

Anna-Lena Nilsson*

Embodying metaphors: Signed language interpreters at work

DOI 10.1515/cog-2015-0029

Received April 19, 2015; revised September 24, 2015; accepted October 7, 2015

Abstract: The present study describes how Swedish Sign Language (SSL) interpreters systematically use signing space and movements of their hands, arms and body to simultaneously layer iconic expressions of metaphors for differences and for time, in ways previously not described. This is analyzed as the interpreters *embodying metaphors*, and each of the conceptual metaphors they embody seems to be expressed in a distinct manner not noted before in accounts of the structure of signed languages. Data consists of recordings of Swedish-SSL interpreting by native SSL signers. Rendering spoken Swedish into SSL, these interpreters produce complex sequences making abundant use of the circumstance that in signed language you can express several types of information simultaneously. With little processing time, they produce iconic expressions, frequently using several underlying conceptual metaphors to simultaneously layer information. The interpreters place individual signs in relation to time lines in order to express metaphorical content related to time, and use movement's of their bodies to express comparisons and contrasts. In all of the analyzed sequences, the interpreters express the metaphor DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN. In addition, they layer metaphors for difference and time simultaneously, in some instances also expressing the orientational metaphor pair MORE-IS-UP and LESS-IS-DOWN at the same time.

Keywords: metaphor, embodying metaphor, signing space, sign language interpreting, Swedish Sign Language

1 Introduction

The present study describes how Swedish Sign Language (SSL) interpreters systematically use signing space and movements of their hands, arms and body to simultaneously layer metaphors for differences and for time, in ways previously not described. This is analyzed as the interpreters *embodying metaphors*, and each

*Corresponding author: Anna-Lena Nilsson, The Norwegian University of Science and Technology, NTNU Sør-Trøndelag University College, Trondheim, Norway, E-mail: anna.l.nilsson@ntnu.no
<http://orcid.org/0000-0003-3150-1492>

of the conceptual metaphors they embody seems to be expressed in a distinct manner that has not been noted before in accounts of the structure of signed languages. Though metaphorical origins have been suggested as a possible source for the form and/or placement of signs in some studies of signed languages, signing space as a domain for conceptual metaphor has not been explored in such detail as here. While a few studies of signed language discourse produced as the output of simultaneous interpreters have been conducted previously, this particular type of data has not been analyzed before. Where previous studies have used controlled input discourse and recorded several interpreters interpreting the same pre-recorded spoken language discourse, the present study uses data where simultaneous interpretations of spoken Swedish monologues into SSL have been recorded during several authentic interpreting assignments. The data analyzed for the study consists of recordings of hearing SSL/Swedish interpreters who grew up using SSL in their families. They are thus native signers, and are here termed *L1-interpreters*. Their use of signing space for hand, arm and body movements in their signed target language renditions of the spoken Swedish input is analyzed in terms of iconic expressions of conceptual metaphors, which are embodied in signing space. This is described in terms of them embodying underlying conceptual metaphors in signing space. Central to the present study, are a pair of conceptual metaphors used for event structure comparison: DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN and SIMILARITY-IS-CLOSENESS (Lakoff et al. 1991).¹ More specifically, these metaphors are used to compare and/or contrast entities, such that non-evaluative comparison between A and B is determined by the distance between A and B. In the analysis section, several different types of body movements used by these interpreters to express DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN are described. In addition, we will see how they layer metaphors for difference and for time simultaneously, in some instances also expressing the orientational metaphor pair MORE-IS-UP and LESS-IS-DOWN at the same time. The analysis also shows that the interpreters locate opportunities to use these underlying conceptual metaphors, and with very little processing time embody several of them simultaneously in signing space, even when the spoken language does not use words that indicate the presence of a particular conceptual metaphor.

2 Background and hypotheses

In this background section, some of the key concepts and theories used for data analysis and description will be introduced. In addition to briefly looking at the

¹ I am grateful to Laura Janda for helping me locate this pair of metaphors.

concepts *embodiment* and *conceptual metaphor*, metaphor in signed languages, and the use of signing space and body movements will also be covered. Finally, hypotheses based in this will be presented.

2.1 Embodiment

The complexity of the concept embodiment is discussed by Rohrer (2007) who states that “[b]y my latest count, the term ‘embodiment’ can be used in at least twelve different important senses with respect to our cognition” (2007: 28). Rohrer also states that these twelve different senses mainly form two different clusters. In one of these clusters embodiment refers to “dimensions that focus on the specific, subjective, cultural, and historical contextual experience of language speakers” (2007: 31). The other cluster “emphasizes the physiological and neurophysiological bodily substrate” (2007: 31). Drawing on a large number of empirical studies, Gibbs (2003) advocates an embodied view of linguistic meaning. He describes the meaningful representation of language as “both a depiction of what has happened and potential perceptions and embodied actions that may take place in the future” (2003: 13). He also refers to work in cognitive linguistics indicating that much of our metaphorical thinking arises from recurring patterns of embodied experiences. In his conclusion, Gibbs states that “significant aspects of meaningful symbols in language and thought are, indeed, grounded in pervasive patterns of embodied experience” (2003: 14). Empirical examples of how bodily actions such as, e.g., gaze direction, gesture, and grasping actions are used to claim and demonstrate understanding have been referred to as *embodied dimensions of understanding in interaction* (Mondada 2011). But the way we use our body to portray how we understand and conceptualize the abstract, combining speech and gesture, has also been termed *embodiment* (Mittelberg 2013). In the present study, the concept *embodiment* was chosen to signify how signed language interpreters recruit their whole bodies to express linguistic content, embodying several conceptual metaphors. They do so producing signs in different places in signing space, by moving their hands, arms and bodies.

2.2 Conceptual metaphor theory

Human thought processes can be seen as fundamentally metaphorical in nature (Lakoff and Johnson 1980). According to them “[t]he essence of metaphor is understanding and experiencing one kind of thing in terms of another” (1980: 5).

This process, in turn, helps us grasp concepts that are either abstract or not clearly delineated in our experience. Central to the present study are a pair of conceptual metaphors used for event structure comparison: *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* and *SIMILARITY-IS-CLOSENESS* (Lakoff et al. 1991). More specifically, these metaphors are used to compare and/or contrast entities, such that non-evaluative comparison between A and B is determined by the distance between A and B. In the data for this study, the interpreters use movements in space to produce iconic expressions of the metaphor *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN*. A distance between two entities is expressed as an actual distance between the places in space where the interpreters produce signs in the interpreted discourse, and/or as a distance between the places where an interpreter stands while producing signs. Metaphorical expressions for time are also of specific interest for the analysis. Human understanding of time is essentially metaphoric, with the most important metaphorical source domain being that of space (Radden 2003). Consequently, the metaphor *TIME AS SPACE* is pervasive in languages around the world. But whereas time is generally thought of as one-dimensional, space is three-dimensional, which allows for differences in the mappings of structural elements in time expressions. The three dimensions of particular interest for the present study are: the orientation of the time line, the position of times relative to the observer, and the motion of time (Radden 2003). As for the orientation of the time line in metaphorical expressions, it has been stated that of the three geometrical axes available to us, the longitudinal axis with a front-back orientation seems to capture our experience of time best (Radden 2003). A lateral axis with a left-right orientation “does not seem to offer any sensible spatial basis for our understanding of time at all” (Radden 2003: 228). This view has been contradicted, however, for co-speech gesture data where English speakers used the lateral axis (left/right) more often, producing gesture leftward for earlier times and rightward for later times (Casasanto and Jasmin 2012). Concerning the position of times relative to the observer, viewing time as linear, with the *EGO* as a temporal reference point, allows for a distinction between three deictic times: present, past, and future (Radden 2003). The predominant view, especially in Western languages, is that of the future being in front of an imaginary observer, and the past behind him/her. Though there is some debate over whether there are other conceptualizations of time or not (cf. Núñez and Sweetser 2006), this is not relevant for the present study. The motion of time has been described with the metaphor *TIME PASSING IS MOTION*, and with times seen as entities and locations (Lakoff 1993). Lakoff presents two special cases of this metaphor (1993: 216–218). In special case 1, times are entities that move relative to a fixed observer: *TIME PASSING IS MOTION OF AN OBJECT*. Here, times are seen as oriented with their fronts in the

direction of motion, and “[i]f time 2 follows time 1, then time 2 is in the future relative to time 1” (1993: 217). For special case 2, times are seen as fixed locations, and the observer moves with respect to them: TIME PASSING IS MOTION OVER A LANDSCAPE (1993: 217). These metaphors are also referred to as *moving time* vs. *moving ego*, cf., e. g., Radden (2003). Whether the relationship between space and time should be analyzed as metaphorical at all has been questioned, since space and time do not necessarily constitute two different domains (Engberg-Pedersen 1999). It has also been suggested that when we use time metaphors we do not understand TIME in terms of MOTION as much as we understand certain temporal frames (e. g., SUCCESSION) in terms of other frames (e. g., ORDERED MOTION), and their temporal properties are played out in spatial scenarios (Moore 2006). In addition to these metaphors, the interpreters in the present study also make use of the orientational metaphor pair MORE IS UP – LESS IS DOWN. For this particular pair of metaphors, the experiential basis consists in our experience of adding more of something to a pile or a container, thereby making the level go up (Lakoff and Johnson 1980). This metaphor is also known as QUANTITY IS ELEVATION (Moore 2006).

