REPRESENTATIONS OF ACTION, MOTION, AND LOCATION IN SIGN SPACE: A COMPARISON OF GERMAN (DGS) AND TURKISH (TİD) SIGN LANGUAGE NARRATIVES

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Abstract

This paper investigates the expression of referent location, motion, and action in signed event narratives in two unrelated, yet historically comparable sign languages, German Sign Language (DGS) and Turkish Sign Language (TİD). In particular, it focuses on how classifier and lexical predicates are used to map event space onto sign space from the perspective of either an external observer or a character within the event. Based on a qualitative data analysis, eight different construction types are identified as possible combinations of these elements. Furthermore, the paper presents a quantitative account of the proportions of use of these different construction types between the two sign languages. The results partially support previous claims that the iconic properties of the visual-spatial modality drive the use of similar structures between sign languages for expressions in the spatial domain. However, notable differences between the two sign languages were also found, pointing to different linguistic and discourse constraints in the use of such spatial expressions.

1 Introduction

In describing complex events, speakers convey information about referents' locations and actions within a spatial setting. Such information is integral to constructing a representation of the event space in which an event takes place. In spoken languages, devices such as spatial verbs, locatives, and prepositions, as well as gestures that accompany speech help speakers to situate referents and describe relations among them (e.g., McNeill 1992, Berman & Slobin 1994, Gernsbacher 1997).

Sign languages, produced in the visual-spatial modality, rely mainly on spatial and body-anchored devices (that is, the body, head, facial expression, eye gaze, and the physical space around the body) to depict spatial locations and actions of characters. Of particular importance in this respect are the use of *different signing perspectives* and so-called *classifier predicates.*[1] Signing perspective refers to the vantage point from which

1 The use of the term "classifier" to characterize the linguistic function of these predicates is a contentious issue in sign language research. Other names given to these forms include *polymorphemic verbs* (Engberg-Pedersen 1993), *polycomponential signs,* or *property markers* (specifically for the handshape) (Slobin et al. 2003). Nevertheless, the term *classifier* has been widely adopted and we use it throughout this paper. See Schembri (2003) and Emmorey (2002) for discussions of the terminological issues.

an event is mapped or projected onto sign space. In particular, this mapping can be from an *observer's* perspective (giving a global view of the event space from an external vantage point) or from a *character's* perspective (representing event space from the point of view of a character within the event) (cf. Slobin et al. 2003). Classifier predicates, on the other hand, express information about the motion, action, and location of referents. In these polycomponential predicates, the handshape typically expresses information about the size and shape of the referent, and the position and movement of the hand in sign space encode information about the location and motion of the referent in the event space (Schick 1990, Engberg-Pedersen 1993, Emmorey 2002, Schembri 2003). The handshape in classifier predicates can convey size and shape properties of referents by mapping the referents fully onto the hand, as in *entity* classifiers, or by depicting the referent in the manner in which it is handled or manipulated, as in *handling* classifiers.[2] For example, a B-hand (flat hand, palm down) can be used as an entity classifier to represent a car (in German Sign Language) or a table (an object with a broad, horizontal surface), while an F-hand (contact between index finger and thumb) can be used as a handling classifier to represent holding a single flower or picking up a pencil. The focus in this paper is on these two types of classifier predicates and how they are used with different perspectives to represent event space in signed narratives within and across different sign languages.

Until recently, the use of classifier predicates for depicting locations and actions of referents has been assumed to be similar across sign languages (Meier 2002, Talmy 2003, Aronoff et al. 2005) or has not been investigated for systematic differences across unrelated, or less documented sign languages (for an exception, see Nyst 2004, who shows that certain types of classifier predicates found in Western sign languages – notably, entity classifiers – do not exist in Adamorobe Sign Language, a village sign language used in Ghana). Furthermore, the assumption of modality effects has created a bias toward expecting similarities rather than differences in the use of these devices across sign languages (see also Supalla & Webb 1995, Newport & Supalla 2000). These claims have been attributed to the homogenizing effect of the iconic (i.e., visually motivated) properties of sign languages in contrast to spoken languages (Aronoff et al. 2005). However, there has not been much research on less well-known and unrelated sign languages or in discourse situations to test these claims.

In this paper, we investigate similarities and differences in the use of classifier predicates and perspectives in sign language narratives in two historically unrelated and differentially documented sign languages (namely German (DGS) and Turkish (TİD) Sign Language),[3] and provide a qualitative and quantitative analysis of the different constructions used. We discuss the implications of these findings in terms of whether and to what extent

2 In classifications proposed by other researchers, what we call *entity* and *handling* classifiers are subsumed under categories including *static size and shape specifiers (SASS), semantic* classifiers, and *instrument* classifiers (Supalla 1986, Brennan 1992). Other types of classifier handshapes convey properties of referent size and shape by tracing their outline or indicating their dimensional extensions (cf. the names *tracing* classifiers (Supalla 1986, Brennan 1992) and *extension* classifiers (Engberg-Pedersen 1993)). In addition, the handshape in *limb* classifiers represent the front or back limbs of animals or the legs of humans (Engberg-Pedersen 1993).

3 The acronyms TİD and DGS use the letters of the Turkish and German names for the sign languages, respectively. TİD stands for *Türk Işaret Dili;* DGS stands for *Deutsche Gebärdensprache.* See section 3 for general information about these sign languages.

the iconic properties of the visual-spatial modality homogenize expressions related to spatial representation in different sign languages.

2 Projection of event space onto sign space in sign languages: Different perspectives

The iconic properties of the visual-spatial modality make it possible to map referent location and motion from the real event space onto sign space. This mapping can take place in two main ways, which can be characterized in terms of the vantage point from which the signer maps entities in the event space onto the body and the space around the body. On the one hand, signers can take the perspective of an *observer* who is external to the event. On the other hand, signers can take on the role of a *character* in the event and sign from a perspective within the event space.

