai (South East Siberia). *In: Journal of Ethnology and Folkloristics* 6(1): 9-25.
- Campbell, C. (2003). Contrails of Globalization and the View from the Ground: An Essay on Isolation in East-Central Siberia. *In: Polar Geography* 27(2): 97-120.
- Caputo, V. (2000). At 'home' and 'away'. Reconfiguring the field for late twentieth-century anthropology. *In: Amit, V. (ed.). Constructing the Field: Ethnographic Fieldwork in the Contemporary World* (1. publ. ed.). London: Routledge, pp. 19-31.
- Carse, A. (2017). Keyword: Infrastructure. How a humble French engineering term shaped the modern world. *In: Harvey, P., Jensen, C.B., and Morita, A. (eds.). Infrastructures and Social Complexity. A Companion.* London: Routledge, pp. 27-39.
- Carse, A. (2012). Nature as infrastructure: making and managing the Panama Canal watershed. *In: Soc. Stud. Sci.* 42(4): 539-63.
- Cresswell, T. (2010). 'Towards a politics of mobility'. *In: Environment and Planning D: Society and Space* 28 (2): 17-31.
- Davydov, V. (2017). Presentation at 3<sup>rd</sup> CoRe workshop "Mobility and Remoteness – What is the connection?". May 26<sup>th</sup>-27<sup>th</sup>, Department of Social and Cultural Anthropology, University of Vienna.
- Davydov, V. (2012). Temporality of Movement of Northern Baikal Reindeer Herders, Hunters and Fishermen. *In: Journal of Ethnology and Folkloristics* 6 (1): 27-47.
- Dictionary.com  
<http://www.dictionary.com/browse/infrastructure?s=t> [accessed 03.09.2021]
- Donahoe, B., Habeck, J. O., Halemba, A., and Sántha, I. (2008). Size and Place in the Construction of Indigeneity in the Russian Federation. *In: Current Anthropology* 49(6): 993-1020.

Dudeck, St. (2012). From the Reindeer Path to the Highway and back – Understanding the Movements of Khanty Reindeer Herders in Western Siberia. *In: Journal of Ethnology and Folkloristics* 6(1): 89-105.

Fondahl, G. and Poelzer, G. (2003). Aboriginal land rights in Russia at the beginning of the twenty-first century. *In: Polar Record* 39(209): 111-122.

GEOTECH-Eastern Geophysical Company LLC

[Общество с ограниченной ответственностью «ГЕОТЕК – Восточная геофизическая компания» - Геотек Сейсморазведка \(gseis.ru\)](http://gseis.ru) [accessed 27.04.2022]

Gese, E. M., Dowd, L.B., and Aubry, L. M. (2013). The Influence of Snowmobile Trails on Coyote Movements during Winter in High-Elevation Landscapes. *In: PLoS ONE* 8(12): e82862.

Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. London: Houghton Mifflin.

Golovnev, A. V., and Osherenko, G. (1999). *Siberian Survival. The Nenets and Their Story*. Ithaca and London: Cornell University Press.

Habeck, J. O. (2016). Gender Shift im hohen Norden Russlands. Verlauf und Folgen des sowjetischen Modernisierungsprojekts. *In: Saxinger, G., Schweitzer, P., and Donecker, St. (eds.). Arktis und Subarktis. Geschichte, Kultur, Gesellschaft*. Wien: new academic press, pp. 150-165.

Habeck, J. O. (2013). Learning to Be Seated: Sedentarization in the Soviet Far North as a Spatial and Cognitive Enclosure. *In: Miggelbrink, J., Habeck, J. O., Mazzullo, N. and Koch, P. (eds.). Nomadic and Indigenous Spaces: Productions and Cognitions*. Farnham: Ashgate, pp. 155-179.

Haller, T., Blöchlinger, A., John, M., Marthaler, and E., Ziegler, S. (eds.). (2007). *Fossil Fuels, Oil companies, and Indigenous Peoples. Strategies of multinational oil companies, states and ethnic minorities. Impact on environment, livelihoods, and cultural change*. Action Anthropology, Volume 1. Zürich: Lit Verlag, N.J.: Piscataway.