2.3 Metaphor in signed languages

Expressions for time in signed languages have frequently been discussed in terms of *time lines* (Friedman 1975). In her article in *Language*, Friedman describes time reference in American Sign Language (ASL): “Time relative to the time of discourse is primarily manifested by a line extending forward and backward from the body” (1975: 951). This time line can be divided into three primary areas, where the space “coincident with and immediately in front of the signer’s body” represents the present, the space behind the body represents the past, and the space in front of the signer represents the future (1975: 951). Friedman declares that this “visual (and visible) metaphor” can be used for present, past or future reference (1975: 951). Remarking on the seeming (non) movement of time, she states that “[i]n ASL, time would appear to be viewed as a constant, while ‘the world’ moves in its course” (1975: 951), a view that has been refuted since then. For descriptions of time lines in other signed languages, see, e. g., Brennan (1983) on British Sign Language (BSL), Engberg-Pedersen (1991) on Danish Sign Language, Malmquist and Mosand (1996) on Norwegian Sign Language, Johnston and Schembri (2007) on Australian Sign Language (Auslan), as well as several others. A more detailed description, comprising four different time lines used in Danish Sign Language (DSL), was presented by Engberg-Pedersen (1991). For the present study, English names and

descriptions from Engberg-Pedersen 1993 and 1999 are used, however. Two of the time lines she describes are of particular interest for the analysis of the SSL data in the present study, namely the *sequence [time] line* and the *anaphoric time line*. The sequence line in Danish Sign Language “runs parallel to the signer’s surface plane with more leftward loci used for ‘earlier’ and rightward used for ‘later’” (Engberg-Pedersen 1999: 141). This use of a left-right axis to talk about time is in accordance with the results presented by, e. g., Casasanto and Jasmin (2012), and goes against the claim that there would be no “sensible spatial basis” for this (Radden 2003). The anaphoric time line is a line with a spatially fixed reference point that does not have a default value, but must always be established in context; it “stretches outside the sender’s chest from the side of the signer’s nondominant hand diagonally to the locus of the reference point” (Engberg-Pedersen 1993: 85). Four similar time lines in BSL were described already by Brennan (1983), called *Time line A, B, C* and *D*. There are some works specifically focusing on metaphor in signed languages, like, e. g., Brennan (1990) on BSL and P. P. Wilcox (2000) on ASL. Metaphorical expressions in ASL have also been analyzed with an approach based on sets of correspondences between domains of thought and linguistic form termed *conceptual mappings* (Taub 2001). Though Taub mainly describes iconicity at the lexical level and how the signer’s hands are moved in signing space for so-called verb agreement, she also considers a type of double mapping (both iconic and metaphorical) she terms TOPICS ARE LOCATIONS (2001: 105–109). Here, Taub explicitly discusses the meaning expressed by the locations of parts of a signed construction, and the distance between these parts. How signs in ASL are directed specifically to express spatial metaphors has also been analyzed, using mainly examples based on the English metaphor that ideas are objects with physical substance, and that they are located in the head (Liddell 2003). The relative placement of signs in signing space has also been discussed in metaphorical terms for SSL (Bergman 2007). Moreover, time lines have been discussed in terms of “iconic mappings of space and time in signed languages” (S. Wilcox 2002). Presenting an overview of iconicity in the mapping of space and time in signed languages, Wilcox claims that even though signed languages have a “unique expressive potential for iconic mapping of space and time, this potential underlies all human language ability” (2002: 279). Finally, it has also been claimed that the notion of time lines has become objectified, to the point where such “lines” are treated as existing objects in the grammars of several signed languages (Selvik 2006). In a usage based analysis of some examples from Norwegian Sign Language, she proposes a preliminary outline of a schematic network for temporal signs in signed languages, that involves associating certain temporal meanings with certain movement paths (2006: 170).

2.4 Use of signing space and body movements

Studies of signed languages often separate the *manual signal*, i. e., what the hands do, from the *non-manual signals*, which are those parts of a signed language that are produced with eye-brows, mouth, nose, chin, torso, etc. When signers stand up while they produce discourse in a signed language, they are free to move not only their arms, hands, and heads as part of the linguistic signal, but to actually move their whole bodies (i. e., also moving the feet). When the signer is seated, the possibility to move the body is naturally more restricted. For the present purposes, it is sufficient to define *signing space* as the area in front of the signer where the signer can produce signs comfortably, without fully extending the arms. The places in signing space where a signer produces individual signs, and the meaning conveyed by the relative positions of the hands, have been areas of particular interest in previous research. The use of time lines in signed languages has largely been described by analyzing the manual signal, focusing essentially on the structure of individual signs and/or where individual signs are placed relative to each other in signing space. Less attention has been given to how signers move their body, and frequently no clear distinction is made regarding where in signing space a sign is placed mainly as an effect of movements of the signer's hands and arms only, and where a sign is placed as an effect of the signer moving his/her whole body. This, of course, is also a consequence of technical difficulties in measuring such movements accurately, with access to video-recorded data only. Thus, one and the same article can contain both a more implicit statement regarding how signers “place various events in past, present, or future time by placing the signs at various points in the time space”, and a statement explicitly stating that in order to place an event the signer “*steps backward and to the left*” to refer to an earlier time (Winston 1991: 406, my emphasis). The ASL lecture used for Winston (1991) is also used for a description of the indication of comparative discourse frames in ASL (Winston 1995). Here, the term *spatial mapping* is used, and the description of such mapping includes “physically *stepping* into a specific space and producing the sign(s)” (1995: 92, my emphasis). Body movements such as light or exaggerated forward or backward movements of the body, shoulders, or head have also been described for ASL, and regarded as “systematic use of *body lean forward* and *body lean back* to convey the notion of ‘contrast’ at several levels” (Wilbur and Patschke 1998: 275, italics in original). For Sign Language of the Netherlands (*Nederlandse Gebarentaal*, NGT), *body leans* have been described as part of the prosodic cues involved in the expression of corrective focus (Kooij et al. 2006).

2.5 Signed language interpreting

Interpreting entails working from one language, the *Source Language (SL)*, rendering it into another, the *Target Language (TL)*, and is usually carried out in one of the two major modes of interpreting: *simultaneous* or *consecutive*.² The recordings analyzed here consist of simultaneous interpreting, which has been defined as “the process of interpreting into the target language at the same time as the source language is being delivered”, and is the mode signed language interpreters are usually expected to work in (Russell 2005). Despite the term, when interpreting simultaneously the interpreter cannot begin interpreting immediately, but will have to wait for some time in order to have a sufficient portion (frequently referred to as a *chunk*) to start working with. The period of time between hearing the SL until the interpreter starts producing the TL is known as *time lag* or *décalage*. Average time lags reported differ from between 2 and 3 s (Barik 1957 [2002]) up to, e. g., over 5 s (Oléron and Nanpon 1965 [2002]). In one of few studies looking at time lag in signed language interpreting, it was noted that interpreters with an average 2-second onset lag time showed a dramatic increase in the number of *miscues* (defined as instances where equivalence is not achieved) compared to those with an average 4-second onset lag time (Cokely 1986). There are few studies of signed discourse produced by interpreters. Two types of simultaneous interpreting into ASL, known as *transliterating* and *interpreting* respectively, have been compared regarding the prosodic features used by the interpreters in order to indicate major topic segments in the spoken English source text (Winston and Monikowski 2003). (The differences between the two types of interpreting are not relevant for the present study.) Though much of the analysis involves pausing strategies used by the interpreters, there are also descriptions of how they use their bodies for comparisons as well as for performatives (also known as *Constructed Dialogue* and *Constructed Action* [Winston 1991; Metzger 1995]). Analyzing ASL discourse produced by interpreters for perceived utterance boundaries, Nicodemus (2009) presents a photo with the text: “Body Movement: Back and Forth” and an arrow indicating movement back and forth, but also slightly to the left and right (2009: 50). The study was designed to identify linguistic behavior perceived as indicating an utterance boundary, and there are no descriptions of specific examples, or what types of discourse content the body movements convey.

