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On the notion of metaphor in sign languages

Some observations based on Russian Sign Language

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Metaphors in sign languages have been an important research topic in recent years, and Taub's (2001) model of metaphor formation in signs has been influential in the field. In this paper, we analyze metaphors in signs of cognition and emotions in Russian Sign Language (RSL) and argue for a modification of Taub's (2001) theory of metaphor. We demonstrate that metaphor formation in RSL uses a number of mechanisms: a concrete sign can acquire metaphorical meaning without change, a part of a sequential compound can acquire a metaphorical meaning, and a morpheme within a productive sign or a simultaneous compound can acquire a metaphorical meaning. All these processes have parallels in spoken languages, so we argue for a modality-independent model of metaphor formation where metaphorical mapping is divorced from iconicity.

Keywords: metaphor, iconicity, Russian Sign Language

1. Introduction

The field of metaphor studies is large and diverse nowadays (Steen 2014). The origins of the explosive development of this topic lie in Lakoff & Johnson's (1980) book, in which they argue that metaphors are not just a literary trope, but are omnipresent in everyday language and, importantly, in cognition. For sign language research, Taub's (2001) book is a landmark, as it applies Lakoff & Johnson's framework to sign languages. Taub demonstrates that metaphors are very common in American Sign Language (ASL), and proposes a cognitive model that connects a group of ASL metaphorical signs to iconicity.

Russian Sign Language (RSL) also has many signs which can be characterized as metaphorical; however, for RSL, this phenomenon has not been described

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before. Based on the analysis of metaphors in signs of cognition and emotions in RSL, we argue for a modification (or rather an extension) of Taub's model. We want to preserve the main insights of Taub's analysis while at the same time demonstrating that metaphors in signed and spoken languages are more similar than the original model might imply by separating metaphorical and iconic mappings from each other.

In order to formulate our claim precisely, in the rest of the introduction we discuss the cognitive theory of metaphor in more detail (Section 1.1) and outline Taub's (2001) model for sign languages (Section 1.2). Our proposal and research questions are introduced in Section 1.3.

1.1 Metaphor as mapping

Lakoff & Johnson (1980) demonstrated that metaphors are present in everyday language, as abstract concepts are frequently understood through a connection with more concrete concepts. For instance, one can say *We went our separate ways* to describe an end of a love relationship, which is a manifestation of the metaphor *LOVE IS A JOURNEY*.[1]

The term used to describe this metaphorical connection is "mapping", which is the set of correspondences between constituent elements of the source and the target domain (see Figure 1). In the example above, different aspects of the source domain X (journey) are mapped onto different aspects of the target domain Y (love): lovers are travelers (*we went our separate ways*), love is a vehicle (*our relationship is off the track*), and impediments in the journey are difficulties in the relationship (*the marriage is on the rocks*).

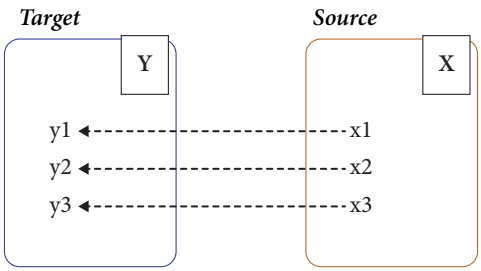

Figure 1. Metaphorical mapping

There are two important aspects of this model of metaphor. The first is that, according to Lakoff & Johnson (1980), metaphor is not inherently linguistic: rather,

1. Since in the sign linguistics field small caps are reserved for glosses of signs, we use italic small caps for metaphors.

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it reflects cognitive mappings, which should be present in thought, behavior, culture, etc. This has been confirmed by a vast number of studies in different fields, including linguistics and psychology (Gibbs 2008; Steen 2014), although it is questionable whether all metaphors that can be found in linguistic expressions are equally present in thought and cognition (Steen 2015). The second aspect which is important for this study is that language can clearly reflect metaphorical mappings. Conceptual metaphors are pointed to by so-called "metaphorical linguistic expressions" (Kövecses 2010), which can be relatively easily identified. In particular, a metaphor is detected when a word (or a larger syntactic unit) has an abstract use in a given context, but can also be used literally and have a more basic current-contemporary meaning in other contexts (this simple rule is the basis of the metaphor identification procedure described in Pragglejaz Group (2007), among others). Basic meanings are usually more precise and concrete (what they evoke is easier to imagine, feel, see, hear, and taste), they tend to be historically older and related to bodily action (Kövecses 2010). For instance, the prepositional phrase *on the rocks* in the sentence *Our marriage is on the rocks* has an abstract metaphorical meaning 'in a poor state' and refers to marital problems. In the sentence *Our boat is on the rocks*, on the other hand, it is used literally in a concrete sense.

To sum up, the metaphorical mapping is a property of thought (cognition); however, we can detect it by looking at linguistic units (metaphorical expressions). Language often manifests the mapping because the same linguistic expression is used to describe both the source and the target domains. However, as Taub (2001) argued, in sign languages, metaphor is tightly intertwined with iconicity.

1.2 Metaphors and iconicity in sign languages

Taub (2001) studied iconic and metaphorical-iconic signs in ASL. In the first part of her book, she develops a model of creation of iconic signs (also applicable to iconic words in spoken languages). In the second part of the book, she analyzes metaphorical signs which are also iconic, and proposes a model of creation of such signs. According to this model, ASL metaphorical-iconic signs are created through the process of double mapping. At the first stage, the metaphorical mapping, the connection between the source and the target domains, is established. At the second stage, the iconic mapping, the source concept is iconically encoded in a novel sign.

