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How many right and left sides are there in Nganasan?

1. Introduction

In recent decades, spatial expressions have been studied in a substantial number of works (e.g., Talmy 2000, Levinson 2003, Levinson & Wilkins 2006). The expressions that we use for the location of objects are often built upon metaphorical conceptualizations, which in turn have their origins in the human body and bodily experience (e.g., Lakoff & Johnson 1980, Svorou 1994, Heine 1997, Wen & Jiang 2021).

A considerable number of works have also been devoted to the study of the grammaticalization of body part terms, both in general and Uralic linguistics (e.g., Svorou 1994, Heine & Kuteva 2002, Heine 2014, Sipőcz 2005, van Pareren 2013). In addition, numerous studies have dealt with the extensions of body parts in various domains (e.g., Hilpert 2007, Sharifan et al. 2008, Brenzinger and Kraska-Szlenk 2014, 2019). In some languages, such as in Mixtepec Mixtec (spoken in Mexico) or in Kanuri (spoken in Nigeria, Niger, Chad, and Cameroon), there are lexical-semantic extensions such as designations of body parts that can be extended and used in relation to new concepts. In Kanuri, for example, the word 'arm' has undergone an extension and has the secondary meaning 'elephant trunk' (Hilpert 2007: 78). In Mixtepec Mixtec, a metonymic lexicalization can be observed: body part terms are combined with other content words and new concepts are formed such as other body parts, objects, or spatial terms, e.g., cloud+face > 'eye'; face+field > 'cornfield' (cf. Lewandowska-Tomaszczyk 2020: 38). For metonymic conceptualization, we also find examples in Nganasan, described in Section 2.3 below.

To understand the linguistic data in Nganasan (and other languages) as well as these conceptualizations, we need to take an excursion into the structure of the human body and the relation between the expression of movement and the planes of the body. Three principal anatomical planes run through the human body; direction of motion can be

indicated along these. One of them is the sagittal plane, which divides the body into right and left halves. Along the sagittal plane, movement occurs forward and backward. The second axis is the coronal or frontal plane, which splits the body into the front (anterior) and the back (posterior). Motion along this plane occurs sideways. The third axis is the transverse plane, which divides the body into upper (superior) and lower (inferior) parts. (For body planes see also Bailey 2020.) Figure 1 shows the body planes.

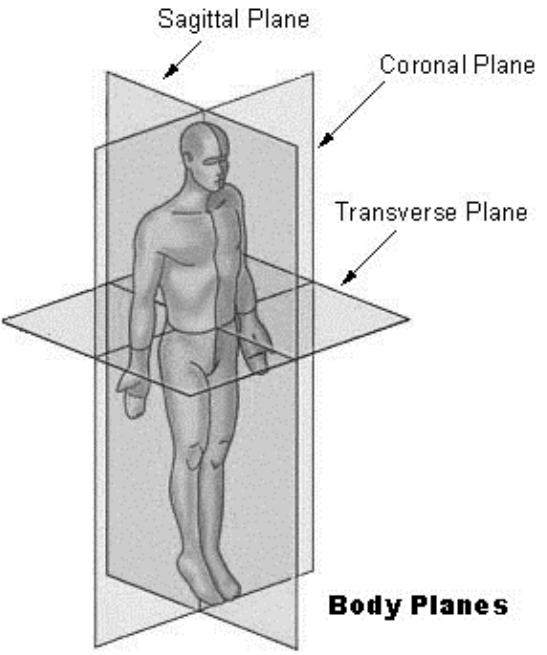

Figure 1. Body planes[1]

In order to localize an object, the speaker considers the structure of the object. An object usually has a vertical and a horizontal axis like the human body. Along these axes, we can identify the concepts UP/DOWN, FRONT/BACK, and LEFT/RIGHT. (A non-exhaustive list of the concepts is given in Evans 2019: 236.) However, not all objects have the same three concepts. For example, a tree, unlike e.g., a car, normally has no front or back regions, while a ball has no sides at all – or rather, can only assigned sides within the context of a specific situation.