² For a thorough introduction to interpreting studies cf. Pöchhacker and Shlesinger (2002).

2.6 Hypotheses

As we have seen, human thought processes are regarded as fundamentally metaphorical in nature (Lakoff and Johnson 1980), and an embodied view of linguistic meaning has been suggested (Gibbs 2003). It has also been noted that the metaphor *TIME AS SPACE* is pervasive in languages around the world (Radden 2003). In previous research on metaphor in signed languages the placement of signs in space as related to the so called time lines has been analyzed, and concepts like iconic mappings and conceptual mappings have been used to describe both the structure and placement of signs (cf. Section 2.3). According to Radden (2003) the most important source domain for metaphorical expressions is space, and S. Wilcox states that signed languages have a “unique expressive potential for iconic mapping of space and time” (2002: 279). In addition, there are previous studies on signed language where it is noted that body movements are used to indicate comparisons and contrasts (cf. Section 2.4).

With this in mind, it can be hypothesized that the interpreters will place individual signs in relation to such time lines in order to express metaphorical content related to time. As signers’ body movements have been shown to indicate, e. g., comparisons and contrasts, it is also hypothesized that various movements of an interpreter’s body are used to express this type of discourse content.

3 Material and method

The present study is a data-driven explorative study, using data collected both for a study of how interpreters use signing space in simultaneously interpreted discourse, and to create a corpus of such data. Twelve SSL/Swedish interpreters were recorded during a total of 12 hrs. of authentic interpreting, working from spoken Swedish monologues into Swedish Sign Language. This provided unique data from actual interpreting assignments, with a range of source language input that could not be controlled. The interpreters (3 male and 9 female) had between 9 and 31 years of experience as full time, professional SSL-Swedish interpreters at the time of recording. In all of the recorded situations, the interpreter is standing up, roughly level with the speaker. Initially, approximately 5 min of signing were analyzed for each of the twelve interpreters recorded, to provide a general impression of the data. These sequences were located some time into a speaker’s presentation, to give the interpreters time to become familiar with the speaker’s style, and to make it possible for them to start creating a coherent signed discourse. Passages with long pauses, hesitations, or other disfluencies were excluded. An early impression of a difference in

the amount, types, and quality of the interpreters' movements was corroborated by showing parts of the material first to another signed language linguist and then to a linguist working with spoken language and gesture. As this type of body movement had not been the subject of study before, a more detailed analysis was made of 2×30 s of the signed target language output of all twelve interpreters recorded, this time with the aim of describing their body movements. Using ELAN (Crasborn and Sloetjes 2008), the body movements of the interpreters were coded independently of the spoken source language they were interpreting. A qualitative design was used, where it gradually became clear which features of the discourse were relevant, and descriptive categories evolved from the process. A description was also made of the types of discourse content that were conveyed with the various movement patterns. As a consequence of this, associations between particular types of discourse meaning and specific body movements became apparent. Finally, the meaning of the interpreters' signed output was compared to what the source language speakers had originally said, both to verify the accuracy of the interpreted discourse and to find possible links between words used by the speakers and signs and movements used by the interpreters. This step-by-step process, where the interpreters' body movements were matched with the meaning these movements were used to convey, revealed that the six interpreters who grew up using SSL in their families (L1-interpreters) demonstrated systematic use of signing space for various movements of their arms and bodies. Such systematic associations between specific movements and the meaning of the discourse segments they convey are analyzed below, and described as *embodiment of metaphors*. As the six interpreters who are L2-users of SSL (L2-interpreters) either did not use such movements at all, or used them differently and possibly incorrectly, they were excluded from further analysis.³ The systematic (and possibly most native like) use that was found in the SSL output of the six L1-interpreters was analyzed in more detail for this study. All of the example sequences described in the analysis in Section 4 were originally spoken in Swedish and interpreted into SSL. In the following, written English and two-dimensional photos are used to illustrate how a person moves in three-dimensional space while interpreting. Translations into English, as well as English glosses for the manual signs have been produced by me. In accordance with conventions in signed language linguistics, manual signs are glossed with words in capitals that represent the general meaning (or function) of the sign in the context it was produced in. If more than one word is needed there are hyphens between the words (e. g., BECOME-LESS). Major

³ Some initial observations regarding differences between how the L1- and L2-interpreters move have been published as a poster (Nilsson 2013).

boundaries in the discourse are indicated with a slash (/). Each example sequence is introduced with a brief description of the particular situation and what the speaker said, which is followed by both a glossed version of the interpreters' signed rendition and a back translation of that into English. Moreover, there are descriptions of how the interpreter moves his/her body, accompanied by photos made from the original video recordings.⁴ In some of the photos, vertical and/or horizontal lines have been drawn, aligned with some fixed object, to provide a point of reference for the interpreter's movements. Under the photos, the glosses that are used in the text are repeated, to simplify identification of the different parts of the examples. This does mean, however, that a phrase consisting of several signs can be represented by several glosses while the photo actually only shows (part of) one sign. Glosses for signs not represented in the photo have been put in brackets.

4 Analysis

As this is the first tentative study of these phenomena in SSL discourse, focus is on a qualitative description, and no quantitative analysis has been undertaken. When a descriptive model is in place, later studies could include such analyses. The combinations of body movements that are described for the sequences analyzed below are quite frequent in the analyzed data. The six sequences analyzed here have been chosen both for their clarity and because they combine several of the features discussed. In the following example sequences, the L1-interpreters use several types of movements in signing space for their hands, arms and body, and they are often simultaneously embodying more than one conceptual metaphor. The sequences are presented in order to show different degrees of complexity, with layers of metaphorical meaning gradually being added. All of the sequences analyzed for the study have one thing in common, namely that they are analyzed as instances where the interpreters' movements in signing space constitute embodiment of the conceptual metaphor DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN. In addition, in sequences 4–6, we will see how metaphors for difference and metaphors for time are simultaneously layered, and in some instances the orientational metaphor pair MORE-IS-UP and LESS-IS-DOWN is also expressed.

⁴ These still photos focus on the interpreter, and only show a part of the original recordings that include more of the surroundings in the filmed setting.

4.1 Sequence one

In the first sequence, the speaker is describing an ongoing national decision making process, and has just stated that several universities have already made their decision. (This part of the discourse has not been included in the analysis). The speaker, who represents Stockholm University, continues by saying: *Uppsala University, just like us, is considering the matter*. Taking only the manual signs into account, the interpreter's rendition consists of the following signs: UPPSALA UNIVERSITY/JUST-LIKE US/CONSIDER MATTER NOW. A possible back translation into English would be something like: 'Uppsala University, just like us, is considering the matter now'. This does not differ much from the original. As SSL does not mark verbs for tense, the interpreter has added the lexical sign NOW, which explains the difference in wording. However, the interpreter also uses signing space in a meaningful way. The interpreter's rendition of the first (unanalyzed) part of the speaker's utterance, where the universities that have already made a decision are listed, ends in the position seen in Figure 1(a). The interpreter then embodies the metaphor DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN for his rendition of the analyzed part of the utterance. First, while producing the two signs UPPSALA UNIVERSITY, he moves his upper body to the position seen in Figure 1(b). Then, while producing the two signs JUST-LIKE US, he moves to the position seen in Figure 1(c). His movements thus make it clearly perceivable that there is a difference between Uppsala University and Stockholm University (i. e., *us*), as the signs related to the two different universities are produced in two distinct places.⁵



Figure 1: Sequence with the signer embodying the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor using different places in signing space.

⁵ Unfortunately it is impossible to tell from the recording if the interpreter is also moving his feet and/or legs.

The position the interpreter uses in Figure 1(a) serves as a distinct *mid-position* to use for the distinction that follows. This creation of a distinct mid-position, which is subsequently used for a distinction and/or comparison, is typical for some movement patterns used by these interpreters, and has been described in Nilsson (2013). The fact that there are two different universities where no decision has been made yet is then indicated using two distinct places in signing space, seen in Figures 1(b) and 1(c). Finally, as seen in Figure 1(d), the interpreter moves back to the mid-position, and describes the current situation with regards to these two different universities, by producing the three signs CONSIDER MATTER NOW. The position in Figure 1(c) is further back (and possibly slightly lower) than the one in Figure 1(a) and 1(d). This backward movement is frequently used by the interpreters to indicate a contrast between I/me/we/us and somebody/something else (Nilsson 2013). In this first fairly uncomplicated sequence, the interpreter embodies the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor by moving between two perceivably different places in signing space when he produces signs to talk about two different entities.

