




RESEARCH ARTICLE

Mental maps, practical mastery and environmental experience: an analysis of the wayfinding culture of Evenki reindeer herders and hunters

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Abstract

The present work explores the link between navigational processes and the experience of place by considering the case of Evenki reindeer herders and hunters. Our analysis shows how the idiosyncratic wayfinding methods of the Evenki result in a unique experience of place – a case that elucidates the important question of the impact of navigational processes on environmental experience, and that advances the debate between mental map theory and practical mastery theory in anthropology. We defend that their wayfinding methods – involving a particular gait, path networks, and vast hydrological and toponymical knowledge – allow the Evenki to navigate without a need for integrating egocentric and allocentric frames of reference. As a result, the Evenki experience themselves as free individuals moving through an environment that is alive and rife with possibility. This analysis reveals the ways in which wayfinding processes relying predominantly on route knowledge – as opposed to survey knowledge – affect environmental experience. Alternative methods of wayfinding can be seen as a form of resistance to the uniformisation of landscapes, and as a way of embracing the heterogeneity of space.

1. Introduction

Wayfinding is one of the hardest aspects of human cognition to study within the confines of the lab. Experimental conditions often differ from real-world navigation, and empirical approaches might gain experimental control at the expense of ecological validity. Ethnographic work in anthropology can help inform the study of wayfinding by documenting how it unfolds within particular cognitive–cultural ecosystems (Fernandez-Velasco and Spiers, 2023). Nevertheless, the diversity of human cultures of wayfinding has led to diverging views within anthropology, which can be divided into two overarching theoretical camps: ‘mental maps theory’ and ‘practical mastery theory’.

‘Mental maps theory’ defends that we possess mental maps of the environment and that we position ourselves within those maps to navigate. ‘Practical mastery theory’ defends that the way that we navigate is by mastering our surroundings and learning the paths therein. An element lurking in the background of the debate is that these antagonistic conceptions of navigation go hand in hand with radically different ways of conceiving the experience of the places through which we navigate. For mental map proponents, what we experience is a match between perceived environmental features and our representation of the environment, together with a sense of being in a particular location (e.g. Hutchins, 1995, p. 13). For the practical mastery proponents, what we experience is an ever-changing environment, rolling under our

feet as we advance: ‘The world of our experience is a world suspended in movement, that is continually coming into being as we – through our own movement – contribute to its formation’ (Ingold, 2000, p. 242).

The present work will explore the link between navigational processes and the experience of place by considering the case of Evenki reindeer herders and hunters. To this end, we build on our ethnographic fieldwork as well as on the analysis of previously existing research within psychology, anthropology and phenomenology. The Evenki, a Tungusic people spread over northern Asia, are renowned for their hunting and navigational skills (Vasilevich, 1963; Lavrillier, 2006). Ethnographers have also highlighted the particularities of the Evenki experience of place, which is characterised by a pervading sense of freedom within an alive and responsive environment (Safonova and Sántha, 2013). Our analysis shows how the idiosyncratic wayfinding methods of the Evenki result in a unique experience of place – a case that elucidates the important question of the impact of navigational processes on environmental experience.

In Section 2, we introduce the Evenki, their way of walking, and their knowledge of landscape and river systems. In Section 3, we delve into the mental map versus practical mastery debate and some of its more recent developments. Section 4 consists of an analysis of Evenki methods of navigation. Section 5 discusses how the theory of navigation emerging from the analysis results in Evenki environmental experience, which is characterised by a sense of freedom and autonomy in an ever-evolving landscape. Section 6 broadens the scope to draw general conclusions about the connection between wayfinding and the experience of place.

2. Skillful walking

In 2019, our team undertook a subarctic winter expedition and an arctic summer expedition in the Evenkia region of Siberia. During that time, we interviewed two reindeer herders (in Surinda during our winter fieldwork), and two ex-reindeer herders and four semi-nomadic hunters (in Chirinda during our summer fieldwork). Our team was composed of a cognitive scientist and a geographer, and we do not consider ourselves experts in Evenki culture. Moreover, our two seasons of geographical fieldwork are shorter than the standard in anthropological work. Rather than being the core of the present study, the results of our fieldwork serve to guide our review and analysis of the existing literature. We developed our fieldwork as part of the larger project *Wandering in Other Worlds*, based at the Pitt Rivers Museum, and which also included an ethnographer and Evenki historian. The interviews were semi-structured and no questionnaires were used. Interviews were prompted with a question that then led to a discussion. The themes we aimed to cover in our discussions were: (1) wayfinding practices, (2) cultural transmission, and (3) environmental experience. All materials were fully anonymised and no identifying information exists in any hard copy. The Joint Chair of the UCL Research Ethics Committee approved the study under the reference number 15959/001.

In our study, we follow Vladimir Davydov’s analysis in what concerns the apparent divide between the nomadic and sedentary Evenki (e.g. reindeer herders vs hunters). Davydov argues that the Evenki way of life should be understood through the prism of everyday practices and their related patterns of mobility, rather than through the divide between nomadic and sedentary Evenki (Davydov, 2013). Previous research shows that both herders and apparently settlement-based Evenki engage in nomadic practices (Dumont, 2018). Additionally, although reindeer herding, where still present, is no longer the majority occupation among the Evenki in the regions that we visited, the lives and practices of the Evenki we met could hardly be characterised as sedentary. Evenki hunters leave their settlements for hunting seasons that span several months. In Chirinda, we stayed with an old couple of ex-reindeer herders that lived in a chum (a tent that is the traditional itinerant dwelling of reindeer herders) at the other side of the lake from the settlement, moving their dwelling with the seasons. The navigational practices of the Evenki developed over a time in which reindeer herding was the main mode of life and economy for the Evenki people. Nevertheless, the navigational practices that we will be discussing are present in both nomadic reindeer herders and semi-nomadic hunters.