Consider the following scenario, presented by Taub (2001: 109–113), also depicted in Figure 2: the signer wants to describe the fact of successfully communicating an idea despite a difficulty (A) (glossed as THINK-PENETRATE). Luckily, ASL signers have a conceptual metaphor available to them that can be used to map this abstract concept to a more concrete one, namely the metaphor *COMMUNICATION*

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is sending. Based on this metaphor, the fact of successfully communicating an idea despite a difficulty is mapped onto successfully sending an object despite a difficulty (B). This more concrete situation is then realized in sign with the help of the Analogue-Building Model of Linguistic Iconicity, which is also used for non-metaphorical iconic signs. In particular, an image is selected to describe this situation (C); the image is schematized (D), and then encoded (E). At the image selection stage (C), the language user chooses a specific sensory image to reflect the source concept: a small object is sent through the air (not by mail or by handing it to another person); a difficulty in sending is a barrier between two people (not the fact that the object is aimed too high or goes off in the wrong direction); the specific way of overcoming this difficulty is sending the object with sufficient force. Schematization (D) is a vacuous step in the process of creating metaphorical signs because through metaphorical mapping the image is already schematic (this is not the case for concrete iconic signs). Finally, at the encoding stage (E), elements of the schematic depiction of the image are represented by linguistic means available to ASL signers, such as handshapes, movements, and locations: the moving object is represented by the tip of the extended index finger (ASL classifier handshape for small moving objects); the barrier is encoded by the non-dominant -handshape; and finally, the movement of the object is represented by the movement of the dominant hand.

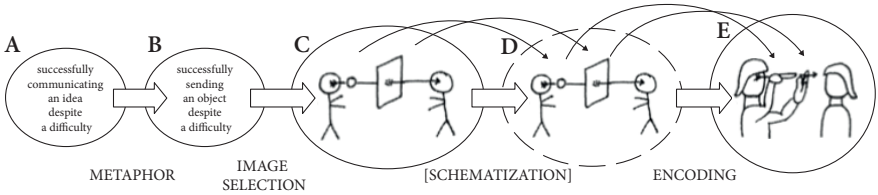

Figure 2. Analogue-Building Model of Metaphorical Iconicity applied to the ASL sign think-penetrate (Taub 2001: 111)

Why should iconic mapping be a part of the creation of metaphorical signs? Most probably, this decision is motivated by the choice of signs for this research. The goal of Taub's book is to develop a cognitive model of iconicity: she first describes concrete iconic signs, and then metaphorical iconic signs. It is therefore very plausible that metaphorical signs would be created by using an extension of the same model used for creating iconic signs. This also is in line with the idea that metaphors are not inherently linguistic, but a part of cognition: metaphorical mapping happens between concepts, not between linguistic entities.

However, there are some theoretical and practical issues that this analysis raises. Although this model was not designed to account for all types of metaphorical signs in ASL, it still implies an important difference in mechanisms governing the

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process of metaphorical extension in spoken and sign languages. Namely, while in spoken languages, both the source and the target domain are expressed by the same lexical unit, in sign languages only the target (more abstract) concept has to be expressed by the sign. For example, the ASL sign THINK-PENETRATE has only an abstract meaning and cannot be used literally. Indeed, Taub argues that in ASL, it is rare for a frozen lexical sign to be used both literally and metaphorically, in other words, to describe both the source and the target domain (Taub 2001: 97).[2] Instead, signs are creatively modified, or, in the double-mapping scenario, metaphorical mapping is used to connect two concepts, and then the more concrete concept is used to create a novel sign through the iconic mapping.[3]

This does not mean that, according to Taub's model, metaphorical signs in sign languages cannot have literal usages at all. As the stages of the double mapping are not necessarily temporally ordered, a situation is possible in which an iconic sign is first created through the analogue-building process (steps B–E in Figure 2), and then undergoes metaphorical extension through the process of metaphorical mapping (step A). However, the mere possibility for a metaphorical sign to express only a target meaning constitutes a serious difference with the model of conceptual metaphor in spoken languages.[4] Hence, the logical question is: are mechanisms of metaphor creation in sign and spoken languages indeed so different?

A practical issue is that this analysis of metaphors in sign languages leaves open the question of proving the existence of such metaphors. For spoken languages, the line of reasoning is straightforward: one expression can be used in different types of contexts to describe both the target and the source domain, thus a mapping between these domains can safely be assumed. In sign languages, we presumably only see the linguistic expression referring to the target domain (abstract meaning), and we reconstruct the source domain (the concrete

2. In a recent study, Roush (2016: 393) mentions that, albeit infrequently, ASL metaphorical signs can be polysemous.

3. In addition, Taub (2001: 98) discusses a third type of metaphorical language use in ASL, namely establishing a metaphorical scene to be manipulated meaningfully throughout a discourse. An example of this is discussed in Chapter 10 of her book, in which she analyzes an ASL poem, in which an extended metaphor of a sign language being a hidden treasure is created throughout the whole text. Such metaphors are, of course, also attested in spoken languages, as they are one of the tools of poetry; we do not discuss this type of metaphor further, focusing on metaphorical use of single signs only.

4. As an anonymous reviewer pointed out, Taub's model is supposed to account for metaphorical-iconic signs only, but obviously, this still leaves the necessity to explain the differences between signed and spoken language and to extend the model to other cases.

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meaning) using iconicity. However, the validity and reliability of this procedure is questionable, and maybe other non-linguistic tests of the presence of conceptual metaphor (Gibbs 1994) have to be applied if we want to stick to this conception of metaphorical signs.