4.2 Sequence two

In sequence two, the speaker talks about a type of planning document: *Well, when I look at that plan, I think ... I sort of think using two perspectives*. If we compare this to the interpreter's rendition into SSL, she produces the following signs: WELL WHEN I LOOK AT PLAN/THEN I THINK IN TWO PERSPECTIVE PERSPECTIVE. A back translation into English could be something like: *Well, when I look at that plan, I think using two perspectives*. Again, the back translation does not differ much from the original, this time with the exception that the speaker's hedging is not rendered.

As space is generally not used to position entities in relation to each other in English, nor in Swedish for that matter, naturally this back translation into English does not reflect the fact that this interpreter also embodies the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor in her signed rendition of the phrase *two perspectives*. The three signs she uses to do that are shown in Figure 2. First, in Figure 2(a), the interpreter produces the number sign TWO with her right hand. Then, in Figure 2(b), continuing to use her right hand, she produces one instance of the sign PERSPECTIVE. Finally, in Figure 2(c), while maintaining the right hand in place producing the sign PERSPECTIVE, she produces one more instance of PERSPECTIVE, now with her left hand. In doing this, she places two different instances of the sign PERSPECTIVE in two separate places in front of her, with a distance between them. Consequently, in

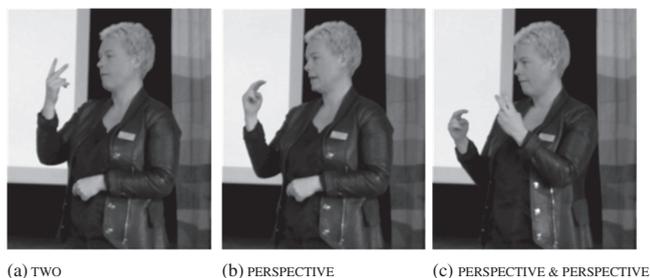


Figure 2: Sequence with the signer embodying the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor using both hands simultaneously.

the photo in Figure 2(c) two instances of PERSPECTIVE are produced with different hands, held in two distinct places in signing space, with a distance between them.⁶

The interpreter in this sequence also embodies the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor, using two different places in signing space when talking about two different entities. As signers have two hands at their disposal, an additional possibility to indicate that there are two different entities is to use both hands simultaneously, and produce the signs used to talk about them in different places in signing space at the same time. Both of these strategies are used simultaneously in this target language rendition, thereby adding one more form of visual information.

4.3 Sequence three

In this sequence, the speaker describes data from a linguistic study, and the number of instances of a specific linguistic structure produced by the informants, saying: *One only has 7, another has 68*. In his rendition into SSL, the interpreter produces the following signs: ONE ONLY SEVEN/ANOTHER HAVE SIXTY-EIGHT/DIFFERENT/SEVEN SIXTY-EIGHT. A back translation into English of this indicates that the interpreter restructures this sequence more, rendering the numbers twice and also remarking on the size of the difference: *One only [has] 7, another has 68. That's a huge difference, from 7 to 68*. The comment regarding the size of the difference is expressed using only three manual signs.

⁶ What looks like a small height difference between the two instances of PERSPECTIVE in Figure 2(c) is an effect of the camera angle and not use of a height difference to express discourse content and indicate a difference in the importance of the two perspectives.

In addition, several other body movements are used, resulting in additional information being expressed. This interpreter also embodies the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor as can be seen from his movements in signing space. The first instance of the sign SEVEN is placed far to his left, cf. Figure 3(a), and the interpreter even leans his body to the left while producing the sign. Then, he moves his body back to an upright position while the sign SIXTY-EIGHT is placed more to the right, cf. Figure 3(b). Thus, the two number signs are produced with a clear distance between them.



Figure 3: Sequence with the signer embodying the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor using different places in signing space.

The number signs in Figure 3(a) and 3(b) are produced with the interpreter's right hand, as he is predominantly right-handed. The sign produced with his left hand in Figure 3(b) is not important for the discussion in this study. It is a type of sign known as a *buoy*, more specifically a *POINTER buoy* (Liddell 2003). It serves a discourse function and can be said to be an instance of gestural pointing which the signer uses to draw attention to some specific entity in the discourse (Nilsson 2008). This buoy is seen also in Figures 5(b), 5(c), (7) and 8(b). The next three signs are illustrated with the four photos in Figure 4. The interpreter first states that there is a difference (between 7 and 68), by producing the sign DIFFERENT.



Figure 4: Sequence with the signer embodying the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor using both hands simultaneously, and the orientational metaphor MORE-IS-UP using a height difference.

The start and end positions of the hands in DIFFERENT are shown in Figure 4(a). The fact that the difference is a large one in this context is conveyed both by the size of the movement of his hands/arms and by the facial expressions used. The two number signs SEVEN and SIXTY-EIGHT are then produced again. This time, however, the interpreter uses a different strategy to embody DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN. He produces the sign SEVEN to his left, as before, but now using his left hand, as can be seen in Figure 4(b). (This production of SEVEN with his left hand in Figure 4(b) is combined with a noticeably smaller body movement to the left than the one in Figure 3(a).) The interpreter then produces the sign SIXTY-EIGHT to his right, using his right hand, as before, while moving slightly to the right. While he is doing this, he also maintains the sign SEVEN where it was first produced, producing the two number signs at the same time, but in two different places. The photo in Figure 4(c) thus shows the two different numbers expressed with different hands, simultaneously held in two different places in signing space, with a distance between them.

Returning to Figure 4(c), in addition to DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN, the interpreter also embodies the orientational metaphor MORE-IS-UP. Not only are the signs for the two different numbers held in different places on a left-right axis in signing space, but in addition, the sign expressing the highest number is produced higher in signing space than that of the sign for the lower number. By producing the two number signs like this, the interpreter is making the metaphorical height difference clearly perceivable, simultaneously indicating in one additional manner, which number is the highest and which is the lowest. In sequence three, two numbers are expressed as being distinct from each other with signs first produced one after the other in different places and then produced in different places simultaneously. In the final part of the sequence, the interpreter embodies both the metaphors DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN and MORE-IS-UP at the same time. When the speaker states that: *One only has 7, another has 68*, the word *only* emphasizes the difference in size between the two numbers. In the interpreter's rendition, a difference in height between the positions where the two number signs are produced provides an additional indication of the difference in quantity between the two.

4.4 Sequence four

The speaker is describing the bar chart that can be seen behind the interpreter: *The blue bars that you can see here, that's the applicants from the fall semesters 2005 until 2012*. The interpreter renders this with the following signs: SEE BLUE BAR FROM FALL IS APPLICANTS FROM 2005 TIME-FROM-TO 2012. A back

translation into English could be something like: *You see the blue bars representing the fall semesters, that's the applicants from 2005 until 2012*. Again, the interpreter has restructured the content to some extent. In her rendition, the interpreter embodies the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor. She produces the signs for '2005' and '2012' in two different places in signing space, the first one to her left and the second to her right, as seen in Figure 5(a) and Figure 5(c). Thus, we can see the signs for the two different numbers, i. e., the two different years, being produced in two different places, with a distance between them, indicating that they represent two different points in time.



Figure 5: Sequence with the signer embodying the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor and the metaphor TIME AS SPACE.

As she is not only talking about those two different points in time, but actually about a time period from the one explicitly stated point in time up until and including the other, the interpreter also produces a sign glossed TIME-FROM-TO. It is highly iconic, and the production of the sign can be described as her drawing a dash ('-') in front of her with her right hand. The sign is produced at a place in signing space that links the places where the two signs for the years were produced, cf. Figure 5(b). Sequence four is analyzed as an instance of use of the sequence time line, with its left-right orientation, viewing time on a lateral axis with a left-right orientation as discussed by Casasanto and Jasmin (2012). Here, the later point in time (the year 2012) is located to the right of the earlier point in time. This would fit Lakoff's entailments for special case 2, where "[t]ime has extension, and can be measured. An extended time, like a spatial area, may be conceived of as a bounded region" (1993: 217). However, according to Lakoff, for special case 2 times are fixed locations, and an observer moves with respect to them. The interpreter does not move her body noticeably, to embody an observer, while she produces these signs. Looking at the four photos in Figure 5, we can see a continuous gradual movement of her right hand, which moves towards her right, tracing the left-right oriented sequence time line. This

sequence is therefore analyzed as an instance of the more general metaphor *TIME AS SPACE* (Radden 2003). As the speaker is talking about two different years rather than two numbers, the year represented by the higher number is not regarded as something that is “more” than the year represented by a lower number. The second point in time is simply regarded as being “later in time”. These two points in time are thus the starting point and the end point of the period discussed, and the number signs are produced without a distinct height difference. In sequence four, the interpreter uses two different places in signing space, embodying the *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* metaphor to talk about two different points in time. This is combined with the interpreter linking the two points in time in order to talk about the period between them, using movement of her dominant hand along the sequence time line, for the metaphor *TIME AS SPACE*.