Nowadays, the Evenki have reasonable access to modern technology, such as snowmobiles and cell phones. Despite this possibility, most Evenki do not carry GPS devices or maps with them when they are navigating the taiga, not even a compass. The Evenki we encountered regarded these cognitive artefacts with scorn, as something of a nuisance or, at best, a game, that had little to do with walking in the Taiga. Anecdotally, we witnessed a reindeer herder winning a surprise prize in a local festivity and being crestfallen to discover it was a GPS device and not the portable radio for which he had hoped. A quote by the reindeer herder Oleg Iakovlev (as recorded by Lavrillier and Gabyshev, 2017, p. 15) reflects well the Evenki attitude towards external representations of the environment: ‘Everything is written in the natural environment, you just need to observe all around you.’

At the heart of the Evenki way of navigation is what many ethnographers refer to as skilful walking. After long-term ethnographic research, Brandišauskas highlights the importance of skilful walking in Evenki practices: ‘dwelling on the taiga is based on skilful attunement to a place . . . while moving through it’ (Brandišauskas, 2012, p. 23). This skilful attunement is a deeply embodied affair. It is also embedded within a complex network of paths, and it takes place in the context of vast hydrological knowledge and a rich toponymical system (i.e. a system of names of places). Gait, a network of paths, hydrological knowledge and toponymy – these are the four main elements of Evenki navigation that emerge from the existing literature. Our own fieldwork and interviews also corroborated the centrality of these four elements for Evenki methods of wayfinding.

Concerning gait, Safonova and Sántha (2013, p. 141) made several recordings during their fieldwork to clarify the embodied aspects of skilful walking among the Evenki:

‘We also tried and failed to learn this embodied knowledge. After inspecting recordings that we made of Irgichi walking through the taiga, we noticed several features of Evenki walking. Irgichi followed an animal’s trail as if it were a tunnel through the thicket. In his right hand he carried a stick that he used to balance and propel himself through the taiga, like a punter with his pole. When branches obstructed his path, he would transfer the stick to his left hand and snap the branch with his right hand, thus always maintaining four points of balance. His pace was so light that only the cracking of twigs and branches marked the rhythm of his movement.’

What Safonova and Santha describe in their research is a way of walking that favours suppleness as an embodied form of attunement to the landscape. Irgichi treads lightly. He always uses his stick not just to push himself forward but as a way of increasing the contact with the ground. Feeling the ground is paramount to skilful walking. The Evenki have a preference for light footwear, for thin soles – despite the cold temperatures –, because this way they get a better sense of the texture of the land on which they walk.

The second element of Evenki navigation, the paths (or tracks, as they are often invisible to the untrained eye), are created and maintained with the movement through the taiga of herders and hunters. Although the network was much broader during pre-soviet times, it is still an important element in Evenki navigation (see Campbell, 2001 for a detailed analysis).

As for hydrological knowledge, the Evenki have an extraordinary command of the river systems of a much larger area than their usual area of exploration. Rivers are in fact central elements within the Evenki understanding of landscapes and within Evenki cosmology (Lavrillier, 2006). We were told that rivers were both the first thing that children learned about an environment and the first element one should learn about when approaching a novel environment. Their importance is reflected in how Evenki make drawings of places, always starting with rivers, something that is documented in both soviet and contemporary ethnographic accounts:

‘During my missions in the thick taiga forest between 1925 and 1961, the Evenks, whether they learned to write or not, always drew me maps showing only the rivers and all their tributaries, measuring distances in days of travel. Most of them kept in memory the complete scheme of a river, but also all the meeting points between the great rivers. Of course, none of them orientated their drawing like our geographical maps, according to the absolute cardinal points; on the other hand,

they were never mistaken about the direction of the rivers' currents. Before drawing the map, they would turn the sheet of white paper in their hands for a long time, and then, once they had found the right position that would contain the space to be represented, they would begin by drawing the most important river, running the pencil from them in the direction of the current, and gradually tracing all the tributaries of this river, and also those of the nearby river to express the presence of a pass.'

-Vasilevič (1963, p. 315)

Alexandra Lavrillier also remarks how during map-sketching exercises, the Evenki were never interested in cardinal points or in landmarks such as mountains, but in rivers (Lavrillier, 2006). This is also present in their oral history. Lavrillier noticed that adults and children alike recited large rivers and their tributaries as a pastime, the way one might recite multiplication tables. This detailed hydrological knowledge supports the capacity of the Evenki to explore territories that go well beyond their habitual lands of herding or hunting. Rivers also serve to delineate different regions and thus to support everyday navigational activities. When they are talking or sketching itineraries, the Evenki always take as a point of departure the location of their tent in relation to its closest river and describe walking movement in reference to the direction of the current. Knowing the contour of nearby rivers means that when hunting, the rivers can always be used as a return path and as borders of different areas.