[1] commons.wikimedia.org/wiki/File:BodyPlanes.jpg

In this study, I will discuss how the Nganasan orient themselves in their environment. Due to the richness of the topic, not all its facets can be described here. Only two types of direction, the concepts RIGHT and LEFT are dealt with in this paper. Although this topic was already touched upon in Hajdú's 1951 article, a detailed description has been lacking until today, and I will now try to fill this gap. The basis of this study is the theory of conceptualization of space in cognitive linguistics. Before I turn to the Nganasan expressions of 'left' and 'right', the domain of spatial expressions should be briefly presented, and the data used in this study will be introduced.

1.1. Spatial scenes

When a speaker wants to describe an object located in a scene, s/he uses spatial expressions. The object placed in the scene is termed FIGURE. However, the scene may also contain other objects. The object which serves to describe the location of the FIGURE is called the reference object, or GROUND (Talmy 1983: 102; 2000: 101). The GROUND can also be related to another, secondary reference object, which is not necessarily expressed lexically in the clause, but only implied. Thus, there are two types of secondary reference objects: encompassive and external. The third component of the spatial scene is the reference frame, which specifies how the FIGURE is localized concerning the GROUND. According to Talmy (2000: 183), the FIGURE is a smaller, moveable, more dependent entity, which is usually geometrically simpler and more salient than the GROUND. A bike or a ball is a prototypical FIGURE, while a house or church is a prototypical GROUND.

There are two different approaches to the frame of reference of spatial expressions, one elaborated by Levinson (2003) and the other by Talmy (1983, 2000, among others). In this study, I use Talmy's frames, which show certain differences to Levinson's system. On the one hand, there are certain terminological differences; on the other hand, Talmy takes movements into account, which do not occur in this form in Levinson's work. The terminology used by Levinson is given in brackets.

Talmy (2000: 178–214) identifies four frames of reference found in languages of the world: ground-based, field-based, guidepost-based, and projector-based. The GROUND-based (also called *intrinsic*) frame is the

simplest; it involves only the primary reference object, as example (1) shows. In this example, Simbia is the FIGURE (marked as F), the object that is localized, and the tent is the primary reference object, i.e., the GROUND (marked as G).

(1) {F} {G}
Simbia is near the tent. GROUND-based

The other three types of frames involve both primary and secondary reference objects. Sentence (2) is an example of the FIELD-based (also called *absolute*) reference frame. In this case, there is a fixed point in the cosmos or landscape, which acts as the secondary reference object. In example (2), the primary reference object (GROUND) is the *river Avam*. The spatial expression "north of" only implies the secondary reference object, i.e., the Earth. This kind of secondary reference object encompasses the primary reference object.

(2) {F} {G}
The sled is north of the river Avam. FIELD-based

The GUIDEPOST-based frame (not present in Levinson's categorization) involves a so-called non-projective external secondary reference object. Such an object does not have any projection either since it is a punctual entity, or its projection is not used for localization. The speaker can often function as an external non-projective reference object just like in example (3). The "this side" of the tent is determined concerning the speaker's location, but the reference frame is not projected from the speaker. The speaker is external to the primary reference object (tent) and acts as a guidepost.

(3) {F} {G}
Kurumaku is on this side of the tent. GUIDEPOST-based

The last type is the PROJECTOR-based (also called *relative*) frame. This frame also involves an external secondary reference object, which is typically (but not exclusively) animate, and whose location and orientation function as a frame of reference. Usually, the speaker serves as the source of the projection. For instance, in example (4) one needs both the location

of the speaker and his/her orientation towards the tent to determine which side is the LEFT side of the tent. In the example, the FIGURE is the sled, the GROUND is the tent, and the reference frame is projected by the speaker, who is the external secondary reference object.