These signing perspectives have been described along similar lines by a number of other researchers. Character and observer perspective correspond, respectively, to Liddell's (2003) distinction between "surrogate" and "depictive" space[4], Morgan's (1999) use of the terms "shifted referential framework" and "fixed referential framework", and to what Schick (1990) calls "real-world space" and "model space". Emmorey & Falgier (1999) introduce the terms "diagrammatic space" and "viewer space" to describe the two spatial formats that signers use to structure space in describing environments like a convention center or a town. Furthermore, McNeill (1992) uses the terms "character viewpoint" and "observer viewpoint" for a similar distinction in the use of space for referent representation in gestures accompanying spoken narratives.

In this paper, we emphasize the notion of *event space projection* in our definition of signing perspective. That is, we are particularly interested in how referents are projected on the hands and body and in sign space. We distinguish the different perspectives or projections primarily in terms of (1) the vantage point from which the event is projected onto the sign space, (2) the signer's role in the projected event space, and (3) the size of the projected event space.

In what we call **character perspective**, the event space is projected onto sign space from a character's vantage point within the event. The signer assumes the role of a character in the event, such that at least the character's head and torso are mapped onto the signer's body, and the size of the projected space is life-sized. When **observer perspective** is employed, the event space is projected onto sign space from an external vantage point. The signer is not part of the represented event, and the event space is reduced in size, projected onto the area of space in front of the signer's body.

2.1 Classifier predicates in different perspectives

The use of character or observer perspective typically involves the use of classifier predicates.[5] Two types of classifiers, distinguished on the basis of how referents are depicted,

4 Depictive space was called Token Space in some of Liddell's earlier publications (Liddell 1994, 1995).

5 Lexical predicates may also be used with perspective (see section 2.2).

are particularly relevant to the present study: (1) in *entity* classifiers, the hand represents a referent as a whole, and the handshape encodes certain salient features of the entity's size or shape; (2) in *handling* classifiers, the hand represents the handling or manipulation of a referent by an animate agent (e.g., Engberg-Pedersen 1993, Emmorey 2003, among others).

The use of entity and handling classifiers in discourse can be linked to the type of information that can be felicitously represented by the different forms. In particular, while entity classifiers are better suited for the representation of an entity's location and motion, handling classifiers can aptly depict the manner of manual activity (Supalla 1986, Engberg-Pedersen 1993). For example, the use of an inverted V-handshape can very appropriately represent the path (e.g., straight) and manner (e.g., walking) of motion, as well as source and goal location information (e.g., from right to left in sign space) of a human figure. The semantic features of the inverted V-handshape correspond to parts of the human figure – the two fingers represent a person's legs and the back of the fingers corresponds to the front of the body. Forward, backward, or even sideward motion can be represented through the direction of movement of the classifier and manner of motion can be represented through the particular movement of the fingers (e.g., wiggling fingers for walking).

The intrinsic features of the 2-legged entity classifier do not, however, include parts that correspond to the human figure's arms or head, and are thus not suited for the expression of anything involving manual activity. Depictions of holding a pan while cooking or holding a ball to play with require the use of handshapes that imitate the actual activities. Thus, expressions of this type of information appropriately involve the use of handling classifiers, which – as the name suggests – represent an animate agent handling an entity.

These two types of classifier predicates can combine in various ways with the different event space projections (i.e., perspectives), as will be discussed below.

2.1.1 Alignment of classifier predicates with signing perspectives

Based on the above correspondences between the type of classifier predicate and the type of information to be depicted, we propose a further correspondence between the two different types of classifier predicates and signing perspectives. In observer perspective, where the signer is external to the event and the event space is projected onto the area of space in front of the signer, referent motion and location within the event space is most felicitously depicted through the use of *entity* classifiers. On the other hand, in character perspective, the signer is part of the event in the role of an event protagonist. Thus, this perspective is expected to co-occur with the use of handling classifiers to depict the manipulation of entities by the character (see, e.g., Liddell & Metzger 1998 for similar correspondences).[6]

Table 1 below summarizes what we take to be the characteristics of the two main signing perspectives in terms of event space projection. In addition, it indicates the alignments between classifier types and perspectives stated above.

6 See also Metzger (1995) for the notion of *constructed action*, where the signer's movements and affective displays can be directly attributed to the character mapped onto the body.

	Character perspective	Observer perspective
Projection of Event Space	•Event-internal vantage point •Encompasses signer •Life-sized	•Event-external vantage point •In front of signer •Reduced size
Classifiers	•Handling	•Entity

Table 1: Characteristics of character and observer perspectives in terms of event space projection and the classifier types aligned with each perspective.

2.1.2 Non-alignment of classifier predicates with signing perspectives

The combinations of perspective and classifier predicates found in extended discourse appear to be much more varied than the (prototypical) alignments that were motivated in the previous section. We call these other types of constructions "non-aligned." For example, entity classifiers can appear not only in observer perspective event space projections, but also in character perspective representations. In event descriptions where two referents need to be depicted simultaneously (e.g., to depict one person approaching another), one referent can be mapped onto the signer's body and the other mapped onto the hand as an entity classifier (i.e., upright index finger) moving towards the body to mean "the person approached me" (see a similar example in Liddell 2003: 209).

Conversely, though it has not been documented in the literature, handling classifiers may appear not only in character perspective representations, but also in representations in which the event space is projected from an observer's perspective (see example 2 below from TİD). These possible uses of perspective with "non-aligned" classifiers are represented in Table 2 below.