Harvey, P. and Knox, H. (2015). *Roads. An Anthropology of Infrastructure and Expertise*. Ithaca, London: Cornell University Press.

Harvey, P. and Knox, H. (2012). The Enchantments of Infrastructure. *In: Mobilities* 7(4): 521-536.

Hastrup, K. (2017). The author's notes taken at Gingrich Symposium, November 2, 2017.

Hastrup, K. (2009). The nomadic landscape: People in a changing Arctic environment. *Geografisk Tidsskrift-Danish Journal of Geography* 109(2): 181-189.

Howe, C., Lockrem, J., Appel, H., Hackett, E., Boyer, D., Hall, R., Schneider-Mayerson, M., Pope, A., Gupta, A., Rodwell, E., Ballesterro, A., Durbin, T., el-Dahdah, Farès, Long, E., and Mody, L. (2015). Paradoxical Infrastructures: Ruins, Retrofit, and Risk. *In: Science, Technology, & Human Values*: 1-19.

Illmeier, G. and Krasnoshtanova, N. (2022). How roads shape (im)mobilities in Eastern Siberia. *In: Friedrich, D., Hirnsperger, M., and Bauer, S. (eds.). More than 'Nature': Research on Infrastructure and Settlements in the North, Vienna: LITVerlag, pp. 187-208.*

Ingold, T. (2018). Back to the future with the theory of affordances. *In: Hau: Journal of Ethnographic Theory* 8(1/2): 39-44.

Ingold, T. (2011). *Being Alive: Essays on Movement, Knowledge, and Description*. London: Routledge.

Ingold, T. (2007). *Lines. A brief history*. London: Routledge.

Ingold, T. and Kurtilla, T. (2000). Perceiving the Environment in Finnish Lapland. *Body & Society* 6(3-4): 183-196.

Ingold, T. (2000). *The Perception of the Environment. Essays on Livelihood, Dwelling and Skill*. London: Routledge.

Ingold, T. (1993). The Temporality of the Landscape. *In: World Archaeology* 25(2) (Conceptions of Time and Ancient Society): 152-174.

Ingold, T. (1992). 'Culture and the Perception of the Environment'. *In: Croll, E and Parkin, D. (eds). Bush Base: Forest Farm. Culture, Environment and Development*. London: Routledge, pp. 39-55.

Ingold, T. (1976). Review by Tim Ingold. *In: Man, New Series* 11(1). Royal Anthropological Institute of Great Britain and Ireland, pp. 146-147.

Irkutsk Oil Company (INK)

<https://irkutskoil.com/about/structure/> [accessed 03.09.2021]

Irkutsk Oil Company (INK) Sustainable Development 2022

<https://irkutskoil.ru/sustainable-development/society/social-responsibility-and-interaction-with-stakeholders/> [accessed 06.06.2022]

Keane, W. (2018). Perspectives on Affordances, or the Anthropologically Real. *In: HAU: Journal of Ethnographic Theory* 8 (1/2): 27-38.

Knappett, C. (2014). The Affordances of Things: A Post-Gibsonian Perspective on the Relationality of Mind and Matter. *In: Rethinking Materiality: The Engagement of Mind with the Material World*. E. DeMarras, C. Gosden, and C. Renfrew (eds.). Cambridge: McDonald Institute for Archaeological Research, pp. 43-51.

Konstantinov, Y. (2009). Roadlessness and the Person: Modes of Travel in the Reindeer Herding Part of the Kola Peninsula. *In: Acta Borealia* 26(1): 27-49.

Krasnoshtanova, N., Illmeier, G. and Saxinger, G. (2021). Tokma – malen'koe selo vdali ot bol'shikh dorog. [Tokma – small village off the big roads]. Irkutsk: V. B. Sochava Institute for Geography of the Russian Academy of Sciences.