(4) {F} {G}
The sled is to the left of the tent. PROJECTOR-based

The expressions of the concepts LEFT and RIGHT are PROJECTOR-based in many languages and use the so-called SPEAKER-based system, in which the speaker projects their own body onto the entity. According to Talmy's definition, the SPEAKER-based system also "can use the speaker as a nonprojective landmark in a guidepost-based system for localizing a Figure as in *The bike is this side of the silo."* (Talmy 2000: 213). However, as we will see in Section 2, this is not true for all cases in Nganasan, which also uses the FIELD-BASED frame to express the concept LEFT/RIGHT (see Section 2.2). Figure 2 summarizes the reference frames described by Talmy. The categories used by Levinson (2003: 40) are given in brackets.

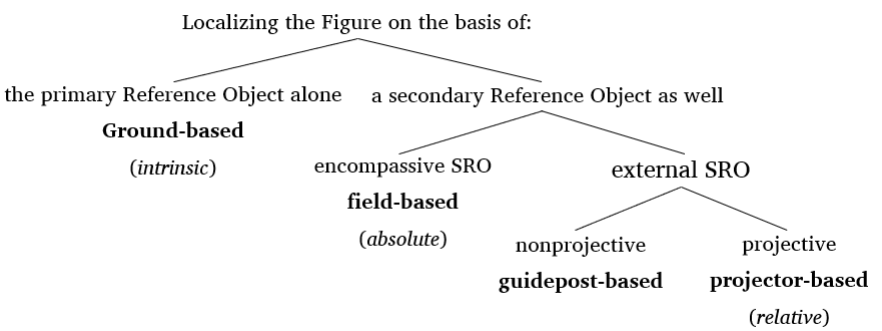

Figure 2. Reference frames according to Talmy (Talmy 2000: 213)

1.2. Data used in this study

This study is based on two important sources: the Nganasan-Russian-Nganasan school dictionary (Kosterkina et al. 2001), from which the basic terms were extracted and checked, and an extended version of the *Nganasan Spoken Language Corpus*. This version contains 11 transcripts (about 1,000 utterances) more than the already published version

(Brykina et al. 2018). Prokofiev collected the earliest transcript in this corpus in 1933. The latest transcripts were collected in 2019 during fieldwork sessions with two speakers. Part of the new texts are the so-called self-recordings of these two speakers. Table (1) gives the basic information about the extended corpus.

Number of utterances:	23,865
Number of words (tokens):	155,245
Number of words (types):	37,609
Number of transcripts:	188
Number of speakers:	39

Table 1. Basic information on the NSL Corpus

The examples given below refer to the corpus following the pattern <speaker code>_<year>_<text title>_<genre code>.<sentence number>. Thus, e.g., ChND_0412_Djajku_flkd.004 is the fourth sentence in the folklore text 'Djajku' recorded in December 2004 from the speaker ChND. The genre of this text is folklore-*d'urimy*. For this study, I have adapted both the glosses and the translations, and the orthography is also modified. (More about the corpus can be found in Wagner-Nagy & Szeverényi 2015 or Wagner-Nagy et al. 2018.)

2. Right side and left side

Hajdú (1951) was one of the first to write about the naming of the RIGHT and LEFT sides in the Uralic languages. In addition to morphological analyses, he also investigated the question of what connections can be made between the way of thinking and the history, or way of life, of the Uralic peoples. I will not elaborate on these latter questions here but will rather concentrate on how many possibilities Nganasan has to name the RIGHT and LEFT sides. Is one single pair of terms used universally or are there situation-specific expressions? As already mentioned, e.g., English uses the PROJECTOR-based frame of reference to describe the spatial relationship. Other languages use other frames. As we will see, Nganasan uses both the PROJECTOR-based and the FIELD-based frames, but in different situations. In Section 2.1 the naming of the RIGHT and LEFT hand is dis-

cussed, then in 2.2 I turn to the indications of the sides with verbs of motion, and in 2.3 to the motivations behind the names of the sides in a tent.