	Character perspective	Observer perspective
Projection of Event Space	•Event-internal vantage point •Encompasses signer •Life-sized	•Event-external vantage point •In front of signer •Reduced size
Classifiers	•Entity	•Handling

Table 2: Characteristics of character and observer perspectives in terms of event space projection and the classifier types non-aligned with each perspective.

2.2 Lexical predicates with and without perspective

In addition to classifier predicates, signers can also use lexical predicates to describe the actions of protagonists in events. Instead of reflecting the handling of an entity or the entity itself, the handshape in lexical predicates corresponds to the citation form. Lexical predicates can be used with or without a projection of the event onto sign space. When signers use lexical predicates (e.g., PLAY) without an event space projection, referents' actions are semantically identified, but spatial information about the referents is absent.

However, lexical predicates may be directed or located in space in a way that corresponds to a particular vantage point. The movement of the hands in space encodes information about the event space. For example, the direction of the predicate could be from the internal vantage point of a character in the event and move forward away from the body. In these constructions, referents are not mapped onto the signer's articulators as in classifier predicates, but there is information about their location and/or motion in the event space.

Not much is known about how frequently and under what conditions these different types of constructions occur in narratives nor about whether there is cross-linguistic variation between sign languages in the distribution of occurrence of different types.

3 Present Study

In the present study, we investigate how different perspectives and classifier and lexical predicate combinations occur in narratives that depict actions, motion, and locations of referents. We compare these uses both qualitatively and quantitatively across two unrelated sign languages, namely in Turkish (TİD) and German Sign Language (DGS), to see whether and how the iconic properties of the visual-spatial modality have an effect on the use of such constructions. If the use of space in these spatial expressions is driven primarily by iconic properties of the visual-spatial modality, we do not expect to see differences between the two unrelated sign languages since they use the same modality for expression. However, if there are further constraints on the use of such expressions other than iconicity (e.g., linguistic or discourse constraints), then we do expect variation between the two languages.

3.1 History and previous work on TİD and DGS

In comparing two sign languages, it is important to take into account the historical and sociolinguistic properties of the two languages. If there are differences across sign languages in terms of age and sociolinguistic context, for example, then it may be these factors that are responsible for differences/similarities in the use of perspective and classifier predicates (see Aronoff et al. 2003, Aronoff et al. 2005 for the possible influence of the youth of sign languages to account for their differences or similarities). Furthermore, it is also important to establish that there has not been any historical link between the languages. The two sign languages we compare in this study, namely TİD and DGS, are similar in terms of historical development and the use of sign language in education. Yet, there has not been any historical contact attested between the two languages (Zeshan 2002).

In Turkey, the establishment of the first Deaf school is dated to 1902 (Deringil 2002).[7] Since 1953 to present, the teaching of TİD has not been allowed in schools; instead oral teaching methods have been preferred. The Turkish Federation of the Deaf was founded

7 The use of a sign language within a Deaf community that existed in the Ottoman Palace for official reasons between 1500-1700 has been documented (Miles 2000), but it is difficult to obtain evidence that the TİD used today is a continuation of the sign language used in the Palace.

in 1964 and since then helps promote communication among the Deaf population throughout the country in the Deaf clubs.

In Germany, the first schools for the Deaf were established in the late 18th century and used a manual, sign-based method of teaching until the middle of the 19th century. In the second half of the 19th century, the teachers of the Deaf began to support the idea of a strict oral method. Since 1911, schooling for the Deaf has been compulsory and a predominantly oral approach has remained the foundation of Deaf education in Germany.

In both countries, Deaf people learn sign language either from their peers in the Deaf schools or through exposure to the community in the Federation clubs without formal instruction in the schools. Thus, due to the historical and sociolinguistic similarities between TİD and DGS, possible differences in structure are less likely to be attributable to differences in the age of the sign languages and more likely to reflect variation due to linguistic, discourse, or constraints other than purely iconic ones.

4 Method

Event narratives were collected from four Turkish and ten German Sign Language users. In each group, signers were either native or early signers (who learned sign language not later than 6 years of age). Signers were asked to view two short silent cartoons that contained activities of a personified mouse and elephant (see Appendix 2 for selected stills). Due to field research circumstances, for TİD, each of the four signers narrated both cartoons, while for DGS, five signers narrated one of the cartoons and five (different) signers narrated the other one. TİD narratives were collected in Istanbul, Turkey, and DGS narratives in Aachen and Cologne, Germany. Movies were described to other native/early signers who had not seen the movies.

5 Coding

Narratives were transcribed into DGS or TİD glosses with the help of CODAs[8] and native/early signers. Since the aim of this study is the investigation of whether two different sign languages use sign space differently in narratives to depict the locations, motion, and actions of characters, only spatial and activity predicates were considered for the analysis. All predicates that indicated location, orientation, motion, or manual activity of referents in space were subsumed under spatial and activity predicates.

Each spatial and activity predicate was further classified into classifier versus lexical predicates. For example, to express that the mouse and elephant are engaged in a game of throwing the ball back and forth to each other (as in still 2 in Appendix 2), a signer may use handling classifiers to depict the actual throwing of the ball or may simply use a lexical predicate like PLAY. Within each predicate type, the type of event space projection was also distinguished – whether it was from character or observer perspective. Finally, the classifier predicates were categorized as aligned or non-aligned with the two kinds of

8 CODA is the acronym used for Child of Deaf Adults, i.e., native hearing signers.

event space projections. These different representation types are described and illustrated with examples in section 6 below.