1.3 Current study

To address these issues, in our investigation of RSL metaphors, we tried to find out whether the model used for spoken languages can be directly applied to RSL signs. We start with the hypothesis that RSL has metaphorical expressions very similar to the ones attested in spoken languages. If this turns out to be true, a simple prediction follows: metaphorical signs should also have literal meanings (in other words, the source and the target domain can be expressed by the same sign). This prediction is relatively easy to test by asking native signers for the availability of literal interpretations of metaphorical signs.

If our hypothesis is correct, then we will be able to propose an extension of Taub's model. In (1a), we schematically represent her account of the creation of metaphorical-iconic signs. The metaphorical mapping part of the model is delimited by square brackets. In (1b), we represent our alternative account, which to a large extent is identical to Taub's model. The difference lies in the fact that in (1b), the iconic analogue-building model is independent of metaphorical mapping and is thus only used to create concrete signs (that is, signs with a basic physical meaning). These signs can then be used metaphorically through the well-known process of metaphorical mapping, the same process that is available for spoken languages. The opposite direction of the metaphorical arrow (from Source to Target) in (1b) reflects the direction of mapping and is in line with assumptions about metaphor in spoken languages: the Source structure is mapped onto the Target domain.[5] We use parentheses around the iconic analogue-building part in our model because we do not expect only iconic signs to be used metaphorically, but also non-iconic concrete signs. This constitutes a second natural prediction of our model, to which we will return in Section 4. Note, that in our modification, the steps of sign creation are temporally ordered: first, the source sign is created, and then metaphorical mapping might apply. Unlike the original model, the new one does not permit for metaphorical signs to **not** express a source concept.

5. The direction of the arrow in our representation of Taub's model in (1a) is based on the process of creation of metaphorical signs in Figure 2.

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(1) a. Taub's (2001) model of metaphorical-iconic signs:
[TARGET → SOURCE] → IMAGE SELECTION → SCHEMATIZATION → ENCODING

b. Alternative (extended) model:
SOURCE → (IMAGE SELECTION → SCHEMATIZATION → ENCODING)
↓ metaphorical mapping
TARGET

The remainder of this paper is structured as follows. In Section 2, we describe our data set and methodological decisions. In Section 3, we present our findings. Section 4 contains a discussion of our findings in relation to the theories of metaphor introduced in this section.

2. Methodology

We investigated metaphors in signs of cognition and emotions in RSL. RSL is a language used by over 120,000 signers in the Russian Federation. Until recently, very little linguistic research has been conducted on RSL. Although some research on several aspects of RSL grammar has appeared in recent years (see Kimmelman (2014) for an overview), metaphorical expressions remained completely out of the scope of investigation before the current project.[6]

We selected cognition and emotions as suitable domains of investigating metaphors in RSL because it has been shown that signs related to these domains are often metaphorical in other sign languages, too (Grushkin 1998; Wilcox 2000; Taub 2001; Brennan 1990, 2005). We created a list of potential meanings in the domains of cognition and emotions based on previous literature and a corpus search using the Russian National Corpus (www.ruscorpora.ru) and with additional help of the on-line dictionary of synonyms (http://web-corpora.net/synonyms/). The list contained 66 meanings (35 of which belong to the cognition domain and 31 denote emotional states). We then compiled a database of RSL signs using existing dictionaries, both electronic (www.spreadthesign.com, www.surdoserver.ru) and printed (Gejlman 1975; Fradkina 2001). Altogether, we analyzed 34 signs expressing cognition and 30 signs of emotions (see Appendix A). We do not want to claim that we analyzed all or even most of the signs from these domains; however, we did analyze the most commonly used ones, as evidenced by their presence in various dictionaries. Note also that we decided to work with dictionaries as the primary source of data in order to analyze metaphors in fully conventionalized signs, unlike, for instance, Wilcox (2000), who paid a lot of attention to more creative use

6. Perova (2015) and Lomakina (2015) report some results of the current study in Russian.

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of metaphors in discourse. As we discuss at the end of Section 4, this may have had important consequences for our conclusions, as creative use of metaphor in discourse might call for a different model of metaphor formation.

In order to test our prediction that metaphorical signs also have literal meanings, we first tried to deduce these meanings using iconicity as a clue. We then consulted two native signers of RSL to test whether the signs we found in the dictionaries were actually used, and also to confirm (or contradict) our hypotheses about the possible concrete meanings of the signs. The procedure we used can be illustrated by the following example.

We hypothesized that the verb ANALYZE (Figure 3) non-metaphorically means 'dig' (note that a similar analysis is suggested by Taub (2001: 156–157) for the similar-looking ASL verb). We first elicited the RSL verb DIG, using the sentences in (2a) and (2b). Only after doing that, we asked to translate the sentence containing the metaphorical sign ANALYZE (2c). If it turned out that the proposed concrete sign was not identical to the metaphorical sign (as was the case for ANALYZE, as DIG has the -handshape, while ANALYZE has the -handshape), we directly asked the signers if the metaphorical sign has another literal meaning. In the case of ANALYZE, no literal meaning was given, but in other cases, this strategy lead to the identification of alternative sources of the metaphorical signs.

(2) a. A child is digging in the sand. (Russian: Ребёнок копается в песке.)
b. A dog is digging a hole. (Russian: Собака копает яму.)
c. He analyzed the information. (Russian: Он проанализировал информацию.)