Krasnoshtanova, N. (2021). Large projects and small communities: the influence of industrial development on remote villages in Eastern Siberia. *In: IOP Conference Series: Earth and Environmental Science* 629. 012026.

DOI: 10.1088/1755-1315/629/1/012026

Krasnoshtanova, N. (2019). New Economic Development of the North of the Irkutsk Region: Socio-Ecological Consequences. *In: IOP Conference Series: Earth and Environmental Science*. 381 012048.

DOI: 10.1088/1755-1315/381/1/012048

Kukavskaya, E. A., Buryak, L. V., Ivanova, G. A., Conard, S. G., Kalenskaya, O. P., Zhila, S. V., and McRae, D. J. (2013). Influence of logging on the effects of wildfire in Siberia. *Environmental Research Letters* 8.

Kuklina, V., Petrov, A., Krasnosthanova, N., and Bogdanov, V. (2020). Mobilizing Benefit-Sharing Through Transportation Infrastructure: Informal Roads, Extractive Industries and Benefit-Sharing in the Irkutsk Oil and Gas Region, Russia. *Resources*, 9(21): 1-18.

Kuklina, V., Povoroznyuk, O. and Saxinger, G., (2019). Power of Rhythms – Trains and Work along the Baikal-Amur Mainline (BAM) in Siberia. *In: Polar Geography* 42(1): 18-33.

DOI: 10.1080/1088937X.2018.1564395

- Kuklina, V., Illmeier, G., and Krasnoshtanova, N. (in progress). Between large scale infrastructures and local communities: Informal roads as agents of change. *In: Frozen Futures: Isolation, Connectivity, and the Promise of Siberia.*
- Landerer, E. (2009a). Hunting, Walking, Reindeer Keeping: places and movements among the Evenki of Eastern Siberia. Dissertation. Scott Polar Research Institute, University of Cambridge (CB2 1ER).
- Larkin, B. (2013) 'The Politics and Poetics of Infrastructure'. *In: Annual Review of Anthropology* 42: 327-343.
- Latour, B., (2005). Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford: Oxford University Press.
- Lavrillier, A., Gabshev, S., and Rojo, M. (2016). The sable for Evenk reindeer herders in southeastern Siberia: Interplaying drivers of changes on biodiversity and ecosystem services – climate change, worldwide market economy, and extractive industries. *In: Marie Roué and M., Molnár, Z. (eds.). Indigenous and Local Knowledge of Biodiversity and Ecosystem Services in Europe and Central Asia. Knowledges of Nature 9. UNESCO: Paris, pp. 111-128.*
- Loginova, J. and Wilson, E. (2020). "Our consent was taken for granted": A relational justice perspective on the participation of Komi people in oil development in northern Russia." *In: Johnstone, R. S. and Hansen, A. M. (eds.). Regulation of Extractive Industries. London: Routledge, pp. 156-184.*
- Loovers, J. P. L. (2016). Making Lobsticks. Travelling with Teetl'it Gwich'in. *In: Sibirica* 15(1): 41-63.
- Malinowski, B. [1922] (1961). Argonauts of the Western Pacific. London: Routledge.
- Masquelier, A. (2002). Road Mythographies: Space, Mobility, and the Historical Imagination in Postcolonial Niger. *In: American Ethnologist* 29(4): 829-856.
- Mertens, K. (2016). Patterns of Evenki Mobility in Eastern Siberia. *In: Sibirica* 15(1): 1-40.
- Morizot, B. (2020). Philosophie der Wildnis oder Die Kunst, vom Weg abzukommen. Stuttgart: Reclam.
- Nelson, R. K. (1973). Hunters of the Northern Forest: designs for survival among the Alaskan Kutchin. Chicago [u.a.]: University of Chicago Press.
- Nelson, R. K. (1986). Hunters of the Northern Forest. 2<sup>nd</sup> ed. Chicago and London: University of Chicago Press.

Niglas, L. (2011). Yuri Vella on the Move: Driving an *Uazik* in Western Siberia. *Folklore* 49.