Finally, Evenki navigators also have a detailed knowledge of landscape names (i.e. toponymy), both of particular sites and of types of landscape. This typology of landscape is extremely useful, because place names are very specific (e.g. 'Ily' means a piece of rock sticking out of a mountain) and they carry information about the possible uses of the landscape. This knowledge system is dynamic and relational: Evenki can use their toponymical knowledge to infer the types of landscape that will surround a particular place (see Lavrillier and Gabyshev, 2018 for a detailed analysis of Evenki landscape typology and a glossary of place names; and Mamontova and Thornton, 2022 for a recent analysis). In the words of researcher and reindeer herder Semën Gabyshev, 'thanks to the Evenki knowledge system of the landscape, I can guess the locations of rocks, rivers, passes, and so on, even if I do not know the specific place' (Lavrillier and Gabyshev, 2018, p. 25).

3. Mental maps versus practical mastery

It is fruitful to frame the discussion of Evenki navigation within the context of the current debate in anthropology between proponents of the mental map theory of human navigation and proponents of the practical mastery theory of human navigation¹. The interesting distinctions of this debate will help advance our understanding of Evenki navigation and, in turn, a more detailed understanding of Evenki navigation can help advance the debate. The 'mental map' theory holds that wayfinding 'is carried out in the light of stored spatial information in the form of a "mental map" of the terrain, plus, presumably, some inferential schemes of converting this information into suitable practical decisions and actions' (Gell, 1985, p. 272). In contrast, 'practical mastery' proponents defend that most forms of wayfinding do not rely on abstract representations of spatial relations, and that we should understand wayfinding 'as a skilled performance in which the traveller, whose powers of perception and action have been fine-tuned through previous experience, "feels his way" towards his goal, continually adjusting his movements in response to an ongoing perceptual monitoring of his surroundings.' (Ingold, 2000, p. 220). The contrast between the views of Edwin Hutchins and Tim Ingold on the topic of navigation provides a useful illustration of the two positions:

'When the navigator is satisfied that he has arrived at a coherent set of correspondences, he might look to the chart and say "Ah, yes; I am here, off this point of land." And it is in this sense that most of us feel we know where we are. We feel that we have achieved reconciliation between the features we see in our world and a representation of that world.'

-Hutchins (1995, p. 13)

¹In this paper, we use navigation and wayfinding interchangeably, but other authors make a difference between these two terms by conceiving navigation as aided (i.e. by cognitive artefacts) and wayfinding as unaided.

“Where am I?” is not ordinarily answered in terms of a location in space, determined by the intersection of an independent set of coordinates. . . . [It] is not in this sense that most of us feel we know where we are. Indeed, I may know precisely where I am and yet have no idea of my geographic location. For it is not by assigning the position where I currently stand to certain spatial coordinates that an answer to the “where” question is arrived at, but rather by situating that position within the matrix of movement constitutive of a region.’

-Ingold (2000, p. 237)

Central to the debate is the concept of non-indexicality, which ‘corresponds with the notion of an allocentric as opposed to egocentric frame of reference in psychology’ (Istomin and Dwyer, 2009). Indexical representations of our environment are coded in egocentric (body-centred) frames of reference, and non-indexical spatial representations of our environment are coded in allocentric (world-centred) frames of reference. Using this notion of non-indexicality, Gell defines maps as ‘any system of spatial knowledge and/or beliefs which takes the form of non-token-indexical statements about the spatial locations of places and objects’ (Gell, 1985, p. 278). Thus, according to mental map advocates, wayfinding depends on placing the subject in a non-indexical system of spatial knowledge. That is, on integrating egocentric and allocentric frames of reference and, as a result, reconciling ‘the features we see in our world and a representation of that world’.

Alternatively, practical mastery advocates defend that during wayfinding, there is no computation of one’s location with respect to a non-indexical representation. To support their position, they refer to an array of anthropological research coming from work with different indigenous groups, and it also builds on the insights of the Gibsonian ecological approach to psychology, in particular, on Gibson’s theory of ‘reversible occlusion’ (Gibson, 1979, p. 198). The central elements of the ‘reversible occlusion’ theory are vistas and transitions between vistas.

The set of visible surfaces along a path constitutes a vista. Importantly, a vista is not a picture seen from a static position, but a dynamic set of surfaces that is created by moving along a path. Imagine walking down a busy shopping street and passing different stores on your right and the road to your left. The individual stores might fall behind you as you walk, but it is the joint flux of passing surfaces both vertical (e.g. stores) and horizontal (e.g. the road) along this path that constitutes the vista. Now, if you turn onto a different street, there is a *transition*, which opens another vista (i.e. that of the surfaces along that new street).

Following Gibson’s line of research, the psychologist Harry Heft defends that wayfinding depends on moving through routes that recreate the flow of perspective particular to the path leading to the destination (Heft, 1996, 2012, 2013, 2021). Tim Ingold refers to this psychological research to argue that wayfinding depends not on reflexive planning and location updating based on mental maps, but on an engaged series of transitions between vistas as one walks. In a phrase that summarises well the practical mastery position, ‘we know as we go, not before we go’ (Ingold, 2000, p. 239).

Istomin and Dwyer (2009) review the map versus mastery debate and argue that it corresponds to the survey and route knowledge distinction (Shemaykin, 1962; Siegel and White, 1975). Navigation based on mental maps corresponds to survey knowledge (non-indexical knowledge of spatial locations) and practical mastery corresponds to route knowledge (knowledge of a network of routes). This connection is important because it points out that transitions between vistas alone cannot explain many of the features of human navigation that are accounted for in the mental map model of spatial cognition. Most notably, mental maps enable generalisations and inferences that go beyond the spatial information gained through direct experience (Allen, 1999). Imagine that A, B and C form a triangle within a street network. Imagine now that an individual had learned the route from A to B and from B to C, but not from A to C. If the individual were to use only route knowledge to go from A to C, they would have to go from A to B and then from B to C. In contrast, using survey knowledge (e.g. picturing the location of A, B and C forming a triangle), they would infer that there is a more direct route from A to C and follow the path closest to the direction to C from A. The capacity for these kind of inferences (e.g. taking a shortcut, taking a detour . . .) is found across cultures, and this presents a problem for the ‘practical mastery’ position.