Figure 3. ANALYZE

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3. Metaphorical mechanisms

Our investigation led us to conclude that there are several mechanisms involved in forming metaphorical signs in RSL. The simplest mechanism is that a sign acquires a metaphorical meaning without undergoing any change (Section 3.1). Another mechanism is that a sign acquires a metaphorical meaning in a sequential compound (Section 3.2). Furthermore, a meaningful morpheme in a multi-morphemic sign can acquire a metaphorical meaning in certain contexts (Section 3.3). These mechanisms are not mutually exclusive and can co-occur in the formation of a single metaphorical sign, as we also discuss below. Some unclear cases which we cannot readily explain are discussed in Section 3.4.

Taub (2001) also addresses various types of metaphorical signs in ASL. In Chapter 6, she discusses examples like THINK-PENETRATE where the whole sign expresses a single conceptual metaphor (see Figure 2). In Chapter 7, she instead focuses on cases where only one or two components of the sign are metaphorical, on signs which combine several metaphors expressed by separate parameters, and also on signs which contain both metaphorical and concrete iconic parameters.

Our typology below is to some extent similar to Taub's, but there is a difference in perspective: while Taub discusses the "conceptual" side of the metaphor, investigating which parameters of signs express which conceptual metaphors, we instead focus on its "formal" side: we look into mechanisms that produce metaphorical extensions to signs (or subparts of signs).

3.1 A concrete sign acquires metaphorical meaning without change

If metaphorical expressions in sign languages are similar to the ones used in spoken languages, this is the mechanism that is expected to be the most common one. In fact, we did find some examples of this type among verbs of cognition and emotions. In Taub's classification, such signs would be characterized as expressing a single metaphor by using all components of the sign.

Consider the following two examples: the sign FEAR (Figure 4) also means 'cold'; the sign COMPASSION (Figure 5) also means 'to sting', as in 'A bee stung me in the hand'. The first sign manifests the metaphor *FEAR IS COLD,* and the second sign the metaphor *FEELING IS TOUCHING*.

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Figure 4. COLD – FEAR

Figure 5. STING – COMPASSION[7]

One might notice that, in the literal meaning, the signs look like classifier constructions, and thus are not lexical. However, there are arguments that these signs are in fact lexicalized also in their concrete meanings. The source sign of FEAR has the meaning 'cold', which is different from the literal meaning of the classifier construction 'the hands are shaking'. The source sign of COMPASSION must be lexicalized as well, as the componential meaning of the fully productive classifier construction is something like 'a small object quickly touches the hand', while the concrete sign has the conventionalized meaning 'to sting'.[8]

This mechanism of creation of metaphorical signs is thus directly comparable to the one involved in metaphorical expressions in spoken languages: the preposition *in*, for example, is an expression which has a literal meaning 'inside a container', but can also be used metaphorically, for instance, to express the meaning of being in a particular moment in time.

7. An anonymous reviewer suggests that the non-manual component in the signs COMPASSION and STING would be different, thereby distinguishing the metaphorical and the concrete uses. This seems true for these two signs; however, we have not investigated the non-manual component in our data (see Taub (2001: 84–85) for some discussion of metaphorical non-manuals in ASL). The implications of the role of non-manuals in our and Taub's models are left for future research.

8. See Johnston & Schembri (1999) for further discussion of lexicalization.

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3.2 A concrete sign acquires metaphorical meaning in a compound

We found that in the domain of cognition, many signs are in fact compounds, that is, they consist of a sequence of multiple signs. Within such compounds, a concrete sign can acquire a metaphorical meaning. Consider the case of DOUBT-A (Figure 6) – we analyze this sign as a combination of THINK (which is itself a metaphorical sign) and SCALES, where SCALES acquires the metaphorical interpretation only within the compound; when used in isolation, it only has the literal meaning.

Figure 6. DOUBT-A. The second part involves alternating up- and downward movements

Another interesting example is the sign CONSIDER-A (Figure 7). This sign is also a compound, the first part of which is THINK, and the second part is MECHANISM (when used in isolation, it only has this literal meaning). This example is important because the sign MECHANISM cannot possibly be analyzed as a classifier predicate (in contrast to the second part of DOUBT-A), as this particular handshape is never used in such predicates.

Figure 7. CONSIDER-A. The second part contains a reduplicated downward arc-shaped movement

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Note that the first part of the compound in both examples belongs to the target metaphorical domain – that of cognition. We assume that this sign acts as a "marker of metaphor", coercing the compound to acquire the abstract meaning.

Taub's (2001) example of THINK-PENETRATE discussed above might actually be analyzed as an example of this strategy in ASL. In this sign, the second component is (very similar to) the concrete iconic sign DRILL, which acquires the metaphorical interpretation of communicating despite difficulty in the context of the abstract sign THINK.

Comparable processes are attested in spoken languages as well. For example, the Russian word *yadovito-zelenyj* 'acid-green' consists of two roots – *yadovit-* 'poisonous' and *zelen-* 'green'. It is likely that the root 'green' is responsible for the resulting metaphorical meaning of the compound, coercing its first part to change its taxonomic class from SUBSTANCE to COLOUR and thus to acquire a figurative interpretation.

3.3 A meaningful morpheme acquires a metaphorical meaning in particular contexts

A sign morpheme can undergo a metaphorical extension in, at least, two kinds of constructions: in a classifier construction (Section 3.3.1) and in a simultaneous compound (Section 3.3.2).

3.3.1 *Metaphors in sign language classifiers*

A very common scenario, also described by Taub (2001) and Wilcox (2000), is when a classifier predicate acquires a metaphorical meaning. Any analysis of this scenario is somewhat dependent on the particular theory of classifier predicates that one adopts (see Zwitserlood (2012) for an overview). Most researchers agree that handshapes in (some) classifier predicates are morphemic; however, the status of movement and location in these signs is debated (see Liddell (2003) for arguments against analyzing location and movement as morphemes, and Zwitserlood (2003) and Benedicto & Brentari (2004) for morphemic analyses).