DOI: 10.7592/FEJF2011.49.niglas

OMV Group. "Our Business"

<https://www.omv.com/en/our-business/exploration-and-production/exploration>

[accessed 03.03.2019]

Oil & Gas Portal

<http://www.oil-gasportal.com/> [accessed 03.03.2019]

Palmberger, M. (2019). Relational ambivalence: Exploring the social and discursive dimensions of ambivalence – The case of Turkish aging labor migrants. *In: International Journal of Comparative Sociology* 60(1-2): 74-90.

Pandya, V. (2002). Contacts, images and imagination. The impact of a road in the Jarwa reserve forest, Andaman Islands. *In: Bijdragen tot de Taal-, Land- en Volkenkunde. On the road. The social impact of new roads in Southeast Asia. Leiden.* 158(4): 799-820.

Passport Municipal Statistics

[https://www.gks.ru/scripts/db\\_inet2/passport/table.aspx?opt=256164192018](https://www.gks.ru/scripts/db_inet2/passport/table.aspx?opt=256164192018)

[accessed 24.04.2021]

Pelto, P. J. (1973). *The Snowmobile Revolution: Technology and Social Change the Arctic.*

Perović, J. (2016). 'Sucht nach Öl. Das "System Putin und die Folgen der Wirtschaftskrise'. *In: Russland-Analysen* 313: 2-7.

Porath, N. (2002). 'A river, a road, an indigenous people and an entangled landscape in Riau, Indonesia'. *In: Bijdragen tot de Taal-, Land- en Volkenkunde* 158(4): 769-797.

Potapov, P., Hansen, M. C., Laestadius, L., Turubanova, S., Yaroshenko, Al, Thies, Ch. Smith, W., Zhuravleva, I., Komarova, A., Minnemeyer, S., and Esipova, E. (2017). The last frontiers of wilderness: Tracking loss of intact forest landscapes from 2000 to 2013. *Sci Adv* 3(1).

Povoroznyuk, O. (2014). Belonging to the land in Tura: Reforms, migrations, and identity politics in Evenkia. *In: Journal of Ethnology and Folkloristics*, 8(2): 33-51.

[http://www.jef.ee/index.php/journal/article/view/159/pdf\\_122](http://www.jef.ee/index.php/journal/article/view/159/pdf_122)

Prainsack, B., Pot, M. (2021). Qualitative und interpretative Methoden in der Politikwissenschaft. Wien: Facultas.

REXSAC. Resource Extraction and Sustainable Arctic Communities

<https://www.rexsac.org> [accessed 26.04.2021]

Rideout, C. (2013). Trapping marten. With higher fur prices, setting for silky sables can pay. In: Trapper & Predator Caller. Nov. 2013.

Rodgers, D. and O'Neill, B. (2012). Infrastructural Violence: Introduction to the special issue. In: *Ethnography* 13(4): 401-412.

Rohr, J. (2014). Indigenous peoples in the Russian Federation. *IWGIA Report 18 (International Work Group for Indigenous Affairs)*. Copenhagen, Denmark.

Sancho-Reinoso, A., Saxinger, G., Fink, Ch., Povoroznyuk, O., Wentzel, S., Illmeier, G., Krasnoshtanova, N. and Kuklina, V. (2022). Mapping hierarchies of mobility in the Baikal Amur Mainline region: a quantitative account of needs and expectations relating to railroad usage. *Polar Geography*.

DOI: 10.1080/1088937X.2022.2046195

Saxinger, G., Krasnoshtanova, N. and Illmeier, G. (2021). Neglected Transportation Infrastructure: Corporate Social Responsibility and the Russian State in a Small Siberian Oil Town. In: *Sibirica*, 20(3): 1-45.

<https://www.berghahnjournals.com/view/journals/sibirica/20/3/sib200302.xml>

Saxinger, G., Schweitzer, P., Donecker, St. (eds.) (2016). *Arktis und Subarktis. Geschichte, Kultur, Gesellschaft*. Wien: new academic press.