2.1. His right hand stuck

The two central lexemes are *mantimü* ~ *mantimi* 'right-hand, right (side)'[2] and *bəðiʔə* ~ *bəðiə* 'left-hand, left-handed person, left (side)'. The word *mantimü* can be used as a noun or as an attribute modifying the noun *d'ütü* 'hand' (5a). An adjectivized form, *bətid'i*, derived from the root *bəti-*, is used in attribute position (5b). Although, according to Tereshchenko (1979: 136), these lexemes can also be used in connection with the lexemes 'foot' (*bətɨd'i ŋuəj* 'left foot' and *mantimü ŋuoj* 'right foot') and 'side' (*bətɨd'i kəi* 'left side' and *mantimü kəi* 'right side'), there are unfortunately no example sentences for such use. The fact that these words can appear as an attribute of the lexeme 'foot' is obvious. Somewhat less trivial is the use with the word *kəi* 'side'. As we will see below, when talking about the parts of a tent (Section 2.2) or the sides along a movement (Section 2.3), two other lexeme pairs are used for the expression of the LEFT/RIGHT opposition. To clarify whether these words can be used with the lexeme *kəi* 'side', and if so, in which context, native speakers should be consulted. There was no opportunity for that at this moment.

(5) a. *mantimü* *d'ütü-ðü* *təðü-ʔə.*
right hand-POSS3SG stick-CO.3SG
'His right hand stuck (to the stub).'
(ChND_0412_Djajku_flkd.004)

b. *bətɨd'i* *d'ütü-ðü* *təðü-ʔə.*
left hand-POSS3SG stuck-CO.3SG
'His left hand stuck (to the stub).'
(ChND_0412_Djajku_flkd.007)

The speaker can also use these words to denote directions, as in (6a-b). This is the PROJECTOR-BASED reference frame, in which the frame of the speaker or hearer is projected out. Here, the FIGURE is localized with respect to the primary reference object. In the story these two sentences

[2] Hajdú (1951: 175) etymologically derives the word from the word 'straight'. Without analyzing his etymology in more detail, it has to be noted here that this must be considered rather problematic.

refer to the protagonist who wants to defeat another person, trying to throw him down. This means that the protagonist is the projector. In both sentences, the lexemes for 'right' and 'left' are used as nouns, which is not uncommon in Uralic languages. The same construction is possible in Hungarian (*balra / jobbra dobta* 's/he threw (it) to the left/right').

(6) a. *mantimü* *d'a* *hú͡atəmi-ʔə-ðu,* *d'aŋku.*
right.GEN ALL whip-CO-3SG>SG not.exist.3SG
'(He) wanted to throw (him) to the right side, (but) it didn't work.' (JDH_00_Musuna_flkd.233)

b. *tə,* *bəðiə* *d'a* *hú͡atəmi-ʔə-ðu,* *d'aŋku,*
now left.GEN ALL whip-CO-3SG>SG not.exist.3SG
hüə-tə *nəńd'i-tɨ.*
time-LAT stand-CO.3SG
'Now (he) threw (him) to the left side (back), no, (he) is still standing.' (JDH_00_Musuna_flkd.235)

2.2. He is walking on the face road

As mentioned above, a kind of conceptual transfer can be found in the Northern Samoyedic languages as well. Two types of transfer are mostly used in languages: metonymic and metaphoric. In case of metonymic transfer an expression that is used to denote one entity is used instead to denote another one (cf. Langacker 2000: 201). In the case of metaphoric transfer there is a transfer from one term to the other which is not formally marked, and which would be false if the statement were taken literally. Such conceptual transfers can also be found with the expressions of the direction of movement in Nganasan, where the source of the transfer is the human body. As Heine (2014: 17) points out, "the human body provides one of the most salient models for understanding, describing, and denoting concepts that are more difficult to understand, describe, and denote." The motivation of the directional expressions in the Northern Samoyedic languages is the sitting position on a sled. As Figure 3 shows, the driver sits on the sled half-turned, with both feet hanging down from the left side of the sled and half turned front-left with respect to the direction of movement.