Consider the following example: RSL has a classifier predicate HOLD with the -handshape. The handshape in this sign is a morpheme, as it has a fixed shape and meaning (holding a small object). There is no movement in this predicate, while the location is also meaningful, as it reflects the location of the held item; yet, it might not be morphemic, as potentially, there are an infinite number of different locations that can be used in the sign. One particular form of this sign acquired a metaphorical meaning, namely the sign REMEMBER-A (Figure 9). This sign is identical to the sign HOLD with the location fixed as 'at the head'. Note that

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in this sign, the location cannot be changed without removing the metaphorical interpretation.

Figure 9. REMEMBER-A

The creation of this sign is thus at least partially compatible with our model in (1b): there is a source sign HOLD.AT.HEAD, which is a particular (localized) form of a productive classifier predicate. This sign has at least one morpheme (the handshape), which in a particular context (in combination with the location 'at the head') acquires a metaphorical meaning. Whether the same scenario applies to the location is less clear, as it is not certain that the location in the classifier predicate is morphemic. We return to this issue in the next section.

The RSL metaphorical sign REMEMBER-B, an inchoative verb occurring in such contexts as 'I suddenly remembered her name', constitutes a similar example. It is articulated at the same location as REMEMBER-A, but with a short upward movement and the -handshape (Figure 10). This handshape can be used in handling classifier constructions, where it represents a small object (for example, a candy, a pearl, or a coin). Thus, in this abstract sign, a piece of memory is metaphorically conceptualized as a small object a person takes out of his/her head. Again, the same sign has a concrete interpretation (which, for obvious reasons, is much rarer). The same analysis described for REMEMBER-A above can thus be applied to the sign REMEMBER-B as well.

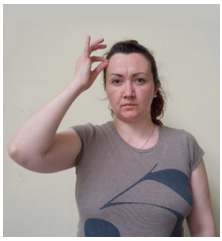

Figure 10. REMEMBER-B

Note that classifier predicates also participate in the creation of non-metaphorical signs. The process during which classifier constructions acquire a non-compositional meaning in a particular combination of handshape, orientation, movement,

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and location is usually referred to as lexicalization of classifiers (Johnston & Schembri 1999). The resulting meaning of these signs can be abstract, as in RSL REMEMBER-A and REMEMBER-B (Figures 9 and 10), as well as concrete, as in RSL MEET (Figure 11; see also COLD and STING, Figures 4 and 5). The classifier construction in Figure 11 denotes two humans (☝-handshape) moving towards each other. The expressive potential of this sign, however, is not limited to this situation: it can also denote, for example, a meeting of several people.

Figure 11. MEET

3.3.2 *Metaphors in simultaneous compounds*

There are also metaphorical signs whose source signs cannot be characterized as classifier predicates. Consider DOUBT-B (Figure 12). The source sign cannot be a classifier predicate, because this particular handshape is never used as a classifier. We propose that such cases can be analyzed as simultaneous compounds. The components of this sign (the handshape, the location, and the movement) all have literal meanings. The handshape is used in pointing-based signs for internal organs, so in combination with the chest location, it literally means 'the heart'. The movement in its literal interpretation means 'to oscillate', and it can also combine with classifier handshapes. These three form elements can be assembled in this particular way to form a compound that immediately acquires a metaphorical meaning: 'to doubt'. The handshape and location together have a concrete meaning 'the heart' as well as a metaphorical meaning 'the mood', and the movement has a concrete meaning 'to oscillate', which in context of 'the mood' receives the metaphorical meaning 'doubt'.

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Figure 12. DOUBT-B. The sign contains oscillating vertical movement of the hand

This interaction of meanings is in line with the theory of Construction Grammar (Goldberg 1995), the RSL construction in question being "X oscillates" with the meaning 'X moves from one position to another and back again'. The semantic constraint on the X-variable is: X is an elongated solid physical object (for example, 'branch' or 'needle'). Violation of this constraint and filling of the X-variable by a noun from a different taxonomic class (such as 'heart') leads to a change in meaning of the whole construction, which is now 'to doubt'. The only peculiarity here lies in the fact that both 'heart' and 'oscillate' are produced simultaneously in the form of compound.

The idea that sign languages have simultaneous compounds is not new (Brennan (1990); see also Meir (2012) for an overview); however, they are considered to be rather infrequent. For instance, in the BSL compound MINICOM, one hand produces the sign TYPE and the other the sign TELEPHONE (Brennan 1990: 151); that is, in two-handed signs, the two hands may constitute separate items in a compound. It is also possible to analyze numeral incorporation and initialization as simultaneous compounding, although this is not the most commonly accepted analysis (Meir 2012: 101–102). Finally, lexical signs which contain classifier morphemes, such as those analyzed as noun incorporation by Meir (2001) – e.g. SPOON-FEED, FORK-EAT – can in principle be analyzed as compounds as well (Zwitserlood 2003, 2012).

Metaphorical signs are in many respects similar to the cases of noun incorporation, the only difference being that the morphemes acquire a metaphorical meaning. If we decompose metaphorical signs as consisting of separate morphemes which also participate in separate metaphorical mappings, we can find many more examples of simultaneous compounds. Note that the idea of separate metaphorical morphemes has also been discussed by Wilcox (2000) and Taub (2001), and the idea of metaphorical compounds has first been proposed by Brennan (1990).