4.5 Sequence five

In this sequence, the speaker talks about the risk that the number of PhD-students will decrease: ... *from approximately 800 to 700*. The interpreter’s rendition into SSL consists of the following four signs: *FROM EIGHT-HUNDRED BECOME-LESS SEVEN-HUNDRED*. As for several of the other sequences, a back translation into English would read more or less exactly as the original, but the speaker’s hedging is again not rendered. The *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* metaphor is embodied by the interpreter also in this sequence. Having first produced the sign *FROM* (not shown in Figure 6), the interpreter produces the two-handed sign *EIGHT-HUNDRED* at a place slightly above shoulder height and to his left in signing space, as can be seen in Figure 6(a). He continues his rendition by producing the sign *BECOME-LESS*, and then he produces the two-handed sign *SEVEN-HUNDRED* in a different place, more to his right and lower



Figure 6: Sequence with the signer embodying the *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* metaphor, the directional metaphor *LESS-IS-DOWN* and the metaphor *TIME PASSING IS MOTION OVER A LANDSCAPE*.

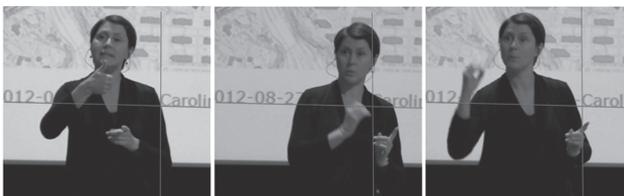
in signing space, as can be seen in Figure 6(c). The two number signs are thus produced in two distinct places in signing space, with a distance between them, indicating a difference between them.

Moreover, the interpreter embodies the orientational metaphor *LESS-IS-DOWN*, by creating a height difference between the places where the two number signs are produced, highlighted by the added horizontal line in Figure 6(a) and 6(c). In doing this, he makes it clearly perceivable that the last number (700), which is produced in the lower place, is a lower number than the first number (800), which is produced in a higher place. The difference in size between the two numbers is indicated in more ways than one. Figure 6(b) shows the start and end positions of a sign glossed *BECOME-LESS*. As this sign is produced, the distance between the two hands is reduced, thus creating an iconic illustration of the decreasing amount talked about. Consequently, in this short sequence lasting approximately 2 s, the metaphor *LESS-IS-DOWN* is actually used twice. It is used both over the whole utterance and in one of the lexical items. Of course, the numbers (800 and 700) as such also indicate different size entities, and furthermore, as can be seen from the photos, in SSL the first part of these number signs use different numbers of fingers (8 vs. 7). In addition, but more difficult to perceive in the photos, the interpreter maintains a small but continuous sideways movement of his body and hands toward his right while producing the sign *BECOME-LESS*, which stops when he produces the sign *SEVEN-HUNDRED*. There are no conventionalized glosses to be used when glossing SSL signs in English, and the sign *BECOME-LESS* could also have been glossed *BECOME-LESS-OVER-TIME*. Again, the sequence time line with its left-right orientation is used, as the interpreter moves to his right to indicate the duration of the process when the group of PhD-students becomes fewer over time. This has been analyzed as an example of embodiment of the metaphor *TIME PASSING IS MOTION OVER A LANDSCAPE*, with time viewed on a lateral axis with a left-right orientation as discussed by Casasanto and Jasmin (2012). In this sequence, there is movement not only of the interpreter's hands but also of his body, which is analyzed as him embodying the observer moving with respect to the fixed locations that constitute times in Lakoff's special case 2 (1993: 217). In sequence five, the interpreter embodies the *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* metaphor using two different places in signing space again, now to talk about two different numbers of entities and the points in time related to them. In addition to this, he links the two places to indicate how one (higher) number might change into the other (lower) number over time, embodying the directional metaphor *LESS-IS-DOWN* as well as using sideways movement of his body to indicate the location of times and embodying the observer moving with respect to them for the metaphor *TIME PASSING IS MOTION OVER A LANDSCAPE*. The changing relative positions of the

interpreter's hands are used to indicate the number of entities decreasing, again an instance of use of the directional metaphor *LESS-IS-DOWN*. The interpreter thus embodies several different conceptual metaphors, and layers the information simultaneously. It may also be worth noting that what is discussed here is not an actual change taking place. The speaker is talking about what might happen if certain decisions are made, and a hypothetical development is thus expressed with this iconic metaphorical expression.

4.6 Sequence six

In the final sequence, the speaker talks about the percentage of exchange students from abroad that Stockholm University will be able to offer accommodation to, saying that with the additional accommodation recently acquired: ... *we can offer accommodation for 68%, and that is an increase from 57% last year*. The interpreter renders this with the following signs: THEN THAT IS SIXTY-EIGHT PERCENT WE CAN OFFER ACCOMMODATION/BEFORE FIFTY-SEVEN PERCENT/NOW SIXTY-EIGHT PERCENT. A back translation into English would read: *This makes it 68% that we can [now] offer accommodation. Before, it was 57%, now it will be 68%*. This is a more significant restructuring than we have previously seen, and again, as in sequence three, the numbers are repeated. The *now*, meaning at the time of speaking, can be inferred from the situation, but is never explicitly said by the speaker. It is made more explicit in the interpreter's signed rendition of the utterance. In Figure 7(a), the interpreter starts her rendition by setting up a mid-position to be used for the comparison that follows (Nilsson 2013). She does this by distinctly standing erect while producing the signs glossed THEN THAT IS SIXTY-EIGHT PERCENT WE CAN OFFER ACCOMMODATION. (For reasons of space, only some of the signs used to set up this mid-position are glossed under the photo in Figure 7(a)). This is a



(a) (SIXTY-EIGHT PERCENT) (b) (FIFTY-SEVEN PERCENT) (c) (SIXTY-EIGHT PERCENT)

Figure 7: Sequence with the signer embodying the *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* metaphor, the motion for time metaphor *TIME PASSING IS MOTION OVER A LANDSCAPE*, and the orientational metaphors *LESS-IS-DOWN* and *MORE-IS-UP*.

description of the situation that will be true as of the start of the semester when this is spoken; the university will now be able to offer accommodation to 68% of the incoming exchange students. This mid-position is used to describe the situation at the time of speaking. The interpreter then moves backwards and slightly to her left, while producing the signs BEFORE FIFTY-SEVEN PERCENT, and she ends up in the position illustrated in Figure 7(b). Finally, she moves forward and slightly to her right while producing the three signs NOW SIXTY-EIGHT PERCENT, and that sequence ends with her in the position seen in Figure 7(c). The interpreter thus produces the two final phrases in two different places on a backward/left to forward/right axis, embodying the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor by placing the two different times, and the numbers related to them, in two different places, with a clear distance between them.

Though it might be difficult to perceive in the photos, as already mentioned the interpreter is moving not only on the more easily distinguished left to right axis, but on a backward/left to forward/right axis. She also seems to be bending her knees slightly when she moves backward, but that cannot be seen in the film. This movement is analyzed as embodiment of a motion for time metaphor TIME PASSING IS MOTION OVER A LANDSCAPE, where “times are seen as fixed locations, and the observer can move with respect to them” (Lakoff 1993). Moving backward/left while signing BEFORE FIFTY-SEVEN PERCENT, she is indicating that the time before the speaking time is located behind the initial mid-position where she started her rendition. Then moving forward, she indicates that the future offer of 68% is located forward from that position, thus locating the future in front of the observer at the point in time before. If the recordings had been made under more controlled conditions, it might have been possible to determine the interpreters’ movements more accurately, but it does look as if the interpreter is moving along the anaphoric time line. This would then constitute movement of the signer’s body directed along a time line, not only the more restricted placement of manual signs which is what several descriptions of time lines in signed languages focus on. Moreover, the interpreter embodies one more type of metaphor in this sequence, namely the orientational metaphors LESS-IS-DOWN and MORE-IS-UP. In Figure 8, only a horizontal line is shown, as a point of reference for the height difference between the number signs the interpreter produces. In Figure 8(a), we see the comparatively low place used for signing FIFTY-SEVEN PERCENT, and in Figure 8(b), the higher place used for the higher number SIXTY-EIGHT PERCENT. In this way, the interpreter is making the metaphorical height difference clearly perceivable. The first number (57), which is produced in the lower place, is a lower number than the last number (68), which is produced in a higher place.