Figure 3. A Nenets man on a sled (sketch by Laura Bradley, inspired by Golovnev et al. 2018: 172)

If we now recall the planes of the human body described in Section 1 above, we can observe that the arrangement of the body on the sled corresponds to the coronal plane, but the upper part of the body is rotated along the traverse plane, slightly to the right. As described above, the forward and backward movement only takes place along the sagittal plane. Even if the driver is turned counter-clockwise for practical reasons so that the driver can see the way ahead, the perception of the body corresponds to the non-rotated state. Accordingly, the back of the body is on the right side with respect to the movement, and the front side of the body on the left side. Correspondingly, in Nganasan expressions of the direction to the right and the left side with verbs of motion, i.e., the concepts LEFT/RIGHT, are expressed lexically by *məgu ńii* [back.GEN direction] 'the direction of the back, i.e., backwards' as in (7a) and *horə ńii* [face.GEN direction] 'the direction of the face, i.e., facewards' as in (7b). We can thus observe a conceptual shift, which has not yet led to grammaticalization, but definitely to a metonymic lexicalization. In addition to common verbs of motion such as 'go away' as in (7a), 'go', 'walk', and 'run', etc., other verbs fall in this group which describe the change of position of an entity,

such as ‘pull’ as illustrated by (7b), etc. Positional verbs like ‘sit’, ‘stand’ cannot be used together with these expressions.

The nouns *horə* ‘face’ and *məku* ‘back’ in this function can only be used in their base form in the genitive and are never expanded with possessive suffixes. In (7a) the storyteller talks about a road, which is at ‘the side of the back’. If one applies the above concept to this situation, then one can imagine that the road corresponds to the sled and the right side of the road is the side where the back of the sled driver is. This means that the sled is projected on the path/road.

(7) a. *tahariʔ͡ʔaa* *kurəgüiʔ* *{məgu* *ńii* *sərəə-mənɨ}*
now even back.GEN direction.GEN road-PROL

bii-ʔ͡ʔai-ðə *taa-ðu*
go.away-CO.RFL-3SG.RFL reindeer-POSS3SG
‘Here on the right road (lit. backside road) went the reindeer.’ (MVL_080304_NjomuKamleguNy_flks.154)

b. … *horə* *ńii-d’ə* *sərəə-mənɨ*
face.GEN direction-ADJ.GEN road-PROL

taa-mtu *ńagitə-gə-tɨ*
reindeer-ACC.POSS3SG pull-ITER-CO.3SG

taa-ðu *məl’i* *ńi-ntɨ* *kərbu-ʔ*
reindeer-POSS3SG totally NEG-CO.3SG want-CNG
‘… he pulls the reindeer to the left road (lit. face-side road), the reindeer does not want to.’
(MVL_080304_NjomuKamleguNy_flks.152)

(8) *heðɨtɨ-ʔ* *nəməgəi-ʔ,* *təńi-ðə*
go-IMP.2SG straight-ADV turn-IMP.2SG.RFL

məgu *d’a* / *horə* *d’a*
back.GEN ALL / face.GEN ALL
‘Go straight, and then turn left/right.’
(Aron & Momde 1992: 48)

In Tereshchenko’s grammar (1979: 139) we can also find an example (9) in which the ‘face side’ is used with respect to a river. Here the river can be considered as if it were the sled and the speaker would sit on it, and the sled is transferred to the river. The direction of flow of the river is

considered as if it were the direction of travel of the sled. Thus, the concept LEFT/RIGHT is expressed exactly as it is the verbs of motion.

(9) *bika-a* *horə* *ńii-d'ə* *bərə* *hirəgə.*
river-EP.GEN face.GEN direction-ADJ.GEN bank high.3SG
'The left bank of the river is high.' (Tereshchenko 1979: 139)

If we look at the data of the dictionary (Kosterkina et al. 2005: 198, 281), we find an interesting case. According to the data, at least the word 'face' can also be used concerning the hand or foot, e.g., *horə ńii-d'ə d'ütü* (face.GEN direction-ADJ hand) 'left hand' and *horə ńii-d'ə ŋoj* (face.GEN direction-ADJ foot) 'left foot'. However, this construction was not found even once in the corpus. Whether these terms can actually be used in this manner can only be corroborated by data collected in the field.