In our coding, in deciding whether an event space projection was from character or from observer perspective, the direction or placement of the predicate in space played a large role. This is motivated by the nature of the events depicted in the stimulus films used (see the stills from the stimuli in Appendix 2). In the stimulus films, referents are predominantly located on the left and right sides of the screen, and movement or actions between them, as seen by the viewer, appear laterally directed. Thus, a lateral representation in sign space of referent location, motion, and action reflects the image of the event space as it is viewed on the screen. For this reason, we take the laterality of the predicate's direction as a cue that the event space is projected from the vantage point of an external observer. On the other hand, in the stimulus films, motion and action is directed either toward or away from the protagonists' bodies. Thus, location, motion, and action as represented from a character's perspective is mapped onto sign space along the sagittal axis – moving away from or toward the signer's body or referents associated with locations opposite the signer's body. (See examples 1 – 4 below.)

Thus, we add another element, namely the direction of movement of predicates, to the characteristics that determine the event space representation from either a character's or an observer's perspective in our coding (as shown in table 3).[9]

	Character perspective	**Observer perspective**
Projection of Event Space	•Event-internal vantage point •Encompasses signer •Life-sized	•Event-external vantage point •In front of signer •Reduced size
Direction or placement of the predicate	•Sagittal axis	•Lateral axis

Table 3: Characteristics of character and observer perspective in terms of event space projection and their alignment with the direction or placement of the predicate in our coding.

6 Analysis and results

6.1 Qualitative results: Different construction types of spatial and activity predicates

This section describes and illustrates with examples the different construction types that we identified based on our definitions of observer and character perspective event space projections and on how they combine with different types of predicates (see Figure 1). First, we divided the spatial and activity predicates into two main categories: classifier predicates and lexical predicates. Within the classifier predicates category, we categorized them as aligned or non-aligned with respect to their use in observer and character perspectives. We also identified uses of a novel construction type that combines both character

9 We do not claim that the axis of representation will determine the choice of perspective in all signed narratives. We use it as a cue for the analysis of these narratives based on these particular stimuli.

and observer perspective event space projections, which we call *fused* perspective. Further, we split the lexical predicates category into occurrences with or without an event space projection.

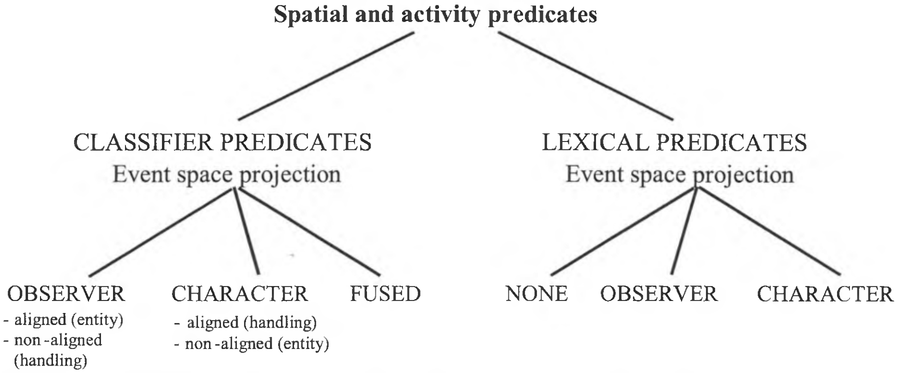


Figure 1: Different construction types of spatial and activity predicates observed in our data.

6.1.1 Classifier predicates in different perspectives

Observer perspective with entity classifier (aligned): In event representations in observer perspective, the event space is reduced in scale and represented in the area of space in front of the signer's body. The signer's head and body are not part of the event, and the hands represent whole referents in the form of entity classifier predicates. Viewed from an external vantage point, the main protagonists in the stimulus events (see the still images from the films in Appendix 2) are located on the right and left sides of the screen and activity and motion between the them is depicted along the lateral axis. In example (1), the mouse and the elephant are represented on the signer's hands by means of entity classifiers. The signer's head and torso are not part of the event. The classifiers are located on the left and right sides of sign space (i.e., laterally) to depict the relative locations of the mouse and the elephant, standing across from each other and facing each other.

(1)
(DGS)

GLOSS: mouse(RH: locR,entityCL)-eleph(LH: locL, entityCL)-face-each-other[10]

Observer perspective with handling classifier (non-aligned): In these predicates, the signer's head and torso are not part of the event, that is, the signer is external to the event and the event space is projected from an observer's vantage point onto the space in front of the body. The placement of the hands in space corresponds to referent locations from observer perspective. However, the handshape represents the manipulation of objects (and not the referent as a whole). In example (2), the signer uses handling classifiers (i.e., for holding the pans) located on the left and right side of sign space to depict the scene where the mouse and elephant are flipping the pancake back and forth between each other (Appendix 2, still 1).

(2)
(TİD)

GLOSS: mouse(RH: locR)-elephant(LH: locL)-BH: hold-pan(handlingCL)

10 The following abbreviations are used in the examples: RH: right hand; LH: left hand; BH: both hands; CL: classifier; LocL: entity located on the left of observer perspective sign space; LocR: entity located on the right of observer perspective sign space.

Character perspective with handling classifier (aligned): In aligned character perspective signing, an event protagonist is mapped onto the head, torso, and hands of the signer, and the signer's movements can be attributed to the character whose role is assumed. The event space is life-sized and encompasses the signer as a character within the event. Spatial and activity predicates move or are located along the sagittal axis, as corresponds to an event space projection from a character's vantage point within the event. In example (3), the signer depicts the mouse flipping the pancake into the air (see Appendix 2, still 1). The signer is in the role of the main animate protagonist (the mouse) and the signer's hand is in the form of a handling classifier, holding the pan. The signer moves her arm in a way that corresponds to the action in the event as the mouse performs it. The pan is held in front of the signer's body and the direction of the flipping movement (upward and oriented forward) directs the pancake along the sagittal axis.