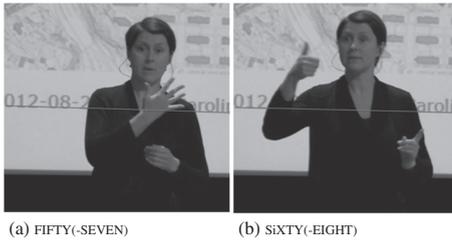


Figure 8: Signs where the signer is embodying the orientational metaphors *LESS-IS-DOWN* and *MORE-IS-UP*.

In this final sequence, the interpreter produces signs in two different places in signing space, embodying the *DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN* metaphor to show that she is talking about two different times, and the percentages associated with them. Moving her body along the anaphoric time line, embodying the observer, she also indicates use of the *TIME PASSING IS MOTION OVER A LANDSCAPE*. Starting from the type of mid-position noted in Nilsson (2013), representing the speaking time, she moves backward/left to talk about the previous situation, and then forward/right to talk about the future situation, embodying the observer in the metaphor *TIME PASSING IS MOTION OVER A LANDSCAPE*. Moreover, some signs are produced using a difference in height, making the metaphorical height difference clearly perceivable and thereby indicating embodiment of the directional metaphors *LESS-IS-DOWN* and *MORE-IS-UP*.

4.7 Simultaneous interpreting and lag time

All of the analyzed sequences are instances of signed language output produced under the particular constraints of simultaneous interpreting. The interpreter does not know what the speaker is going to say, and only has limited time at his/her disposal during which to construct a coherent and equivalent target language output – while the speaker continues to produce new utterances. Table 1 contains information regarding the length of the source language utterances and their respective target language renditions. Duration has been calculated by subtracting the onset time from the finish time. The times specified with 3 decimals in the ELAN annotation window has been rounded off to 1 decimal. Lag time was similarly calculated by subtracting the speaker onset time from the interpreter onset time.

The sequences analyzed for the study range from 2.2 to 7.4 s in length in the source language output, with the shortest one being only part of an utterance,

Table 1: Length in seconds for source language, target language, and lag time.

Sequence	Source language	Target language	Onset lag time
#1	5.4	4.1	1.4
#2	4.4	5.0	1.3
#3	3.9	5.2	1.6
#4	7.4	5.3	2.9
#5*	2.2	2.3	1.0
#6	6.5	6.9	2.7

Note: *This short sequence only consists of a part of a whole utterance.

viz. Sequence 5. The signed target language renditions range from 2.3 to 6.9 s, again with Sequence 5 being the shortest. Two of the TL renditions, the ones for Sequences 1 and 4, are shorter than the original SL utterance. The interpreters' onset lag time for the analyzed sequences range from 1.0 s (for the partial utterance in Sequence 5) to 2.9 s. The longest lag time is seen for Sequences 4 and 6, which are both produced by the same interpreter. There are a number of different reasons for interpreters' renditions being longer or shorter than the original source language output, and for onset lag time being long or short, but this is a subject that will not be discussed further here.

5 Discussion

This is a first, explorative, qualitative study. The sample size is small (6 individuals, with sequences showing only 4 of them analyzed in this paper), and there existed no previous research findings to compare these recordings to. Therefore, the analysis is descriptive, and no frequency scores or other types of usage data have been included but would have to be considered for future studies. In all of the analyzed sequences, the interpreters embody the conceptual metaphor DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN, and they all create iconic representations of this metaphor in signing space. For this study, the presence of a *distance* between the places where signs are produced is analyzed simply as an indication of a *difference*. It has not been possible to measure the size of the distance between places where signs are produced, to analyze whether that reflects the size of some type of difference between entities. To begin with, it is problematic to decide what types of "sizes of difference" there would actually be. Secondly, these recordings were made in natural interpreting settings, with a single camera, making it impossible to measure the actual distances in signing space

in detail. Using more data, and possibly data recorded under different circumstances, maybe embodiment of the other metaphor in the pair, SIMILARITY-IS-CLOSENESS, could also have been found. As discussed in Section 2, the possibility of metaphorical origins in signed languages has been suggested and described before. However, in many instances this has more or less been mentioned in passing, while focusing on, e. g., the use of body leans forward and back to convey the notion of contrast at several levels (Wilbur and Patschke 1998). Using the concept of spatial mapping, examples where a signer not only moves his hands and arms for such mappings, but also actually moves his whole body including the feet, have also been presented for ASL (Winston 1991, 1995). Both these studies, however, focus on spatial mapping as a cohesive device in an ASL lecture rather than metaphor, and the lecture was not produced as the result of interpreting. As mentioned, there are some detailed analyses of metaphorical mappings in ASL (Taub 2001; Emmorey 2002), as well as analyses of how signs are directed to express spatial metaphors (Liddell 2003). Neither of those describe the type of interpreted discourse analyzed in the present study, though. The idea of a metaphorical basis for the placement of individual signs has been mentioned, e. g., by Bergman (2007), but no previous study has focused on the expression of metaphorical content in Swedish Sign Language. Obviously, the metaphorical origins of some aspects of SSL are worth looking into much more than has been possible in this initial study, and especially the use of signing space as a domain for conceptual metaphors. Despite the fact that a majority of deaf and hard of hearing children, youth, and adults in many countries depend on signed language interpreters for their academic success, there is very little research on its effectiveness in the classroom. (See however, e. g., Marschark et al. 2004, 2005, 2008) for some fairly recent studies as well as reviews of previous studies.) It would be valuable to know if the use of these types of body movements, where underlying conceptual metaphors are embodied by interpreters and represented iconically in signing space, make the discourse content more accessible to students relying on signed language interpreting for access to classroom discourse. Possibly a study where deaf participants are shown sequences of this type of interpreted target language renditions as well as sequences where these types of body movements are not used could be conducted to compare how well the different types of renditions are understood. If this use of embodied metaphorical content in interpreting makes discourse content more easily accessible, this could be an important aspect of the production of target language renditions to include in training programs for signed language interpreters. Differences between signed and spoken languages, and the difficulties facing interpreters working between these modalities are specifically brought up by Padden (2000). Drawing on previous research, and

describing how interpreters have to add many levels of spatialized representation in signed languages, she claims that: “More skilled interpreters can use complex lexical choices and patterns, and are favored by signers because their interpreting is easier to view and easier to understand.” (2000: 183). Possibly, the type of language production analyzed in this study, where iconic expressions of several conceptual metaphors are produced in simultaneous layers, is what she has in mind. Describing prosodic cues involved in expressing corrective focus in NGT conversational interaction the possible iconic metaphoric basis for leaning back in denials and leaning forward in affirmations is mentioned, with the additional statement that the same directions of leans would then be expected in both spoken language interaction and in other signed languages (Kooij et al. 2006). In the data analyzed for the present study, however, the interpreters frequently use a backward movement to indicate a distinction between I/me/we/us and somebody/something else (Nilsson 2013), which could possibly rather be regarded as one more way of expressing contrast. In order to explore the possibility that the body movements analyzed here are particular to interpreted discourse, I have also analyzed recordings of two deaf lecturers at Stockholm University presenting in SSL in similar situations (approximately 30 min for each of them). Without going into much detail, it was quite obvious that they use the same type of body movements to express similar discourse content, indicating use of the same underlying conceptual metaphors, and creating iconic representations of them in signing space. When I asked the L1-interpreters whether these body movements are something they produce deliberately, as a strategy to make the information more visual, they stated that this was something they were not at all aware of doing. The cognitive efforts of interpreting simultaneously have been discussed as possibly taking up more mental energy than available (Gile 2009). It would therefore also be interesting to conduct a study looking at similarities and differences when L1-interpreters produce SSL spontaneously compared to the SSL they produce as the result of simultaneous interpreting. When metaphorical content is interpreted into SSL, the L1-interpreters recruit their whole bodies to render it in a manner that can be described as making the metaphor more visible, more salient, and constituting a more distinct presence in the room than spoken counterparts. Specific movements of the interpreters’ hands, arms and bodies in signing space are used to convey particular aspects of meaning. As we have seen, this embodiment makes metaphorical content in the discourse easy to perceive, as it is made plainly visible in signing space, sometimes presented in several simultaneous layers. The concept embodiment has tentatively been applied to describe these body movements in signing space used systematically by the L1-interpreters, with no explicit ambition to clarify the concept as such.