Istomin and Dwyer contend that rather than conflicting, the two theories in the debate are complementary. Human beings both use mental maps and route knowledge during navigation. What varies both across cultures and across individuals is the degree to which one of the two types of knowledge (survey vs route) dominates the other. They then re-evaluate the debate in the light of ethnolinguistic studies. Linguistic expressions of spatial relations can be given in relative (e.g. the bakery is to the left of the café) or absolute frames of reference (e.g. Times Square is south of Central Park). The prevalence of the use of the different linguistic frames of reference varies across cultures, with some languages only allowing a single frame of reference. For example, the Australian language Guugu Yimithirr only allows the absolute frame of reference (Levinson, 2003).

Intercultural studies at the intersection of ethnolinguistics and spatial cognition consistently found that differences in linguistic frames of reference tended to result in differences in navigational styles, with ‘absolute people’ more likely to rely on survey knowledge and ‘relative’ people on route knowledge (Istomin and Dwyer, 2009). Interestingly, when asked to sketch a map, ‘absolute people’ will orient the map according to an absolute coordinate system (e.g. geographic bearing) and ‘relative people’ will sketch non-oriented maps. Hereon, we will refer to ‘absolute’ versus ‘relative’ navigation to indicate navigational systems that rely more heavily on survey knowledge or on route knowledge, respectively. Of course, this absolute–relative people distinction is only part of the story. Istomin and Dwyer did studies with reindeer herders belonging to two different groups (the Komi and the Nenets) and found that even though they are both ‘relative’ people (linguistically) and have roughly similar ways of life, their mental maps and the degree to which they rely on them for navigation varies.

4. An analysis of Evenki navigation

Following the distinction introduced in the previous section, it seems clear that the Evenki would fall on the category of ‘relative’ people. They rely mainly on route knowledge (e.g. the paths mentioned in the previous section), and they have a strong tendency to sketch non-oriented maps. The Evenki have a vast hydrological knowledge and they can build on that knowledge to sketch maps at an ethnographer’s request, but these maps are oriented in reference to rivers, not to absolute coordinates (Vasilevich, 1963). For the Evenki, ‘cardinal points don’t constitute a real point of reference’ (Lavrillier, 2006, p. 23).

Our interviews confirm that Evenki seem to rely largely on route knowledge when they walk in the taiga. Their constant refrain about how to orient is that the Evenki just know the land, and that they find their way by walking. When talking about walking in the taiga, they also made reference to the presence of tracks that they could follow to different places. When we asked an Evenki hunter what he would do if lost, he looked at us confused and said ‘well, I would just find my way’.

When we inquired about the use of maps in particular, another Evenki hunter, who had undergone military training, told us that he had learned how to use a map and compass there. He had found the whole exercise quite fun and had become fairly skilled at locating himself in a map using a compass and landmarks. When we asked him if that was similar to wayfinding in his hunting grounds, he looked at us a bit perplexed and explained that maps and compasses were fun, but that they had nothing to do with walking in the taiga, because to walk in the taiga you need to know the land.

An interview with a Slavic hunter who hunted in the same region provides an illuminating contrast. We simply asked him how he oriented while hunting and he gave the following detailed description, which matches rather well the use of survey knowledge:

‘Well, how could I say it? I have this map in my head, you see. Of the whole region where I hunt and a bit further on. A very detailed map, with all of the mountains and with how the crests and valleys are oriented. And then, I keep track. I look at the mountains and I know which ones they are, and I know where to go. And I always know where north is, I always keep track. Always. Even in the snowstorms. I know in which direction the wind is coming, I feel it at a certain angle, and I keep that angle in order to advance on a straight line.’

While the Slavic hunter relied clearly on survey knowledge (mind maps), the Evenki hunters operating in the same area seemed to rely mostly on route knowledge (practical mastery). Importantly, this does not mean that the Evenki were not able to use maps or to map some of their knowledge, just that the ability to locate themselves within an abstract non-indexical representation of the space around them is not central to their wayfinding processes. Moreover, the ‘skilful walking’ – skilful attunement to a place while moving through it – so central to the Evenki ethos seems to be very much in line with the idea of practical mastery. Another aspect of Evenki walking that points in the practical mastery (i.e. relative navigation) direction is that they prefer to have no predetermined destination and to instead open themselves to the possibilities presented by the environment (Safonova and Sántha, 2013), which resonates with the previously mentioned idea that they know as they go, not before they go.

This still raises the question of the role of allocentric and egocentric frames of reference during wayfinding for the Evenki. A recent proposal defends that the link between environmental experience and the integration of allocentric and egocentric frames of reference (during navigation reliant on survey knowledge) can be elucidated through the concept of the horizon of experience (Fernández Velasco, 2020). The horizon of experience is the Husserlian idea that every experience takes place within a particular framework of reference (Husserl, 2012). This framework determines how we experience the environment and the different objects in it. For instance, when we see the side of a red car from a given perspective, the unseen side of the car is under-determined, but we have an inherent expectation that on its unseen side, the car will also be red, three-dimensional, and so on. On a different level, all of our social interactions take place within a cultural framework of expectations and meaning. Additionally, spatially, our immediate environment is often embedded within a larger configuration of out-of-sight landmarks. When a Londoner finds themselves in Oxford Circus, they have a sense of Regent’s Park, Piccadilly, Marble Arch and Tottenham Court Road hovering somewhere beyond the horizon even if they cannot see them.