(3)
(TİD)

GLOSS: mouse(signer)-hold/flip-pan(LH: handlingCL)

Character perspective with entity classifier (non-aligned): In this non-aligned type, the event space is life-sized and projected from the vantage point of an event protagonist. The location, orientation, or motion of referents is depicted in a character perspective event space. However, the character is not fully, but only partially mapped onto the signer. In this case, one of the signer's hands will represent not the hand of the character, but will represent another referent through the use of an entity classifier. (It is also possible that both hands represent other referents with entity classifiers, while the character remains mapped onto the signer's head and torso.) In example (4), the signer is depicting the mouse flipping the pancake, which then lands on the floor in front it (see Appendix 2, still 3). The image in (4a) shows an aligned character perspective representation with a handling classifier for holding the pan. In (4b), however, a non-aligned entity classifier (on the left hand) is used to represent the pancake at a location across from the signer's body (along the sagittal axis). The pancake's location is determined by an event space projection from the character's vantage point (i.e., as seen from the point of view of the mouse).

(4)
(DGS)

a) GLOSS: mouse(signer)-hold-pan(RH: handlingCL)

b) GLOSS: pancake(LH: entityCL)-fall-on-floor-in-front-of-mouse(signer)

Observer perspective fused with character perspective: Furthermore, in our data, we found a construction type that was characterized by what we call a *fused* representation that includes elements of both character and observer perspectives. This category of representations was found only in the Turkish Sign Language narratives. It did not occur in the German Sign Language narratives, and, moreover, has not (to our knowledge) been previously described for any other sign language. In the fusion, the character's head and torso are mapped onto the signer, yet the event space projection is reduced to the space in front of the signer's body and is from the vantage point of an external observer (corresponding to the view of the stimulus events). The signer exhibits movements of the head and torso that are attributable to the character, but the motion and location of predicates in sign space is represented as viewed from an observer perspective.

In example 5, the TİD signer is depicting the exact same event as the DGS signer in example (4) above (see Appendix 2, still 3), but uses a *fused* construction type. Like the German signer in example (4a), the Turkish signer in (5a) represents the mouse's activity (holding a pan) with a handling classifier held in front of her body, projecting the direction of motion of the pancake along the sagittal axis. The subsequent construction in (5b), however, shows that the pancake's motion is not depicted along the sagittal axis (as expected for a character perspective event space projection), but rather along the lateral axis. The signer's right hand moves upward and then arcs downward to the left (thus, moving laterally), such that the pancake's motion and goal location is depicted in a way that corresponds to the direction of pancake's motion as observed on the screen from the vantage point of an observer. The signer's head and torso, however, remain the mouse's. This is evidenced by the fact that the signer's movements (gaze, head, and shoulders) match the mouse's action of looking at the pancake's location (on the floor) in the stimulus event. Thus, the same articulators (i.e., head and torso) simultaneously exhibit elements of both observer and character perspectives

(5)
(TİD)

a) GLOSS: mouse(signer)-hold-pan (biman: handlingCL)

b) GLOSS: pancake(LH: entityCL)- RH: fall-on-floor-in-front-of-observer/mouse(signer)

Example (6) below shows a similar use of the *fused* perspective construction by a different Turkish signer.

(6)
(TİD)

a) GLOSS: elephant(LH: entityCL)-walk-from-left

b) GLOSS: mouse(signer)-RH: LOOK-AT elephant(LH: locL,entityCL)

In example (6), the signer is depicting the scene where the elephant enters the kitchen (Appendix 2, still 4). In (6a), the signer uses an aligned observer perspective representation in an event space projected in front of the body to depict the elephant entering the scene (as determined by the viewer's external vantage point). The elephant, depicted by a 2-legged entity classifier, enters from the left and traverses the sign space laterally (moving right). In (6b), however, observer and character perspectives are fused. The signer maps the head and torso of the mouse onto her body and uses a LOOK-AT predicate to depict the mouse seeing the elephant entering. However, the predicate and the signer's head and torso are not directed forward as would correspond to the elephant's location in an event space projected from the vantage point of the mouse. Instead, they are directed to the left, that is, to the elephant's location viewed from an observer perspective. Here again, the same articulators (i.e., the torso and head) simultaneously embody elements of both character and observer perspectives.

6.1.2 Lexical predicates in different perspectives

Lexical predicate only (no event space projection): Some signers described aspects of the stimulus films using lexical predicates executed in citation form in neutral space, without the use of any signing perspective. In these cases, the event representation was non-spatial because predicates were not associated with meaningful locations within an event space. In example (7), the signer uses a lexical predicate (PLAY) to refer to the mouse and the elephant playing ball (see Appendix 2, still 2). There is no topographic mapping of locations and actions onto sign space.

(7)
(TİD)

GLOSS: PLAY

Character perspective with lexical predicate: In this construction type, signers identify the actions of characters through the use of directional lexical predicates that are executed in a character perspective event space projection. The handshape encodes the meaning of the predicate, but does not reflect the handling or size and shape of an entity. In example (8), the signer's handshape is that of the lexical predicate (GIVE), and the hand moves along the sagittal axis to convey the transfer of the ball between the mouse and the elephant (see Appendix 2, still 2). In the stimulus, the mouse and the elephant are located across from each other, and thus the use of the sagittal axis indicates that the event space is projected from the vantage point of the mouse.[11] (Note that the ball was identified with a lexical noun prior to the use of this predicate in the narrative.)

11 The vantage point could also be the elephant's, of course, but in this particular narrative, the mouse stays mapped to the location of the signer's body throughout.