The point I am attempting to make is that whereas a person would mainly use only his/her speech organs to express these conceptual metaphors in a spoken language, these interpreters use movements of their whole body to express them in their SSL discourse. This, in my view, makes the concept embodiment particularly suitable to describe what they are doing. In the analyzed sequences, the source expressions in spoken Swedish (which have been translated into English for this study) also have metaphorical content. With very little processing time the interpreters locate this metaphorical content even when the spoken Swedish utterance does not contain words that clearly indicate the presence of particular conceptual metaphors. In sequence five, e. g., the speaker says: ... *from 800 to 700* and this is produced by the interpreter layering several different conceptual metaphors simultaneously in his interpreted rendition after only 1 s of processing time. The L1-interpreters have not only acquired metaphorical concepts from bodily experiences, providing them with the physical, experiential bases that Lakoff and Johnson (1980) maintain are the base for all metaphors. They have acquired these metaphorical concepts at the same time as they were acquiring a language that uses the whole body to express this type of meaning. Perhaps their native signing skills at least form part of the reason that their use of these movement patterns seems to require so little effort, and is so different compared to the body movements of the L2-interpreters (Nilsson 2013). Whether the type of body movements analyzed for this study should be regarded as truly *linguistic* or whether they are better described with a wider term such as *meaningful* is a matter that has not been considered in depth here. This matter, in my opinion, touches on the larger issue of what might distinguish signed language signs from gestures, as discussed by, e. g., Kendon (2008), Parrill (2009), and many others. There is, for example, a recent description of how hearing people use pointing gestures, eye gaze and body posture when they interact (Stukenbrock 2014). Here, Stukenbrock describes spoken language interaction much in the way signed languages have long been described, but she does not use the concept *Constructed Action* (Metzger 1995) that has been used for this type of bodily behavior in signed language research. As far as I am aware, there are no studies of how hearing speakers move while producing a spoken language presentation, and whether that could be related to underlying conceptual metaphors. Maybe there are similarities between what is described here and what hearing speakers do that we are not aware of? An explorative study like this one, analyzing sequences of interpreted Swedish Sign Language discourse, cannot state with any degree of certainty that the body movements described are beyond doubt linguistic. However, as has been discussed above, these L1-interpreters seem to use the movements described here in the way deaf presenters do. They produce these movement patterns under the particular constraints of

simultaneous interpreting, and claim that they do not use them as a conscious interpreting strategy. Arguably, this would make these movements part of their grammar, and thus linguistic.⁷

6 Summary and conclusions

Let us return to the speaker's original utterance in sequence six, repeated here for the reader's convenience: *... we can offer accommodation for 68%, and that is an increase from 57% last year.* As this utterance is produced in a spoken language, and since only one word can be spoken at a time, the utterance is produced in a more linear manner than the interpreter's rendition is. With less than 3 s of processing time, and using approximately the same amount of time as the speaker for language production (6.9 vs. 6.5 s), this interpreter presents the differences in time and quantity in her rendition into Swedish Sign Language by embodying several different conceptual metaphors, even expressing them in simultaneous layers. She produces signs in two different places in signing space, indicating use of the DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN metaphor to show that she is talking about two different times and the percentages associated with them. Moving her body along the anaphoric time line, embodying the observer, she also indicates use of the metaphor TIME PASSING IS MOTION OVER A LANDSCAPE. Starting in a position representing the speaking time, she moves backward/left to talk about the previous situation, and then forward/right to talk about the future situation. In addition to this, some of the signs are produced using a difference in height, thereby indicating embodiment of the directional metaphors LESS-IS-DOWN and MORE-IS-UP. In accordance with the hypotheses, these L1-interpreters place individual signs in relation to so called time lines in order to express metaphorical content related to time, and they use movements of their bodies to express comparisons and contrasts. In addition, each of the conceptual metaphors the interpreters embody seems to be expressed in a distinct manner. FOR DIFFERENCE-BETWEEN-IS-DISTANCE-BETWEEN, the interpreters use two different places in signing space to talk about two different entities, sometimes moving not only their hands and arms but also their body, to make the distance between these places clearly perceivable. At times they also use the possibility to talk about the two different entities simultaneously, by representing them with one hand each at the same time. For the directional metaphors LESS-IS-DOWN and MORE-IS-UP, the

⁷ I am indebted to all three reviewers for making me consider this issue more than I initially intended.

interpreters produce signs at different heights in signing space. Sideways movement of the interpreter's hands, tracing the left-right oriented sequence time line, is used for the general metaphor *TIME AS SPACE*. Moving the body along the sequence time line or along the anaphoric time line, the interpreter can embody the observer, and this is used for the metaphor *TIME PASSING IS MOTION OVER A LANDSCAPE*. The data analyzed for this study consists of signed SSL discourse, produced as a result of simultaneous interpretation by six interpreters who are L1-users of Swedish Sign Language. These L1-interpreters render the spoken Swedish source message into Swedish Sign Language with between 1 and 2.9 s of processing time, and then produce truly complex signed sequences, where they make abundant use of the circumstance that in a signed language it is possible to express several types of information simultaneously. They use movements of their hands, arms and body in signing space to produce iconic expressions of metaphors, and frequently embody several metaphors at the same time to simultaneously layer information. As the interpreters systematically use body movements in space to accomplish this, their target language renditions have been analyzed as embodied use of metaphors. In several of the sequences that have been analyzed, this can be seen as a rich layering of simultaneous information, or as simultaneous layering of metaphors.

Acknowledgements: Most of the project work was conducted while I worked in the Sign Language Section of the Department of Linguistics at Stockholm University, and I am grateful to colleagues there for their willingness to discuss the data with me. The analysis presented here has also been enhanced by discussions, questions and comments during presentations at a number of conferences, as well as by comments from the reviewers. In addition, I am indebted to Jan Anward, Brita Bergman and Lindsay Ferrara for comments on earlier drafts of the text, as well as discussions relating to it. In particular, Jan Anward was helpful in making the example sequences accessible to linguists who do not work on signed languages, Brita Bergman pointed out the distinct ways the metaphors seem to be expressed in, and Lindsay Ferrara suggested viewing the interpreters' output as "layering of metaphors". Finally, I wish to thank my fellow Swedish Sign Language/Swedish interpreter colleagues for agreeing to let recordings of their work be part of the data collected for the project. Without them, this study would not have been possible.

Funding: The study was conducted as part of the project "Use of signing space in simultaneous sign language interpretation", financed by the Swedish Research Council (VR 421-2011-2286).

References

- Barik, H. C. 1957 [2002]. Simultaneous interpretation: Qualitative and linguistic data. In F. Pöchhacker & M. Shlesinger (eds.), *The interpreting studies reader*, 79–91. London & New York: Routledge.
- Bergman, B. 2007. *Det svenska teckenspråket – ett språk i fyra dimensioner* [Swedish Sign Language – A language in four dimensions]. *Kungl. Vitterhets Historie och Antikvitets Akademiens Årsbok 2007* [Yearbook of The Royal Swedish Academy of Letters, History and Antiquities], 39–52. Stockholm: Kungl.Vitterhets historie och antikvitetsakademien [The Royal Swedish Academy of Letters, History and Antiquities].
- Brennan, M. 1983. Marking time in British Sign Language. In J. G. Kyle & B. Woll (eds.), *Language in sign: An international perspective on sign language*, 10–31. London: Croom Helm.
- Brennan, M. 1990. *Word formation in British Sign Language*. Stockholm: Stockholm University dissertation.
- Casasanto, Daniel & K. Jasmin. 2012. The hands of time: Temporal gestures in English speakers. *Cognitive Linguistics* 23(4). 643–674. DOI: 10.1515/cog-2012-0020
- Cokely, D. 1986. The effects of lag time on interpreter errors. *Sign Language Studies* 53(Winter 1986). 341–375. DOI: 10.1353/sls.1986.0025
- Crasborn, O. & H. Sloetjes. 2008. *Enhanced ELAN functionality for sign language corpora*. Paper presented at the 3rd Workshop on the Representation and Processing of Sign Languages: Construction and Exploitation of Sign Language Corpora.
- Emmorey, K. 2002. *Language, cognition, and the brain. Insights from sign language research*. Mahwah, NJ & London: Lawrence Erlbaum Associates.
- Engberg-Pedersen, E. 1991. *Lærebog i tegnsprogs grammatik* [Textbook on Danish Sign Language grammar]. Copenhagen: Døves Center for Total Kommunikation [Deaf People's Center for Total Communication].
- Engberg-Pedersen, E. 1993. *Space in Danish Sign Language. The semantics and morphosyntax of the use of space in a visual language*. Hamburg: Signum.
- Engberg-Pedersen, E. 1999. Space and time. In J. Allwood & P. Gärdenfors (eds.), *Cognitive semantics. Meaning and cognition* 55, 131–152. Amsterdam & Philadelphia: John Benjamins.
- Friedman, L. A. 1975. Space, time, and person reference in American Sign Language. *Language* 51(4). 940–961. DOI: 10.2307/412702
- Gibbs, R. W. 2003. Embodied experience and linguistic meaning. *Brain and Language* 84. 1–15.
- Gile, D. 2009. *Basic concepts and models for interpreter and translator training*. Amsterdam & Philadelphia: John Benjamins.
- Johnston, T. & A. Schembri. 2007. *Australian Sign Language (Auslan). An introduction to sign language linguistics*. Cambridge: Cambridge University Press.
- Kendon, A. 2008. Some reflections on the relationship between 'gesture' and 'sign'. *Gesture* 8(3). 348–366. DOI: 10.1075/gest.8.3.05ken
- Kooij, E. v. d., O. Crasborn & W. Emmerik. 2006. Explaining prosodic body leans in Sign Language of the Netherlands: Pragmatics required. *Journal of Pragmatics* 38(12). 1598–1614.
- Lakoff, George. 1993. The contemporary theory of metaphor. In A. Ortony (ed.), *Metaphor and thought*, 202–251. Cambridge: Cambridge University Press.
- Lakoff, George, Jane Espenson, Adele Goldberg & Alan Schwartz. 1991. Master metaphor list (2nd draft copy). <http://araw.mede.uic.edu/~alansz/metaphor/METAPHORLIST.pdf> (accessed 24 September 2015)