As for the Evenki, knowledge of paths and skilful walking do not seem to require allocentric frames of reference. This lack of allocentric frames of reference while being immersed in the taiga seems to be patent in their phenomenology of place as well. Contrast the Londoner in Oxford Circus who has a sense of a set of landmarks hovering somewhere beyond the horizon with the following description of the Evenki experience of skilful walking: ‘territory is perceived as a field of open possibilities, of potential directions always in relation to the person’s location at any given moment’ (Shirokogoroff, 1935, p. 66).

This quote resonates with Ingold’s idea of the matrix of movement that constitutes a region. However, there is a difference in emphasis. Ingold emphasises the histories and memories of previous movement: ‘For those who know a country, in short, the answers to such basic questions as “Where am I?” and “Which way should I go?” are found in narratives of past movement’ (Ingold, 2000, p. 237). This is of course an important part of Evenki experience, with paths having histories and places having associated memories. Nevertheless, we would like to bring the emphasis from remembered movement to potential movement. Rather than remembering previous movement, the way Evenki navigators feel the space is as a matrix of potential movement (‘a field of open possibilities, of potential directions’).

The above applies neatly to two of the central elements of Evenki navigation introduced earlier. Namely, the Evenki gait and their system of paths. However, the other two elements of Evenki navigation identified in Section 2 – hydrological knowledge and the Evenki toponymy of landscape – might seem at odds with navigation based on route knowledge. As we already mentioned, the Evenki have a detailed knowledge of river systems, going from large rivers to small tributaries over very large areas. Even though this knowledge might be better described as narrative-based, or at best, diagram-based (something akin to a genealogy tree), ethnographers have found that the Evenki are able to draw non-oriented maps in which their itineraries are sketched in reference to river systems (see Lavrillier, 2006 for an example).

During wayfinding, the Evenki rely on rivers as return paths and as borders. Taken as return paths, rivers should be no different than other paths in that they need not involve survey knowledge. What is interesting is that rivers work for the Evenki as ‘lines that delimit both hunting grounds and herding grounds and [on a larger scale] the region of nomadic movement of a clan’ (Lavrillier, 2006, p. 19). Lavrillier gives as an example the itinerary of a hunter who is pursuing a prey in an area between the

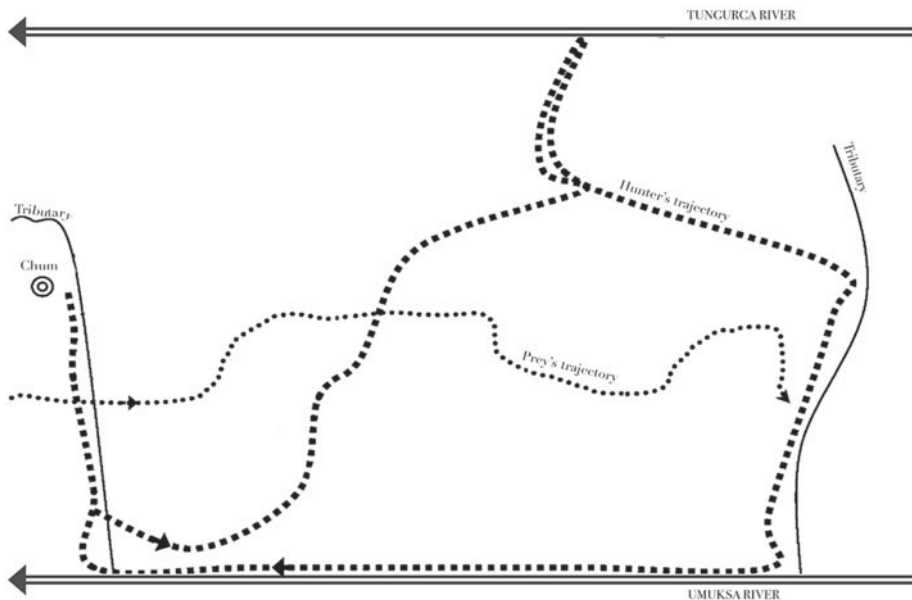


Figure 1. Itinerary of a hunter pursuing prey in an area between the Tungurça and Umuksa rivers Adapted from Lavrillier (2006).

Tungurça and Umuksa rivers (Figure 1). The two rivers run roughly in parallel 10 km apart and the area is approximately 30 km across. After finding the trail of the animal, the hunter first goes down to the Umuksa river, then meanders diagonally across until he reaches the Tungurça river, then in a descending diagonal until he ends on a tributary of the Umuksa, crisscrossing as a result the actual animal itinerary which goes horizontally in between the two rivers. He follows the tributary until finally finding the prey, shooting it and hiding the carcass under a blanket of snow for later transport. Then he follows again the tributary all the way to the river, which he uses as a return path to his tent.

This hydrological knowledge should not be simply equated with a system of landmarks in an allocentric frame of reference. The rivers (as borders) serve to delimit the areas of activity of the Evenki during wayfinding. As such, they serve as a sort of safety net during skilful walking (which we discussed in Section 2). The Evenki can immerse themselves in the environment egocentrically and they will always be able to find their way back to their chum. As a result, it seems that there is no set of distant spatial locations that hover beyond the horizon of experience of the Evenki, unlike the case of the Londoner. Additionally, as with many wayfinding systems, there is a redundancy in the ways that the Evenki can use to go back to their tent after being immersed in the environment egocentrically. They can simply backtrack, retracing their own itinerary backwards; they can use path integration; they can rely on the large system of paths and follow the route that takes them to their tent; they can follow rivers; and they can toponymy for wayfinding inferences.