Saxinger, G. (2016). *Unterwegs. Mobiles Leben in der Erdgas und Erdölindustrie in Russlands Arktis*. Wien, Weimar, Köln: Böhlau.

Saxinger, G., Petrov, A., Kuklina, V., Krasnostanova, N., and Carson, D. (2016). "Boom back or blow back? Growth strategies in mono-industrial resource towns – "east" & "west". In: Taylor, A., Carson, D.B., Ensign, P., Huskey, L. Rasmussen, R., and Saxinger, G. (eds.). *Settlements at the Edge: Remote human settlements in developed nations*. Cheltenham: Edward Elgar Publishing, pp. 49-74.

Schlumberger. Oil Field Glossary.

[https://www.glossary.oilfield.slb.com/Terms/s/seismic\\_line.aspx](https://www.glossary.oilfield.slb.com/Terms/s/seismic_line.aspx) [accessed 03.03.2019]

Schweitzer, P. (2019). Unpublished ERC Advanced Grant 2019, Research Proposal [Part B2].

Schweitzer, P. and Povoroznyuk, O. (2019) 'A Right to Remoteness? A missing bridge and articulations of indigeneity along an East Siberian railroad'. *In: Social Anthropology/Anthropologie Sociale* 27(2): 236-252.

Schweitzer, P. (2017). Polar anthropology, or why we need to study more than humans in order to understand people. *In: The Polar Journal* 7(1): 1-8.

Schweitzer, P., Povoroznuk, O. and Schiesser, S. (2017). Beyond the Wilderness: Toward an Anthropology of Infrastructure and the Built Environment in Polar Regions. *In: The Polar Journal* 7(1): 58-85.

Schweitzer, P., Saxinger, G., Schiesser, S., Povoroznuk, O., and Fink, Ch. (2014). Configurations of Remoteness (CoRe): Entanglements of Humans and Transportation Infrastructure in the Baikal-Amur Mainline (BAM) Region. (Austrian Science Fund (FWF) [P 27625], University Vienna. Unpublished project proposal.

CoRe Panel "Human entanglements with infrastructures: mobility, sociality, and the built environment" at Vienna Anthropology Days (VANDA), Vienna, September 19-22, 2018.

Siegelbaum, L. H. (2008) 'Roadlessness and the "path to communism": Building roads and highways in Stalinist Russia'. *In: The Journal of Transport History* 9(2): 277-294.

Silverman, D. (2001). „Chapter 10: The Potential of Qualitative Research: Eight Reminders“. *In: Silverman, D. (ed.): Interpreting Qualitative Data, Methods for Analysing Talk, Text and Interaction.* Sage Publications, London/Thousand Oaks, pp. 285-302.

Sirina, A. A. (2012). Evenki I Eveny v sovremennom mire. Samosoznanie, prirodoopol'zovanie, mirovozzrenie. [Evenki and Eveni in the modern world: Identity, nature use, worldview]. Moscow: Vostochnaya literatura.

Sirina, A. A. (2010). Ot Sovkhoza k rodovoy obshchine: social'no-ekonomicheskie transformacii u narodov Severa v kontse XX veka [From Sovchose to rodovoy Obshchine: social-economic transformations of the peoples of the North at the end of the XX century], Moscow: IEA RAN.

Sirina, A. A. (2006). Katanga Evenkis in the 20<sup>th</sup> Century and the Ordering of their Life-world. Northern *Hunter-Gatherers Research Series*, Volume 2. Edmonton: Canadian Circumpolar Institute Press.