- Lakoff, George & Mark Johnson. 1980. *Metaphors we live by*. Chicago & London: The University of Chicago Press.
- Liddell, S. K. 2003. *Grammar, gesture, and meaning in American Sign Language*. Cambridge: Cambridge University Press.
- Malmquist, A. K. & N. E. Mosand. 1996. *Se mitt språk! Språkbok – en innføring i norsk tegnspråk* [See my language! Textbook – An introduction to Norwegian Sign Language]. Oslo: Døves Forlag AS.
- Marschark, M., P. Sapere, C. Convertino & R. Seewagen. 2005. Access to postsecondary education through sign language interpreting. *Journal of Deaf Studies and Deaf Education* 10(1). 38–50.
- Marschark, M., P. Sapere, C. Convertino, R. Seewagen & H. Maltzen. 2004. Comprehension of sign language interpreting: Deciphering a complex task situation. *Sign Language Studies* 4(4). 345–368. DOI: 10.1353/sls.2004.0018
- Marschark, M., P. Sapere, C. Convertino & J. Pelz. 2008. Learning via direct and mediated instruction by deaf students. *Journal of Deaf Studies and Deaf Education* 13(4). 546–561.
- Metzger, M. 1995. Constructed dialogue and constructed action in American Sign Language. In C. Lucas (ed.), *Sociolinguistics in deaf communities*, 1. Washington, DC: Gallaudet University Press.
- Mittelberg, Irene. 2013. The embodied mind: Cognitive-semiotic principles as motivating forces in gesture. In C. Müller, A. Cienki, E. Fricke, S. H. Ladewig, D. McNeill & S. Teßendorf (eds.), *Body – language – communication. An international handbook on multimodality in human interaction*, 1, 755–784. Berlin: De Gruyter.
- Mondada, L. 2011. Understanding as an embodied, situated and sequential achievement in interaction. *Journal of Pragmatics* 43(2). 542–552. DOI: 10.1016/j.pragma.2010.08.019
- Moore, K. E. 2006. Space-to-time mappings and temporal concepts. *Cognitive Linguistics* 17(2). 199–244. DOI: 10.1515/COG.2006.005
- Nicodemus, B. 2009. *Prosodic markers and utterance boundaries in American Sign Language Interpretation*, 5. Washington, DC: Gallaudet University Press.
- Nilsson, A.-L. 2008. Spatial strategies in descriptive discourse: Use of signing space in Swedish Sign Language. In L. Leeson (ed.), *CDS/SLSCS Monographs*. Dublin: Centre for Deaf Studies, University of Dublin, Trinity College, Dublin.
- Nilsson, A. L. 2013. *Use of signing space in simultaneous sign language interpretation: marking discourse study with the body*. Poster presented at the Theoretical Issues in Sign Language Research – TISLR 11, London, England. [http://www.diva-portal.org/smash/record.jsf?dswid=222&pid=diva2%3A789821&c=1&searchType=SIMPLE&language=en&query=Anna-Lena+Nilsson+2013&af=\[\]&aq=\[\]&aq2=\[\]&aq3=\[\]&aq4=\[\]&aq5=\[\]&noOfRows=50&sortOrder=author_sort_asc&onlyFullText=true&sf=research](http://www.diva-portal.org/smash/record.jsf?dswid=222&pid=diva2%3A789821&c=1&searchType=SIMPLE&language=en&query=Anna-Lena+Nilsson+2013&af=[]&aq=[]&aq2=[]&aq3=[]&aq4=[]&aq5=[]&noOfRows=50&sortOrder=author_sort_asc&onlyFullText=true&sf=research).
- Núñez, Rafael E. & Eve Sweetser. 2006. With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science* 30(3). 401–450.
- Oléron, P. & H. Nanpon. 1965 [2002]. Research into simultaneous translation. In F. Pöschhacker & M. Shlesinger (eds.), *The interpreting studies reader*, 43–50. London & New York: Routledge.
- Padden, C. A. 2000. Simultaneous interpreting across modalities. *Interpreting* 5(2). 169–185.
- Parrill, Fey. 2009. Dual viewpoint gestures. *Gesture* 9(3). 271–289.
- Pöschhacker, F. & M. Shlesinger (eds.). 2002. *The interpreting studies reader*. London & New York: Routledge.

- Radden, G. 2003. The metaphor TIME AS SPACE across languages. *Zeitschrift für Interkulturellen Fremdsprachenunterricht* 8(2/3). 226–239. <https://zif.spz.tu-darmstadt.de/jg-08-2-3/beitrag/TOC.htm> (accessed 24 September 2015).
- Rohrer, T. 2007. Embodiment and experientialism. In D. Geeraerts & H. Cuyckens (eds.), *The Oxford handbook of cognitive linguistics*, 25–47. Oxford: Oxford University Press.
- Russell, D. 2005. Consecutive and simultaneous interpreting. In T. Janzen (ed.), *Topics in signed language interpreting: Theory and practice*, 135–164. Amsterdam & Philadelphia: John Benjamins.
- Selvik, K.-A. 2006. *Spatial paths representing time. A cognitive analysis of temporal expressions in Norwegian Sign Language. Acta Humaniora*, 247. Oslo: University of Oslo dissertation.
- Stukenbrock, A. 2014. Pointing to an ‘empty’ space: *Deixis am phantasma* in face-to-face interaction. *Journal of Pragmatics* 74. 70–93. DOI: 10.1016/j.pragma.2014.08.001
- Taub, S. F. 2001. *Language from the body. Iconicity and metaphor in American Sign Language*. Cambridge: Cambridge University Press.
- Wilbur, R. B. & C. G. Patschke. 1998. Body leans and the marking of contrast in American Sign Language. *Journal of Pragmatics* 30(6). 275–303.
- Wilcox, P. P. 2000. *Metaphor in American Sign Language*. Washington, DC: Gallaudet University Press.
- Wilcox, Sherman. 2002. The iconic mapping of space and time in signed languages. In L. Albertazzi (ed.), *Unfolding perceptual continua*, 255–281. Amsterdam & Philadelphia: John Benjamins.
- Winston, E. A. 1991. Spatial referencing and cohesion in an American Sign Language text. *Sign Language Studies* 73(1). 397–410. DOI: 10.1353/sls.1991.0003
- Winston, E. A. 1995. Spatial mapping in comparative discourse frames. In K. Emmorey & J. S. Reilly (eds.), *Language, gesture, and space*, 87–112. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Winston, E. A. & C. Monikowski. 2003. Marking topic boundaries in signed interpretation. In M. Metzger, S. Collins, V. Dively & R. Shaw (eds.), *From topic boundaries to omission. New research on interpretation*, 1, 187–226. Washington, DC: Gallaudet University Press.