An interesting aspect of rivers from the point of view of cognitive ethnography is that rivers do not have to be visually perceived directly to be exploited for navigation. The surrounding landscape (e.g. slope, vegetation) indicates the location of a not-yet-visible river, and the sound of the water can provide an auditory cue of the river's location even in densely forested areas where visibility is reduced. As for toponymy, we saw that the Evenki have names for and recognise many types of landscape. They can use this knowledge to infer the possibilities (for wayfinding and otherwise) of each type of landscape (e.g. whether it is easy to climb) and they can also guess fairly accurately the types of landscape that will surround a given landscape type, which as we just mentioned, can serve them to find rivers, or to find the section of landscape in which their tent is based.

Together, these four elements – gait, paths, hydrological knowledge, toponymy – ensure the viability of the Evenki style of navigation without the need for survey knowledge. When hunting, the absence of survey knowledge in their navigational processes allows the Evenki to ‘forget all concerns . . . in order to immerse themselves in the situation’ (Safonova and Sántha, 2013, p. 103). This is incredibly important because, as will become clear in the next section, it leads to the feeling of freedom that is at the heart of the Evenki experience of place.

5. The experience of place for the Evenki

In their walking, the Evenki aim to reach a state in which self-reflexivity falls away and a unique sense of freedom emerges. Based on their extensive fieldwork, Safonova and Santha argue that this experience of freedom is central to the development of the Evenki ethos and ‘comes from the ability to walk and travel alone . . . Landscape also plays an integral part in this ethos, because the areas through which one can walk alone determine the extent and intensity [of the experience].’ (Safonova and Sántha, 2013, p. 159). Only thanks to their complex, relative navigational system are Evenki navigators able to immerse themselves in the taiga and attain this sense of autonomy.

To this end, the Evenki need to liberate themselves from plans and expectations. That Evenki shy away from planning is a point of agreement of many ethnographic accounts: ‘Hunters do not like to predict walking time and [an Evenki hunter] used to tell me “we should not try to guess” (R. *ne budem zagadyvat*’). This also relates with hunting beliefs that beings can react to what is planned in advance’ (Brandišauskas, 2009, p. 199). This lack of plans and expectations facilitates the desired mental state because it means that the Evenki are open to ‘any options and possibilities, however various and unpredictable, that might arise’ (Safonova and Sántha, 2013, p. 115).

The Evenki experience of walking constitutes not only a distinct way of experiencing oneself (as autonomous and free) but also a distinct way of experiencing the environment – ‘one perceives places in a unique way’ (Safonova and Sántha, 2013, p. 142). Here we draw on the previously made point that the Evenki, thanks to skilful walking, perceive the environment as a field of open possibilities and potential directions. Thus, the freedom at hand should not be considered as freedom in an atomistic sense, but in a relational sense. It is not a way for the Evenki to impose their will on the environment. On the contrary, it opens the possibilities of the landscape to the Evenki in a way that transcends the human abstractions of plans and expectations. It is this feeling of possibility that underlies the Evenki experience of place. The Evenki perceive the landscape as alive, as capable of responding to their actions (Sirina, 2008). There is a playful attunement to a living place.

Ironically, we can further our understanding of this sought-for experience of freedom by studying its absence. The Evenki never conceive places as closed and determined; in their minds, places always possess ‘freedom of spatial evolution’ (Lavrillier, 2006, p. 3). As a result, the Evenki in the settlement ‘long for the freedom, self-autonomous organisational and spatial order of the big forest’ (Mustonen and Lehtinen, 2019, p. 23). In contrast to the taiga, the towns are seen to be ordered according to Slavic norms, both politically and spatially. Towns are predictable, overly determined. The result is a draining away of a sense of freedom during sedentary practices. The alienation of the Evenki under the Slavic sedentary way of life is perhaps most clear in their attitude towards the spatial routines of the settlement:

‘Having a set purpose . . . spoils the pleasure of being on the road and prevents one from being fully involved in the journey. Whenever possible, Evenki avoid travelling in such conditions . . . When they finally start their journey home, the first chance encounter will stop them in their tracks and they will accompany whomever they met back to the village. If there is no chance of escaping from a trip with a predetermined aim they will be sullen and uncommunicative, as if the existence of this concrete purpose prevents them from feeling free and accepting the pleasure of the trip.’

-Safonova and Sántha (2013, p. 143)

The delight of the Evenki at chance encounters is something that we experienced often in Chirinda. On a daily basis, we would meet someone, and they would insist that we accompanied them. We would walk

them all the way to their house, and upon arrival, they would insist on accompanying us to our house. If more people were encountered on the way, this would be a further cause for joy, as it would result in new unexpected switches in the itinerary. Soon enough, we started to partake in the pleasure of finding ourselves in groups that gained and lost members as we wandered through the settlement. As Safonova and Sántha explain, all of these chance encounters ‘liberate the traveller from the prescriptiveness of the initial purpose of a journey and allow him or her spontaneously to change the route, and combine different tasks and possible outcomes. This sense of having multiple possibilities fills the situation with joy’ (Safonova and Sántha, 2013, p. 143).