Is this scenario very different from metaphorical expressions in spoken languages? Apart from the fact that morphemes that acquire metaphorical meaning

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are combined simultaneously, the answer is "no". Similar processes are attested in spoken languages. For instance, a bound morpheme can have a literal meaning in combination with some roots, but may acquire a metaphorical meaning in combination with other roots. Consider the Russian prefix *pri-*, which has a literal spatial meaning 'near', as in *pri-stavitj* 'to put something near something' or *pri-slonitjsya* 'to lean against something'. However, in combination with abstract roots it acquires a metaphorical meaning as in *pri-boletj* 'not feel well' (from *boletj* 'be sick').[9]

3.4 Unclear cases

3.4.1 *Lack of the source meaning*

Some signs of cognition and emotions in RSL are problematic to account for, as we cannot find a concrete source sign that could have undergone metaphorical mapping. Note, however, that not all signs expressing cognition or emotions have to be metaphorical – as is also true for abstract notions in spoken languages which do not always have a concrete meaning alongside the abstract meaning. It might be the case that some signs simply have meaning only in the domains of cognition or emotion, and do not involve metaphorical mapping at all. However, we briefly discuss these potentially problematic cases.

For instance, the sign CONSIDER-B (Figure 13) does not seem to have any concrete meaning. Another example is the sign HATE (Figure 14). In fact, one can hypothesize that influence from Russian plays a role in the formation of HATE, as it is similar in form to the sign NOT.SEE, which has the same location and movement, but a different handshape (). Interestingly, the Russian words for 'hate' (*nenavidet*) and 'to not see' (*ne videt*) are also superficially similar. It might thus be the case that RSL signers derived a sign for HATE based on the sign NOT.SEE to reproduce the orthographic relationship between the words for these notions in Russian. Another possible interpretation is that the similarity is a manifestation of the metaphor *ANGER IS NOT SEEING*, exemplified by English expressions like "I'm so mad I can't see straight" and "I saw red", which is grounded in the bodily experience of anger causing problems with visual perception.[10] If this analysis is correct,

9. Taub (2001: 133) also discusses the parallel between metaphorical compounds in signed and spoken languages, e.g. between the metaphorical use of the chest for emotion in many signs in ASL, and the English compounds *black-hearted* and *cold-hearted*. She notes that sign languages are different because the subparts of the compound are combined simultaneously, not sequentially. We cite the Russian examples to show that not only free lexical morphemes, but also bound morphemes can receive a metaphorical interpretation in combination with some other morphemes.

10. We thank an anonymous reviewer for this suggestion.

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then this sign is a metaphorical extension of the sign NOT.SEE, accompanied by a phonological change (see below for further discussion of such cases).

Figure 13. CONSIDER-B. The sign involves an alternating downward and upward movement, as well as a hand-internal movement with the thumb touching the index and middle fingers

Figure 14. HATE

Importantly, cases like CONSIDER-B and maybe HATE cannot be accounted for by Taub's (2001) model either, as for these signs, it is not possible to come up with an image that is at the same time metaphorically connected to the abstract notion and iconically encoded in RSL. We should note, however, that the fact that we cannot come up with an iconic interpretation for some metaphorical signs does not mean that these signs do not have such an interpretation. Iconicity is not the same as transparency, so it is quite possible that, for instance, the sign CONSIDER-B was originally iconic, but that this iconicity has become obscure through historical change (Frishberg 1975). Synchronically, there is no concrete sign that resembles the sign CONSIDER-B, whether iconic or not.

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3.4.2 *Different sign forms in the source and the target meanings*

There are also several cases which present more subtle difficulties for our theory, namely the signs which in the metaphorical meaning are different from their potential source sign in some aspects. Recall the sign ANALYZE which we discussed in Section 2 (Figure 3). This sign does not have a concrete meaning in this exact shape. However, there is a sign which differs from it in only one parameter, namely DIG, which has a different handshape. This presents a problem for our model which we address below, but we wish to point out that we also do not think that Taub's model would be successful in explaining this handshape. If we assume that in this case, the metaphorical chain "analysis (target) – digging (source) – hands as instruments of digging (encoding)" is at play, then there is no step in her model which would account for the fact that the instrument of digging is encoded with the -handshape when referring to the actual digging,[11] but with the -handshape when referring to analyzing something: the encoded image in fact has to be based on the concrete concept in both signs.

In our analysis, we also do not have a clear explanation as to why the handshapes in DIG and ANALYZE are different. However, one could hypothesize that after the sign DIG became the sign ANALYZE through metaphorical mapping, the latter has undergone diachronic change, while the former preserved its original form. In other words, DIG and ANALYZE are separate albeit diachronically related signs, and the metaphorical mapping, manifested by the fact that one expression has both a concrete and a metaphorical meaning, has happened in the past. The same explanation could apply to HATE, if we accept its relatedness to NOT.SEE (see above).

Similar processes are widespread in spoken languages. Consider the pair of Russian verbs *vy-pitj* vs. *is-pitj* (examples from Rakhilina 2000: 151), which have the same root *pitj* 'drink' but different perfective prefixes. While the former form is used in concrete situations (*vypitj vody* 'to drink water'), the latter one expresses a metaphorical meaning (*ispitj chashu gorechi* 'to drain the bitter cup of sorrow'). This can be seen as an instance of the process of linguistic disambiguation, which in turn is driven by the dichotomy "economy principle" vs. "communicative needs", first postulated by Martinet (1955). This dichotomy reflects two opposite principles, guiding the majority of linguistic processes. The first one favors the use of the least effort possible in speech production, and the second one makes sure that the speech is easy to understand. Linguistic disambiguation is driven by the latter principle: it is easier to process a phrase with one-to-one form-meaning correspondence.