(8)
(DGS)

GLOSS: mouse(signer)-RH: GIVE-TO-elephant(opp. signer)

Observer perspective with lexical predicate: There was no example of this type of representation in the data set used in this study. A possible use, however, might be akin to the example in (8). Namely, the same lexical handshape for GIVE could have been used with movement along the lateral axis, representing the transfer of an object between two referent locations on the left and right of the lateral axis – and thus in an event space projection from the vantage point of an observer.

Finally, the DGS data sample used for this study included only one instance of a construction which was characterized by the simultaneous occurrence of both types of predicates (classifier and lexical), on separate articulators, and both types of perspectives (observer and character) for event space projection (see Perniss (2007) for a detailed exposition of this example). Since we encountered this type of construction only once in our sample, we excluded it from the quantitative analysis of the constructions presented in the next section.

6.2 Quantitative Results

In total, DGS signers used 408 and TİD signers used 204 spatial and activity predicates when uses in both film narrations were considered. The means per signer were (40.8) for DGS and (25.5) for TİD, showing that DGS signers used these types of predicates more often than TİD signers in their narrations.[12]

In the first analysis, we investigated whether signers of the two languages differed quantitatively in terms of the use of different spatial and activity predicate types (classifier and lexical) with different event projections (character, observer, fusion, or none) (see Figure 2 below).

12 This difference was due to the fact that TİD signers used more mental/emotional predicates than DGS signers.

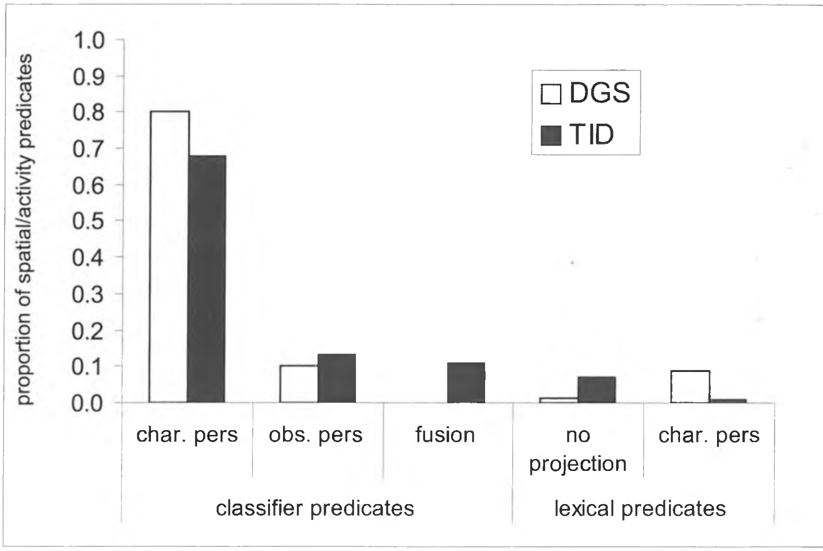


Figure 2: The use of different predicate types (classifier, lexical) with different event space projections (character, observer, fusion, none) in the two sign languages.

This figure shows that there are a number of similarities between the two languages. First of all, signers of both languages preferred classifier predicates (DGS= .90; TİD = .92) over lexical predicates (DGS = .10; TİD = .08). Secondly, character perspective (DGS = .89; TİD = .80 (including fusion)) is used more often than observer perspective (DGS =.10; TİD =. 24 (including fusion)) by signers of both sign languages when both types of predicates are considered. Finally, the use of a lexical predicate in an observer perspective event space projection was not attested in either of the languages and is not represented in Figure 2.

However, Figure 2 also shows differences between the two languages. For example, the proportion of use of observer perspective (including fusion) is higher for TİD users (.24) than for DGS users (.10), when uses in both predicate types are collapsed. Furthermore, while TİD signers used the fusion type of event projection (.11), it was not attested in the DGS data sample.[13] Finally, TİD signers used lexical predicates without an event space projection (.07) , while this type of use was hardly exhibited by DGS signers. On the other hand, DGS signers used lexical predicates within character perspective (.09), which in turn was almost never used by a TİD signer.[14]

In the second analysis, we focused on the use of only classifier predicates and investigated whether the two languages differed in terms of the use of each perspective type with aligned versus non-aligned classifier predicates (see Figure 3 below).

13 Note that the fusion type or no projection were used at least once by each TİD signer. That is, it is not the case that only one or two signers contribute to these proportions.

14 All but one DGS signer used lexical predicates with character perspective at least once in their narrations.

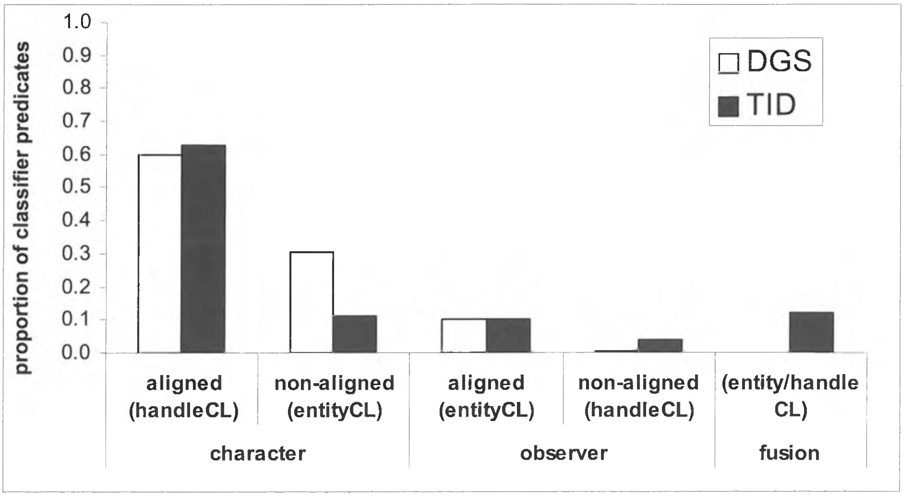


Figure 3: The distribution of combinations of different event space projections (character, observer, fusion) with different types of classifier predicate constructions (aligned, non-aligned) in the two sign languages.