Prescriptiveness is a key word here. All of the Evenki cultural practices of movement aim to rid the experience of the environment of any prescriptiveness. Consequently, the Evenki have a renowned passion for exploring new territories, often for months and without a clear instrumental purpose (Lavrillier, 2006). Additionally, in Transbaikalia, they celebrate an annual ritual in which they wander between secret places without any prescribed movement, often walking in circles and making loops (Safonova and Sántha, 2013). In our interviews, reindeer herders told us that they sometimes left the decision-making during walking to the reindeer, which ensures moving in non-prescribed ways. Hunters reported doing likewise when chasing a prey with their dogs. A hunter in Chirinda described it in the following way: ‘The dog runs here and there, and as we go, everything is surprising and exciting’.

The experience of place described above is deeply connected to the Evenki system of navigation. At the most basic level of analysis, the Evenki navigator still needs to be able to make it back to their tent at the end of the hunt, and this is made possible by the network of paths, hydrological knowledge and the use toponymical-based inference. What is fairly unique about the Evenki method of navigation is that it allows for wayfinding that is not prescriptive, which is essential to the attainment of the aforementioned sense of freedom. Here again, let us contrast the Londoner in Oxford Circus with the Evenki hunter in the taiga. While the horizon of experience of the Londoner is framed by out-of-sight landmarks, the horizon of experience of the Evenki is a matrix of open possibilities.

Edmund Husserl clarifies that the horizon of experience ‘is not a nothingness, but an emptiness to be filled out; it is a determinable indeterminacy’ (Husserl, 2012, p. 41). Of course, this determinable indeterminacy can be determined to different degrees. The abstract spatial configuration of the Londoner’s horizon of experience is (comparatively) overdetermined and it generates a set of expectations about the environment. In comparison, the Evenki is surrounded by uncertainty. The immediacy of the Evenki experience of the environment contributes to the unpredictability and risk necessary for the perception of the landscape as alive and capable of responding to human action.

This unprescribed experience of the environment is only made possible because for the Evenki, there is no ongoing integration of egocentric and allocentric frames of reference during wayfinding – no reconciliation between the features we see in our environment and a spatial representation of that environment, following Edwin Hutchins’s terminology. The integration of egocentric and allocentric frames of reference can assist navigation for people relying chiefly on survey knowledge, but it also overdetermines the navigator’s horizon of experience through expectation and anticipation. It is precisely this integration that the Evenki go to great lengths to avoid. Skilful walking makes possible for them to navigate without the continuous integration of egocentric and allocentric frames of reference, that is, without constantly updating their position in some mental map of the environment. The supple attunement to the environment during skilful walking is only sustainable thanks to a complex navigational system (involving a particular gait, path networks, and vast hydrological and toponymical knowledge) that assures that the Evenki are always able to find their way back to their point of origin. The result is that the Evenki experience themselves as free individuals moving through an environment that is alive and rife with possibility.

6. Conclusions

In many cultures, the generation of survey knowledge is the predominant way of getting to know, producing and organising places. The use of survey knowledge for navigation requires the integration

of egocentric and allocentric frames of reference (it requires matching ‘the features we see in our world and a representation of that world’). In turn, this integration of egocentric and allocentric frames of reference makes us experience places as determined, organised, controlled. The Evenki way of walking the land offers an alternative. It presents a deeply embodied way of immersing oneself in the environment without any set purpose or sense of anticipation. In the words of the environmentalist Gary Snyder (2020, p. 153), ‘it puts you out there where the unknown happens, where you encounter surprise’.

The geographer Doreen Massey writes that ‘what space gives us is simultaneous heterogeneity; it holds out the possibility of surprise; it is the condition of the social in the widest sense, and the delight and the challenge of that’ (Massey, 2005, p. 106). While space holds this possibility, there are two alternatives for approaching and navigating space, and each goes hand in hand with a particular way of experiencing the places through which we travel. As we have seen, survey knowledge empowers the navigator by turning the world into more controlled and predictable environments, but it results in a more restricted form of environmental experience.

In this light, letting go of survey knowledge can be conceived as a form of resistance – a resistance ‘to the uniformization of landscapes, to abandonment of the daily ritual of getting to know, producing and organizing places.’ (di Friedberg, 2017, p. 9). In the Evenki way of walking, we discern a way of relinquishing this daily ritual and of embracing instead the heterogeneity of space. For those of us used to the knowing of places through mental maps, skilful walking entails a rediscovery of our immediate surroundings and of the possibilities that hitherto laid dormant in them – it brings forth a different relationship to the places within which we find our way.