11. Note that this handshape does not refer to an instrument (e.g. a shovel): in an instrumental classifier predicate meaning 'dig with a shovel', the -handshape is used.

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A similar phenomenon is semantic redistribution of synonyms, limiting one of them to the direct semantic domain and the other to the figurative one. This is the case, for example, with the Russian adjectives *koljuchiy* vs. *kolkiy* ('thorny') and the French words *pointu* vs. *aigu* ('sharp'). In both pairs, the first adjective is used literally and the second one metaphorically.

4. Discussion

4.1 Typology of metaphorical mechanisms

In the previous section, we have classified the mechanisms involved in metaphorical expressions in RSL. We have seen that the mechanisms are not mutually exclusive. In fact, all these mechanisms have a common base: morpheme A has a concrete meaning, and it can acquire a metaphorical meaning.

There are some variants of this general process. Firstly, morpheme A can be a full sign or a bound meaningful component of a sign (handshape, location, movement, or a combination thereof). Secondly, the metaphorical extension can happen either in isolation, or in a particular context. For instance, a concrete sign COLD can acquire a metaphorical meaning 'fear' without a contextual trigger, or a concrete sign MECHANISM can acquire a metaphorical meaning as a part of a compound CONSIDER-A, in combination with the sign THINK.

Bound morphemes are always used in context, as they do not constitute signs on their own; however, for such morphemes there are also two different scenarios. One scenario is that a part or parts of a classifier predicate acquire(s) a metaphorical meaning in one of the possible forms of the predicate, that is, when particular location and movement patterns are fixed, as in REMEMBER-A and REMEMBER-B. The other scenario is that a bound morpheme is combined with other bound morphemes in a simultaneous compound which might not have a non-metaphorical meaning as a whole, but its parts do have concrete meanings and undergo metaphorical extension in the context of the compound (e.g. DOUBT-B).

We have seen that the more general mechanism of metaphorical mapping is not modality-specific: it can be used in the same formulation to describe metaphors in spoken languages. It is also not unique to the visual modality that both bound and free morphemes can participate in this process, or that morphemes both in context and in isolation can undergo metaphorical extension. Still, there are also some differences.

Firstly, RSL (as well as other sign languages) makes extensive use of simultaneous morphology, both in classifier predicates and in simultaneous compounds. Thus, morphemes which undergo metaphorical extension sometimes are

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articulated simultaneously with other morphemes. In general, this characteristic has no special connection to the nature of metaphor in sign languages, but just reflects a typological property of their morphology. Moreover, simultaneous morphology is also attested in spoken languages (e.g. in Semitic languages), and one might expect that in such languages these morphemes would also sometimes undergo metaphorical extension.

Secondly, in some cases, the source sign on which the metaphorical sign is based is a classifier predicate. If one accepts the fully morphological analysis of classifier predicates, then classifiers are not exceptional, and the standard scenario in which the concrete sign undergoes metaphorical mapping applies. On the other hand, if some parts of the concrete sign are not morphological, then it is not clear if the classifier predicate itself is a lexical item. Nevertheless, we do not think that this constitutes a problem for our model. In fact, if we look at spoken languages, we often observe that metaphorical mapping does not apply to single lexical items, but to larger syntactic units, such as prepositional phrases (*on the rocks*), noun phrases (*cold heart*), verb phrases (*to give up*), or full sentences (*the ship has sailed*). Some researchers would argue that all these are lexical items as well, as these particular syntactic units are also stored in the lexicon. However, the same can be said of the classifier forms that undergo metaphorical extension: at least the particular forms which acquired a metaphorical meaning are definitely stored in the lexicon. The issue that there might be infinitely many potentially related forms – other syntactic units in spoken languages, or other forms of the classifier predicate in sign languages – is thus not relevant.

Whatever the analysis of classifier predicates undergoing metaphorical mapping, the cases of lexical signs with metaphorical meanings (FEAR), sequential compounds (CONSIDER-A), and simultaneous compounds (DOUBT-B) can be adequately described by our extension of Taub's (2001) model for metaphorical-iconic signs. The advantage of the modified model is that we do not need to directly involve iconicity in the process, and thus underscore the parallel of the general process of metaphorical mapping in the two modalities. This is what we turn to in the next subsection.

4.2 Iconicity and metaphor

The statement that metaphor and iconicity are not directly connected in sign languages is strong. One can find examples that seem to contradict it. Meir (2010), for instance, provides evidence that metaphorical use of some signs is constrained by iconicity. She notes the following fact: the iconic sign for EAT in Israeli Sign Language (ISL, Figure 15) cannot undergo metaphorical extension to be used in a sentence like 'The acid ate the iron key'.

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Figure 15. The ISL sign EAT (Meir 2010: 869, reproduced by an RSL signer)

She explains this by proposing the double-mapping constraint in (3):

(3) DOUBLE-MAPPING CONSTRAINT: A metaphorical mapping of an iconic form should preserve the structural correspondences of the iconic mapping. Double mapping should be structure-preserving. (Meir 2010: 879)

So, for instance, the ISL verb EAT iconically depicts putting food in the mouth but does not depict consuming it, while the component of the meaning of 'eat' necessary for the metaphorical use is in fact consumption. Therefore, the iconic and metaphorical mappings do not match.

As convincing as this example seems, it allows for an alternative analysis that does not involve a direct interface between iconicity and metaphor. One can suggest that the verb EAT in ISL has the semantic component of putting the food in the mouth. In other words, the gloss EAT is not a good translation of the sign: the real meaning is 'put food in mouth', or 'eat with mouth'. If this is indeed the meaning of this sign, then it comes as no surprise that it cannot acquire the metaphorical extension of consumption, because a part of its semantics does not match the metaphor.