- Sirina, A. A. (2009). The Taiga Hunters after perestroika (a case study of the Evenki of Irkutsk Oblast' Eastern Siberia). *In: Beach, H., Funk, D., Sillanpaa, L. (eds.). Post-Soviet Transformations: Politics of Ethnicity and Resource Use in Russia.* Uppsala: Uppsala Universitet, pp. 137-160.
- Snead, J. E., Erickson, C. L., and Darling, J. A. (eds.) (2009). Landscapes of Movement. Trails, paths, and Roads in Anthropological Perspective.
- Southcott, Ch., Abele, F., Natcher, D., and Parlee, B. (eds.) (2019). Resources and Sustainable Development in the Arctic. New York: Routledge.
- Ssorin-Chaikov, N.V. (2003). The Social Life of the State in Subarctic Siberia. Stanford, California: Stanford University Press.
- Stammler, F. (2013). Narratives of Adaptation and Innovation: Ways of Being Mobile and Mobile Technologies among Reindeer Nomads in the Russian Arctic. *In: Miggelbrink, J., Habeck, J. O., Mazzullo, N. and Koch, P. (eds.). Nomadic and Indigenous Spaces: Productions and Cognitions.* Farnham: Ashgate, pp. 221-245.
- Stammler, F. (2011). Oil without conflict? The anthropology of industrialisation in Northern Russia. *In: Behrends, A., St. Reyna, P.G., Schlee, Günther (Eds.), Crude Domination: An Anthropology of Oil.* Berghahn Book, Oxford, pp. 243-269.
- Stammler, F. M. (2009). Mobile Phone Revolution in the Tundra? Technological Change among Russian Reindeer Nomads. *In: Folklore: Electronic Journal of Folklore* 41: 47-78.
- Stammler, F. M. (2002). Success at the edge of the land: past and present challenges for reindeer herders in the west Siberian Yamalo-Nenetskii Autonomous Okrug. *In: Nomadic Peoples* 6(2): 51-71.
- Stolberg, E.-M. (2009). Sibirien: Russlands "Wilder Osten". Mythos und soziale Realität im 19. und 20. Jahrhundert. *Beiträge zur Europäischen Überseegeschichte, Band 95.* Stuttgart: Franz Steiner Verlag.
- Strauss, A. and Corbin, J. (1996). Grounded Theory: Grundlagen Qualitativer Sozialforschung. Weinheim: Psychologie Verlag Union.
- Taylor, A., Carson, D., Ensign, P., Huskey, L., Rasmussen, R. and Saxinger, G. (eds.). Cheltenham: Edward Elgar Publishing, pp. 49-74.
- Titscher, St., Wodak, R., Meyer, M., Vetter, E. (1998). Methoden der Textanalyse. Leitfaden und Überblick. Opladen: Westdeutscher Verlag.

Tsyachnyuk, M., Tulaeva, S., Landonyo, Dzh. (2012). Neft' i Lyudi: samoorganizatsiya v mestnykh soobshchestvakh i peregovory s kompaniyami. [Oil and People: self-organization in local communities and cooperation with enterprises.] St. Petersburg: Renome.

Vitebsky, P. (2005). Reindeer people. Living with animals and spirits in Siberia. London: Harper Perennial.

Vorob'ev, D.V. (2014). Subsistence and Adaptive Strategies among the Evenki in the late Twentieth Century: In the North Turukhansk District of Krasnoyarsk Territory. *In: Anthropology & Archaeology of Eurasia* 43 (1): 8-45.

Wiget, A. and Balalaeva, O. (2010). Khanty, People of the Taiga: Surviving the Twentieth Century. Fairbanks: University of Alaska Press.