This figure shows that signers of both languages prefer the aligned constructions over the non-aligned ones when both types of perspectives are considered (DGS aligned = .70 vs. non-aligned = .30; TİD aligned = .73 vs. non-aligned = .15 (excluding fusion)). Furthermore, it shows that the proportions of uses between the two languages look similar when either character (DGS = .60; TİD = .63) or observer perspective (DGS = .10; TİD = .10) is used with the most expected – or aligned – classifier predicates.

However, it is in the non-aligned representations that the two languages differ most from each other. DGS signers use more character perspective with entity classifiers (.30) than TİD signers (.13).[15] On the other hand, TİD signers use observer perspective constructions with handling classifiers (.04), while this use was not attested in the DGS data (.00).[16]

7 Conclusion and Discussion

In this paper, we compared how fluent signers of two unrelated, yet historically comparable sign languages – TİD and DGS – use sign space and different articulators to depict the location, motion, and action of referents involved in complex spatial events. We found both similarities and differences between the two languages in the types of constructions used (qualitative analysis) as well as in the frequency of use of these different types (quantitative analysis). Similarities in the use of space in these domains have been claimed by other researchers to be driven by modality effects (e.g., Newport & Supalla 2000, Meier

15 In each language, each signer used this type of representation at least once.
16 Each TİD signer used this type of predicate at least once.

2002, Aronoff et al. 2005). However, the present analysis shows that notable differences also exist, expanding our knowledge of the different ways the visual-spatial modality can be used for expression in these domains.

In a qualitative analysis, we proposed a total of eight categories of construction types distinguished on the basis of differential combinations of event space projection (observer, character, fused, or none) and predicate type (classifier or lexical) (see a – h in Figure 4 in Appendix 1). Of these eight types, seven were attested in our sample. Classifier predicates (handling or entity) were aligned or non-aligned with observer or character perspective (a, b, c, d). Moreover, we identified a representation type that has not previously been described which fuses observer and character perspectives (e) (discussed in more detail below). Lexical predicates were also used to express spatial and activity information and occurred either without (f) or with a character perspective event space projection (h). The existence of these different types of constructions in our two-language sample suggests that types of classifier predicates and types of perspective, as analyzed in terms of the different properties listed in Tables 1-3, are independent factors that can appear in various combinations in event narratives. That is, the existence or use of one property does not necessarily entail the use of another, associated element. This argues against a purely iconic, or visually motivated, account of depictions of event space. The expectation for a purely iconic account would be that these properties of referent location, motion, and action representation are always aligned, since the aligned construction types correspond directly to how the event appears in real space from a particular vantage point. The fused construction type, for example, represents a character's action much less iconically than a representation in character perspective with an aligned classifier predicate.

In a second step, we were interested to see whether the data from the two sign languages revealed quantitative similarities and differences in the use of the seven attested types of representation of motion, location, and action.[17] The results show that both groups of signers preferred to use classifier predicates to depict referents, rather than to convey the event semantics with lexical predicates. This could be expected from an iconic account since classifier predicates use more visually motivated representations than lexical predicates. In addition, character perspective representations were strongly favored in both languages. (Overall, they were used five times more often than projections from observer perspective.) Finally, both groups used the aligned types more often than non-aligned types. These preferences may be linked to the semantic content of the stimulus events, since they primarily involved manual activity of animate referents. This supports our notion that manual activity is more felicitously depicted within character perspective and with aligned (i.e., handling classifier) representations. These results suggest that the semantics of the stimulus events and principles of iconicity are factors that drive the use of event space constructions in signed language.

However, the differences that we find between the two sign languages show that there are constraints on the effects of iconicity. Differences between the two sign languages emerged mainly in the use of non-aligned construction types (Appendix 1: b and d). German signers used far more character perspective with entity classifier predicates than did Turkish signers. In contrast, Turkish signers exhibited the use of observer perspective

17 Because of the small subject pool used for this study and the differences in the number of participants between the two languages, we cannot report statistics.

with handling classifiers, which was not used in this data set by German signers. In addition, Turkish signers, but not German signers, used the *fused* construction type.[18] Finally, lexical predicates were never used with event space projections by Turkish signers, while German signers exhibited their use with a character perspective event space projection.

Before we discuss the implications of these cross-linguistic differences, we would like to discuss the fusion construction type in more detail and, specifically, clarify its relationship to other similar types of constructions that have been described in the literature. The fusion construction type bears similarity to, but is notably different from the *simultaneous blends* described for American Sign Language (ASL) by Liddell (2000, 2003) and Dudis (2004), and from the *multiple perspective* representations found in South African Sign Language (SASL) reported in Aarons & Morgan (2003). In an example from Liddell (2000), a signer uses an entity classifier to represent a car with his hand and simultaneously represents the driver of the car on his body and face. In this *simultaneous blend*, two different views of the same event space – one "zoomed in" view and one "zoomed out" view – which correspond to character and observer perspective event space projections, respectively – are simultaneously represented on separate articulators. Moreover, the two representations are independent of each other in the sense that they could each exist on their own (i.e. only the driver or only the car).[19]

In contrast, in the *fused* perspective construction, elements from both perspectives are combined or meshed within a single representation on the same articulator. Specifically, the head and torso of the animate referent are mapped onto the signer (as in character perspective). However, the locations toward which the head and torso are oriented are determined by an observer perspective event space projection (i.e., from the vantage point of an external observer). In the examples in (5) and (6) above, the Turkish signers are not looking forward, as they would in an event space projected from character perspective. Rather, they are looking to the left, i.e. to referent locations in an observer perspective event space. In this sense, these fused representations reveal a different type of simultaneity of perspectives than has been attested and described for other sign languages. Further research is needed to determine whether this fused construction is particular to TİD, or whether it might exist in other sign languages, as well.