Parallel semantic restrictions exist in spoken languages. For example, in some languages, the adjective 'sharp' can acquire the metaphorical meaning 'clear, easily distinguishable' (as in *sharp line*). This is possible only if in its literal usages, it can describe instruments with a sharp edge ('sharp knife', 'sharp sword'). If it is not compatible with these contexts and can describe sharp piercing instruments only ('sharp needle', 'sharp spear'), the metaphor is not possible. For example, the adjectives *spitz* (German), *pointu* (French), and *jues'* (Komi), which cannot be used with cutting instruments, cannot undergo this metaphorical extension (Kyuseva 2012). Clearly, this restriction is not based on any kind of iconicity, but on the semantic components of the concrete use of the word.

Of course, the fact that EAT in ISL involves the semantic component of eating by putting food in the mouth is iconically motivated. However, it is possible that it is not the iconicity that is directly responsible for the impossibility of metaphorical mapping, but rather this meaning component. Therefore, it is not necessary to postulate a direct link between iconic and metaphorical mapping, as Meir suggests.

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To sum up, we do not see a reason to expect that only iconic concrete signs can undergo metaphorical extensions. Yet, we did not find clear examples of non-iconic concrete signs being used metaphorically in the domains of cognition and emotions in RSL. It is possible that, for instance, CONSIDER-B is non-iconic and does have a non-metaphorical meaning that we were not able to detect, but this is a pure conjecture. However, in other domains, we do find examples of non-iconic signs which undergo a metaphorical extension. For instance, the sign HEAVY in RSL (Figure 16) can express both direct (as in 'heavy bag') and figurative ('hard life', 'bad temper') meanings. The source sign is apparently not iconic,[12] but it has undergone a metaphorical extension.

Figure 16. HEAVY. The right hand's movement is an orientation change from palm facing upwards to downwards

If iconic mapping and metaphorical mapping are in fact completely independent, why is it the case that non-iconic metaphorical signs are relatively rare? We think that the answer lies in the abundance of iconicity in concrete signs in RSL and other sign languages. For instance, Pietrandrea (2002) finds that, in Italian Sign Language, handshape is iconic in 50% of signs, and location is iconic in 67% of signs that are not articulated in the neutral space; she does not discuss movement, but one might suspect that movement is also frequently iconic. No such research exists for RSL, but by our estimation, a large majority of signs have at least one iconic parameter. Signs which are clearly not iconic (synchronically) are, for instance, kinship terms, but such terms are unlikely candidates for source meanings in metaphorical mapping. Other clearly non-iconic signs such as weekdays, names of the months, and some colors, which are also semantically not very likely to undergo metaphorical extension, are in addition initialized, which indicates

12. An anonymous reviewer points out that the weak (left) hand might iconically represent a flat surface that an object could rest on. However, the right hand does not support this interpretation, as its movement (orientation change) is not compatible with it being the heavy object:

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that these signs are contact-based and thus probably do not belong to the core vocabulary of RSL. In other words, the abundance of iconicity in the basic core signs explains why metaphorical signs are also commonly based on iconic sources. There is, however, no principled reason why arbitrary signs would be excluded from participating in the metaphorical mapping, and as we have seen, they are in fact not excluded (e.g. HEAVY). Even more importantly, there is no principled reason to think that iconicity directly interacts with metaphorical mapping, at least for the many cases of existing iconic signs undergoing a metaphorical extension.

The last question we want to address is whether Taub's original model, depicted in (1a), can be used in some special cases. In fact, we think that this model, in which a metaphorical sign is created from scratch using double mapping (and thus actively involving iconicity), is very suitable for describing more creative uses of metaphors in sign languages: in poetry, story-telling etc., where the metaphorical signs are indeed created on-line and are not conventionalized. Wilcox (2000), Taub (2001, Chapter 10), and Kaneko & Sutton-Spence (2012) provide detailed examples of such poetic use of metaphor. However, we think that our extended version of the model is more appropriate to describe lexicalized metaphorical signs, such as basic terms in the domains of cognition and emotions.

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Appendix A

The list of RSL signs used in this study. Notations such as CONSIDER-A and CONSIDER-B do not imply that the signs are exactly synonymous; it only reflects the fact that we did not study their meaning in enough detail to come up with more distinctive glosses.

Signs of cognition (N = 34)

ACKNOWLEDGE, ACQUIRE, ANALYZE, BE.CONFUSED, BELIEVE, COMPARE, CONCENTRATE-A, CONCENTRATE-B, CONSIDER-A, CONSIDER-B, CONSIDER-C, DELIBERATE-A, DELIBERATE-B, DOUBT-A, DOUBT-B, DOUBT-C, DREAM, FANTASIZE, FIX.IN.MEMORY, FORGET-A, FORGET-B, GUESS, IMAGINE, INVENT-A, INVENT-B, REFLECT, REMEMBER-A, REMEMBER-B, REMIND, REMINISCE, THINK, UNDERSTAND-A, UNDERSTAND-B, UNDERSTAND-C.

Signs of emotion (N = 30)

ADMIRE, ADORE, ANGRY, ANNOYED, ASHAMED, COMPASSION, ENVY, ENJOY, FEAR, GLAD, HAPPY, FALL.IN.LOVE, HATE, HAVE.FUN, HOPE, INSPIRED, JEALOUS, LIKE, LOVE, MAD, OUTRAGED, OFFEND, PITY, PROUD, SAD, SCARED, SHY, SURPRISED, UNSURE, WORRY.

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