## **6. APPENDIX**

### **6.1. Abstract**

Intensified oil exploration and industrial logging in the north of the Irkutsk Province in Eastern Siberia continue to alter the boreal forest upon which local communities depend in securing their livelihoods. Seismic lines are clear-cut, straight routes, often logged in grid-like patterns for oil exploration by method of “seismic reflection”. This Master’s thesis presents an ethnographic case study that analyses the impact of this wide-spread, yet understudied oil infrastructure on the inhabitants of the Tokma village, who live on subsistence hunting and the trapping of sable – mobility-intensive activities, which today, are facilitated by seismic lines and snowmobiles. Using empirical data gained in two fieldworks, firstly, the thesis engages a relational affordance concept to analyse human-infrastructure relations. Secondly, it inquires the wider implications of seismic lines and their (unintended) consequences. Offering a network of open corridors in an unruly sub-Arctic environment, seismic lines afford mechanised mobility on snowmobiles, which require fuel and frequently need spare-parts – resources to which the marginalised population of this remote region has access only thanks to the compensation payments of the industries. The thesis shows how seismic lines induce new entanglements through their affordances with and between the hunters of Tokma, snowmobiles, fuel and the industries that reconfigure local mobilities and livelihoods. Without seismic lines and snowmobiles the (mostly elderly) men of the Tokma hunting commune could no longer accomplish their physically demanding work as hunters and trappers. At the same time, people suffer in the face of the environmental degradation caused by innumerable grids of seismic lines. The study shows how the people of Tokma got caught up in a paradoxical situation: increasingly relying on industrial infrastructures and support to sustain their traditional livelihood, while these infrastructures simultaneously destroy the environmental basis of the community.

## 6.2. Zusammenfassung/Abstract in German

Im Zuge der intensivierten Suche (Prospektion) nach neuen Erdölvorkommen sowie des industriellen Holzeinschlages im Norden der Provinz Irkutsk in Ostsibirien, hat sich der boreale Nadelwald (Taiga), der die Lebensgrundlage für die lokale Bevölkerung darstellt, stark verändert. Seismische Linien sind kilometerlange, geradlinige, häufig gitterförmig (sich kreuzend) angelegte Messstrecken, die bei der Prospektion mittels der Methode „Reflexionsseismik“ durch Rodung der Vegetation entstehen. Basierend auf empirischem Material, das in zwei Feldforschungen gesammelt wurde, präsentiert die vorliegende Masterarbeit eine ethnographische Fallstudie, die sich mit den Auswirkungen dieser weit verbreiteten, aber bisher kaum beachteten Infrastruktur auf die Bewohner\*innen des Dorfes Tokma auseinandersetzt. Sie leben von der Subsistenzjagd und dem Zobelfang – mobilitätsintensive Tätigkeiten, bei denen seismische Linien sowie Schneemobile mittlerweile eine Schlüsselrolle spielen. Unter Anwendung eines relationalen Affordanz-Konzeptes analysiert die Studie einerseits die Beziehungen zwischen Mensch und Infrastruktur. Andererseits werden die unbeabsichtigten (Neben-)Wirkungen seismischer Linien und ihrer Affordanz(en) – den Möglichkeiten und Beschränkungen, die sie für einen Betrachter/eine Betrachterin eröffnen – untersucht. Indem seismische Linien ein Netzwerk aus offenen Korridoren durch eine unwegsame nördliche Waldlandschaft bilden, begünstigen sie den mechanisierten Transport und Einsatz von Schneemobilen, die jedoch Treibstoff und häufig Ersatzteile benötigen – Ressourcen, die für die marginalisierte Bevölkerung der entlegenen Region nur dank der Kompensationszahlungen seitens der Öl- und Holzindustrie zugänglich sind. Die Studie zeigt, dass seismische Linien über ihre Affordanz(en) neue Verflechtungen mit und zwischen den Jägern, Schneemobilen und Treibstoff sowie der Industrie hervorbringen, die die lokale Mobilität und Lebensweise neu konfigurieren. Ohne seismische Linien und Schneemobile, welche die Jagd und das Fallenstellen maßgeblich erleichtern, könnten die (größtenteils betagten) Jäger von Tokma ihre körperlich anstrengende Arbeit nicht mehr verrichten. Gleichzeitig leiden die Menschen unter der Umweltzerstörung, die durch unzählige seismische Linien, die ihr Jagdgebiet durchschneiden und den Wildbestand beeinträchtigen, verursacht wird. Die Studie beleuchtet die paradoxe Situation, in welche die Menschen geraten sind: Sie sind zunehmend auf industrielle Infrastrukturen und Unterstützung angewiesen, um ihren traditionellen Lebensunterhalt zu sichern, während diese Infrastrukturen gleichzeitig ihre ökologischen Grundlagen zerstören.