How can the overall differences in the use of the different constructions types which we have found between the two languages be explained? The fact that differences between the two sign languages were most prominent in the non-aligned constructions points to a possible explanation related to the simultaneous representation of multiple referents. It is possible that different sign languages might impose different linguistic or discourse constraints on the use of space to depict the location, motion, or action of two or more referents simultaneously. For example, DGS might constrain the use of handling classifiers when the signer's head and torso are not encompassed by the event space (i.e., as in the non-aligned observer perspective construction), whereas for TİD this does not

18 Even though we could not report statistics in this paper, we think it is remarkable that the TİD signers used constructions that the DGS signers never used, in spite of the fact that there were more DGS than TİD participants in our sample.

19 There seems to be constraints on this co-existence, however. For example, the fact that the car (represented on the hand) and the driver (represented on the head and torso) are both oriented forward.

constitute a constraint. Moreover, different constraints may apply to the possibilities of event space projection with lexical predicates. For example, in contrast to DGS, TİD might constrain the use of lexical predicates with a projected event space. More research is needed to determine whether these crosslinguistic differences are due to linguistic or discourse constraints (or perhaps even conceptual constraints (Liddell 2003)).

To conclude, our results suggest that although the visual-spatial modality might constrain and homogenize expressive possibilities in sign languages (e.g., Newport & Supalla 2000, Aronoff et al. 2005), the diversity of human conceptual, linguistic, and discursive structures may influence the impact of these constraints in different ways. The present study is limited by a small number of subjects and narratives, and further research is needed to determine the range of variation across sign languages in the expression of spatial events. However, the results presented here already indicate that there may be more differences between sign languages in the domain of spatial event representations than previously thought.

8 Appendix 1:

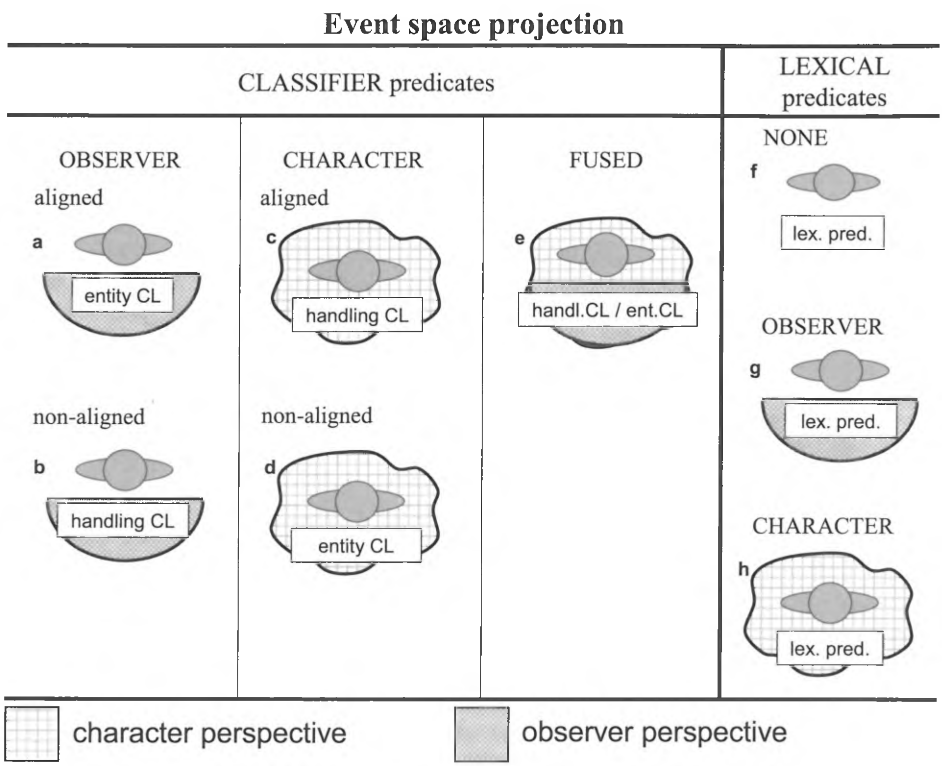


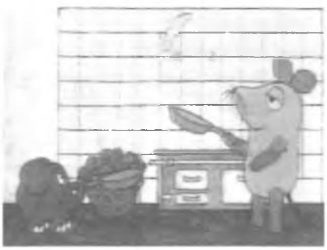
Figure 4: Schemas for different possible uses of predicate types and perspectives deployed in event space representations in signed narratives.[20]

20 See Fridman-Mintz and Liddell (1998) for the use of similar symbolic depictions, where a wavy line area surrounding the signer indicates *surrogate space* and a semi-circle area in front of the signer indicates *token space*.

Appendix 2:

Stills from stimulus clips that correspond to examples of signed narratives in the text:

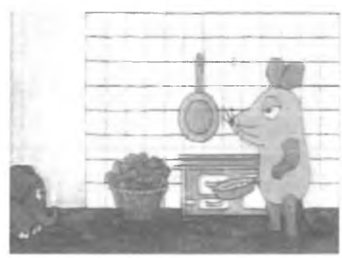
- Still 1: Mouse and Elephant each hold pan and flip pancake back and forth between each other
- Still 2: Mouse and Elephant throw ball to each other
- Still 3 : Pancake falls in front of Mouse
- Still 4 : Elephant enters kitchen and Mouse sees Elephant



Still 1

Still 2

Still 3



Still 4

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