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References

- Allen, G. L. (1999). Spatial abilities, cognitive maps, and wayfinding. In Golledge R.G. (ed.), *Wayfinding Behavior: Cognitive Mapping and Other Spatial Processes*. Baltimore: The Johns Hopkins University Press, pp. 46–80.
- Brandišauskas, D. (2009). Leaving Footprints in the Taiga: Enacted and Emplaced Power and Luck among the Orochen-Evenki of the Zabaikal Region in East Siberia. Doctoral dissertation, University of Aberdeen.
- Brandišauskas, D. (2012). Making a home in the taiga: Movements, paths and signs among Orochen-Evenki hunters and herders of Zabaikal Krai (South East Siberia). *Journal of Ethnology and Folkloristics*, 6(1), 9–25.
- Campbell, C. A. (2001). The Evenki system of paths: The study of travel and technology in east-central Siberia. Master’s thesis, University of Alberta, Canada.
- Davydov, V. (2013). People on the move: Development projects and the use of space by Northern Baikal reindeer herders, hunters and fishermen. *Études Mongoles et Sibériennes, Centrasiatiques et Tibétaines*, 43–44, 1–3.
- Di Friedberg, M. S. (2017). *Geographies of Disorientation*. Routledge. doi:10.4324/9781315584683
- Dumont, A. (2018). Are the Evenki reindeer herders still nomads? The alternate use of different types of spaces in Inner Mongolia, China. *Études Mongoles et Sibériennes, Centrasiatiques et Tibétaines*, 49, 1–23.
- Fernandez-Velasco, P. and Spiers, H. J. (2023). Wayfinding across ocean and tundra: What traditional cultures teach us about navigation. *Trends in Cognitive Sciences*, 28(1).
- Fernández Velasco, P. (2020). Disorientation and self-consciousness: A phenomenological inquiry. *Phenomenology and the Cognitive Sciences*. doi:10.1007/s11097-020-09659-1
- Gell, A. (1985). How to read a map: Remarks on the practical logic of navigation. *Man*, 20(2), 271–286.
- Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Houghton: Mifflin and Company.
- Heft, H. (1996). The ecological approach to navigation: A Gibsonian perspective. In: Portugali, J. (ed.), *The Construction of Cognitive Maps*. Dordrecht: Springer, pp. 105–132.
- Heft, H. (2012). Way-finding, navigation, and spatial cognition from a naturalist’s standpoint. In: Waller D. and Nadel L. (eds), *The Handbook of Spatial Cognition*. Washington, DC: American Psychological Association, pp. 265–294.
- Heft, H. (2013). Environment, cognition, and culture: Reconsidering the cognitive map. *Journal of Environmental Psychology*, 33, 14–25.
- Heft, H. (2021). Perceiving ‘natural’ environments: An ecological perspective with reflections on the chapters. In Schutte A., Torquati J. and Stevens J. (eds), *Nature and Psychology: Biological, Cognitive, Developmental, and Social Pathways to Well-Being*. Nebraska Symposium on Motivation, Vol. 67, Springer, pp. 252–273. doi:10.1007/978-3-030-69020-5_8
- Husserl, E. (2012). *Analyses Concerning Passive and Active Synthesis: Lectures on Transcendental Logic*. Dordrecht: Springer Science & Business Media.
- Hutchins, E. (1995). *Cognition in the Wild (Issue 1995)*. Cambridge, Massachusetts: MIT Press.
- Ingold, T. (2000). *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Psychology Press.
- Istomin, K. V. and Dwyer, M. J. (2009). Finding the way: A critical discussion of anthropological theories of human spatial orientation with reference to reindeer herders of northeastern Europe and western Siberia. *Current Anthropology*, 50(1), 29–49.

- Lavrillier, A.** (2006). S'orienter avec les rivières chez les Évenks du Sud-Est sibérien. Un système d'orientation spatial, identitaire et rituel. *Études Mongoles et Sibériennes, Centrasiatiques et Tibétaines*, **36–37**, 95–138.
- Lavrillier, A. and Gabyshev, S.** (2017). *An Arctic Indigenous Knowledge System of Landscape, Climate and Human Interactions. Evenki Reindeer Herders and Hunters*. Fürstenberg/Havel: Verlag der Kulturstiftung Sibirien SEC Publications. ISBN 978-3942883313.
- Lavrillier, A. and Gabyshev, S.** (2018). *An emic science of climate. Reindeer Evenki environmental knowledge and the notion of an “extreme process”*. In *Études mongoles et sibériennes, centrasiatiques et tibétaines*. (49). Fürstenberg/Havel: Verlag der Kulturstiftung Sibirien SEC Publications.
- Levinson, S. C.** (2003). *Space in Language and Cognition: Explorations in Cognitive Diversity*, Vol. **5**. Cambridge: Cambridge University Press.
- Mamontova, N. and Thornton, T. F.** (2022). The multiperspectival nature of place names: Ewenki mobility, river naming, and relationships with animals, spirits, and landscapes. *Journal of the Royal Anthropological Institute*, **28**(3), 875–895.
- Massey, D.** (2005). *For Space*. London: Sage.
- Mustonen, T. and Lehtinen, A. A.** (2019). Lived displacement among the Evenki of Yiengra. *International Journal of Critical Indigenous Studies*, **12**(2), 16–44.
- Safonova, T. and Sántha, I.** (2013). *Culture Contact in Evenki Land: A Cybernetic Anthropology of the Baikal Region*. Kent: Global Oriental.
- Shemaykin, F. N.** (1962). *General Problems of Orientation in Space and Space Representations*. In *Psychological science in the USSR*, Vol. **1**. US Office of Technical Reports Arlington.
- Shirokogoroff, S. M.** (1935). *Psychomental complex of the Tungus*, Vol. **1**. London: Kegan Paul, Trench, Trubner.
- Siegel, A. W. and White, S. H.** (1975). The development of spatial representations of large-scale environments. In Hayne W. R. (eds), *Advances in Child Development and Behavior*, Vol. **10**. London: Elsevier, pp. 9–55.
- Sirina, A. A.** (2008). People who feel the land: The ecological ethic of the Evenki and Eveny. *Anthropology and Archeology of Eurasia*, **47**(3), 9–37.
- Snyder, G.** (2020). *The Practice of the Wild: Essays*. London: Catapult.
- Vasilevich, G. M.** (1963). Drevnie geograficheskie predstavleniia èvenkov i risunok kart[Ancient Evenki geographical representations and mapping]. *Изв, ВГО*, **95**(4), 306–319.