2.3. His bed is on the blizzard side

Another important spatial domain is orientation in a tent. A Nganasan family rarely lived alone in their tent. The common practice was that two families, or often even more than two, lived together in one tent. The families then lived – seen from the entrance (*ŋua*) – on different sides of the tent. The part furthest from the entrance, opposite the entrance, is the sacral place *siŋ*. Between the entrance and the sacral place, like the sagittal plane of the human body, an imaginary line can be drawn across the ground of a tent which divides it into two parts. These two regions correspond to the concept LEFT/RIGHT. The two points in the tent are shown in Figure 4 below.

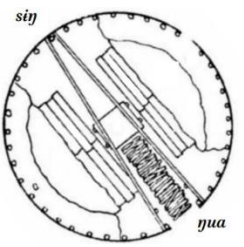

Figure 4. A Nganasan tent (Popov 1948: 87, modified by Laetitia Lilla Wagner)

Tents were built taking the atmospheric conditions into account. Two important winds dominate the weather on the Taimyr Peninsula. The

wind that blows from the southwest brings blizzards and rain (*koðu?* 'blizzard'). In the traditional dwelling areas of the Nganasan, this is also the side where the town of Dudinka is located (see Figure 5). This town is called *Koðuta?a* 'big blizzard' in Nganasan. From the opposite side blows the northeastern wind *ŋarmü* or *ŋarmi*, which brings cold air. To protect a tent, especially the entrance (*ŋua*), it was placed so that the entrance was directed to the southeast. Accordingly, the opposite side, where the sacral place (*sɨŋ*) is, was oriented towards the northwest. The spatial alignment of a tent is shown schematically in Figure 5. (For more details see, among others, Popov 1948 and 1966.)

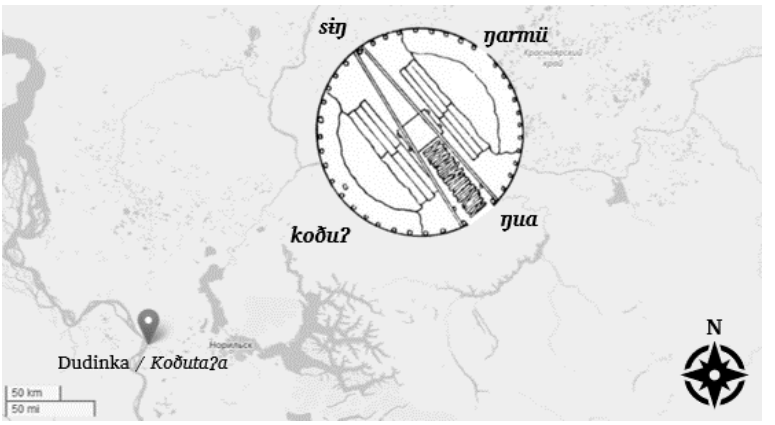

Figure 5. The spatial alignment of a tent[3])

The naming of the sides in the tent was not speaker-based, but relied on other FIELD-BASED reference frames, where the weather phenomena played a decisive role. The names were as follows: the southwestern side is called *kotuðə ńiiďə kəi* [blizzard.GEN+*ńii-ďə* direction-ADJ+ side] 'blizzard side', the northeastern side *ŋarmüðə ńiiďə kəi* [northeast_wind-ADJ.GEN+*ńii-ďə* direction-ADJ+ side] 'north-east wind side', the northwestern side *sɨŋə ńiiďə kəi* [sacral_place.GEN+*ńii-ďə* direction-ADJ+ side] 'the side of the sacral place', and the southeastern side was called *ŋua ńiiďə kəi* [door.GEN+*ńii-ďə* direction-ADJ+ side] 'the door side'. The word *ńii* 'direction' is a relator noun, which is adjectivized in this construction and

[3] based on Popov 1948: 87, modified by Laetitia Lilla Wagner and Jeremy Bradley; map data from OpenStreetMap

stands as an attribute before the noun *kəi* 'side'. These expressions are not relative; that is, they do not depend on the position of the speaker, but are absolute. Regardless of where the viewer stands, the designations remain the same, thus the system is not SPEAKER-based; the frame of reference cannot be considered GROUND-based (intrinsic). As it is shown above, the Nganasan use the weather terms for naming the cardinal points as well. This naming convention is transferred to the microcosm, that is, to the tent. Therefore, in this case, the speaker uses the FIELD-based reference frame. The following examples illustrate the naming of the two sides of the tent. In sentence (10a) the FIGURE (the old woman on the bed) is localized to the GROUND (tent) and the exact spatial relation is expressed on the basis of the anchor, which is, in this case, an immovable point of reference.

(10) a. *taharía͡bi?* *kotuðə* *ńii-d'ə*
now blizzard.GEN direction-ADJ.GEN

kəi-tə *bəbə-tənɨ* *ini?ía͡-təə* *ŋomtü-tü.*
side-LAT bed-LOC old.woman-DRV sit-CO.3SG
'On the bed in the left side (lit. 'blizzard side') of the tent sits an old woman.' (ChND_041212_Girl_flkd.070)

b. *ou?,* *ŋarmü-ðə* *tə,*
oh north_east.wind-ADJ.GEN well

ŋarmü-ðə *ńii-d'ə* *kəi-tə*
north_east.wind-ADJ.GEN direction-ADJ.GEN side-LAT

batu *śai-tənɨ* *kobtúa͡-tu* *ŋomtü-tü.*
woma's.place corner-LOC girl-POSS3SG sit-CO.3SG
'On the right side (lit. 'northeast wind side') by the woman's seat sits the daughter.'
(JDH_00_Musuna_flkd.044)

As in the scenario described in Section 2.2 above, this case can also be considered a metonymic transfer, but here a FIELD-based frame is used.

3. Summary

As we have seen, in Nganasan there are three possibilities for the naming of the concepts LEFT and RIGHT. The use of the lexemes and the reference

frame depends on the situation. In two cases (see Section 2.1 and 2.2), the speakers use the PROJECTOR-based frame. The FIELD-based frame is used exclusively in connection with the tent. As we have seen, in this case the macrocosm was transferred to the microcosm, and the movement of the speakers does not change the naming of the regions. Therefore, this is not a SPEAKER-based system. Table 2 summarizes the use of frames of reference.

frame of reference	**LEFT**	**RIGHT**	**situation**
PROJECTOR-based	*bəðiʔə ~ bəðiə*	*mantimü ~ mantimi*	hand
	horə ńii	*məgu ńii*	moving
FIELD-based	*kotuðə ńiiďə kəi*	*ŋarmüðə ńiiďə kəi*	tent

Table 2. Frames in Nganasan

It could also be shown that Nganasan uses metonymic transfer in at least two situations, in reference to a movement, and in reference to position verbs for indicating a position in the tent. As we have seen in sentence (9), it is not self-explanatory which lexical expression the speakers will use to express the left and right side, which indicates that more research on the mode of expression of the concepts LEFT/RIGHT outside the tent is needed.

This work is a corpus-based study in which an area should be presented that, except for a few examples, has been mostly unexplored not only in Nganasan but in the Samoyedic languages in general. These results clearly show that a corpus can be used for cognitive linguistic studies, but the limitations of a corpus are also obvious. Research conducted in the field (rather than via social media) could help to ensure that these concepts are also described in less-documented languages. This, in turn, could contribute both to the refinement of the conceptual framework and to a better typological description.

Abbreviations

ACC	accusative	ITER	iterative
ADJ	adjectivizer	LAT	lative
ALL	allative	LOC	locative
CNG	connegative	NEG	negative auxiliary
CO	coaffix	POSS	possessive
DRV	derivation suffix	PROL	prolative
flkd	folklore genre d'urimy	RFL	reflexive
flks	folklore genre śiteby	SG	singular
GEN	genitive		

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