5 Event representations in signed languages[1]

Aslı Özyürek and Pamela Perniss

1 Introduction

Signed languages are the natural visual languages of the Deaf, and rely mainly on spatial and body-anchored devices (that is, the body, head, facial expression, eye gaze, and the physical space around the body) for linguistic expression. The affordances of the visual-spatial modality allow signers to give detailed information about the relative location and orientation, motion, and activity of the characters in an event, and to encode this information from certain visual perspectives. In spoken languages, devices such as spatial verbs, locatives, and spatial prepositions also help speakers to situate referents in a discourse context and describe relations among them from certain perspectives (e.g. Taylor and Tversky 1992; Berman and Slobin 1994; Gernsbacher 1997). However, due to modality differences, spatial details about an event can be conveyed in a richer way in signed compared to spoken languages.[2] Furthermore, much spatial information, including visual perspective, is often encoded obligatorily in event predicates of location, motion and activity predicates in signed languages due to the modality.

The purpose of this chapter is to give an account of the way in which a signer's choice of visual perspective interacts with and determines the choice of different types of event predicates in narrative descriptions of complex spatial events. We also ask whether certain types of events (i.e. transitivity) are more or less likely to be expressed by certain perspectives and/or types of predicates. To give a comprehensive account of this phenomenon and to see to what extent the visual-spatial modality predicts/constrains such expressions in sign languages, we compare two historically unrelated and differentially documented sign languages, namely Turkish (TİD) and German Sign Language (DGS).[3]

[1] This research is funded by NWO (Netherlands Science Foundation), VIDI project.

[2] Note that speakers convey more spatial information than is present in their speech if one takes into account the gestures that accompany their speech (Goldin-Meadow 2003; Kita and Özyürek 2003).

[3] The acronyms TİD and DGS use the letters of the Turkish and German names for the sign languages, respectively. TİD stands for *Türk İşaret Dili;* DGS stands for *Deutsche Gebärdensprache*. See section 3.1 for general information about these sign languages.

First we give an overview of different types of event predicates and perspectives that have modality-specific features in signed languages.

2 Event representations in signed languages: Types of event predicates and perspective choice

2.1 Types of event predicates

In order to express the location, motion, and action of referents in an event, signers can use different types of event predicates, in particular, so-called 'classifier' (handling, entity) or 'lexical' predicates. These two main types of predicates convey different amounts of semantic information about the figure, location, motion, and action of the depicted event. In particular, classifier predicates are semantically more specific than lexical predicates, as will be described below.

In the use of *classifier 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 encodes information about the motion and location of the referent in the event space (Schick 1990; Engberg-Pedersen 1993; Emmorey 2002; Schembri 2003). Two major types of classifiers are distinguished in the sign language literature on the basis of how referents are depicted by the handshape: (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 referent (e.g. Engberg-Pedersen 1993; Emmorey 2003; Zwitserlood 2003, among others).[4] For example, a B-hand (flat hand) 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. These two types are particularly relevant to the present study.

The use of classifier predicates to express the location, motion, and action of referents in discourse is generally preceded by a sign that identifies the referent. Once the referent has been identified, a signer can use classifier predicates to convey spatial information about it, as can be seen in example 1 from DGS below (see still 1 in appendix 2 for the cartoon event being depicted). In this example, the signer first uses the lexical noun MOUSE to identify the referent and then uses an entity classifier in the second sign to refer to the mouse's

[4] 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).

Example 1 (DGS)

(a) GLOSS:MOUSE

(b) GLOSS:Mouse(RH:entityCL) come-from-right

(c) GLOSS:Mouse (RH:handlingCL) bouncing-ball

path and direction of motion. In the third sign, she uses a handling classifier to refer to the mouse's simultaneous manual activity, namely bouncing the ball.

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-Pederson 1993), as can be seen in example 1 (DGS). The use of a handshape with an extended, upright index finger can very appropriately represent the path of motion (e.g. straight), including source and goal information (e.g. from right to left), of an animate figure. The intrinsic features of the index finger handshape 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. On the other hand, the handling handshapes are better suited for representing the manner of the activity than for expressing change of location. 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.

In addition to classifier predicates, signers can also use *lexical predicates* to describe the actions of protagonists in events. Instead of representing the handling of an entity or the entity itself, the handshape in lexical predicates corresponds to the sign's citation form (i.e. the form that would be listed in a dictionary – see examples 7 and 8 later in the text). For example, signers may use the lexical predicate PLAY to describe a scene where the mouse and the elephant play ball together (throwing it back and forth), instead of actually depicting the action of throwing the ball (as the use of a handling classifier would). When signers use lexical predicates, referents' actions are semantically

identified, but more specific spatial information about the referents themselves, as is encoded in classifier predicates, is absent.

2.2 *Perspective types*

In order to depict an event in fluent discourse, signers generally have to choose the visual perspective from which to depict the location, motion, and action of figures in the event. Thus, signing perspective refers to the vantage point from which an event is mapped or projected onto sign space. Unlike spoken languages, the iconic properties of the visual-spatial modality make it possible to map referent location and motion from the real event space directly onto sign space from different perspectives. This is done by visually modulating the predicate (classifier or lexical) in the sign space according to the particular perspective chosen.

In this chapter, we emphasize the notion of 'event space projection' in our definition of perspective. We distinguish the different perspectives or event space projections (character and observer) in signed depictions primarily in terms of (i) the vantage point from which the event is projected onto the sign space, (ii) the signer's role in the projected event space, and (iii) the size of the projected event space (e.g., as evidenced by the depiction of size and shape information about the figure).

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, on the other hand, 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.

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,[5] 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 and 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

[5] Depictive space was called 'token space' in some of Liddell's earlier publications (Liddell 1994, 1995).

viewpoint' and 'observer viewpoint' for a similar distinction in the use of space for referent representation in gestures accompanying spoken narratives.

2.3 Alignment of event predicates and perspectives

The use of the types of classifier predicates described above typically involves the use of character or observer perspective (or the fusion or simultaneous use of both perspectives). However, less is known with regard to how perspective is used with lexical predicates.

With regard to perspective and the type of classifier predicate, the most prototypical alignments in their use can be motivated in the following way. Referent motion and location within the event space is most felicitously depicted through the use of *entity* classifiers, which depict the figure (i.e. salient size and shape properties of the figure) as if viewed from an external viewpoint. This corresponds to 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. The use of observer perspective is thus expected to co-occur with 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. Handling classifiers depict the way a referent is handled or manipulated by an agent. Thus, character perspective is expected to co-occur with the use of *handling* classifiers.[6]

Table 5.1 summarizes what we take to be the most salient features of the two main signing perspectives in terms of event space projection. In addition, it also indicates which classifier types will co-occur with which perspectives when they are expected to 'align.' Note that these expected alignments assume that the signer's visual perspective of the event will determine the type of event predicate chosen, as described above. This view also predicts that when signers choose either perspective, they are more likely to depict the event with a classifier predicate than with a lexical predicate, since the first one is more visually specific than the latter.

However, the combinations of perspective and classifier predicates found in extended discourse appear to be much more varied than the expected alignments. For the purposes of this chapter, we call these less expected, though frequent, 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, one referent can be mapped onto the signer's body in character perspective and the other mapped onto the hand as an entity

[6] See also Metzger (1995) and Liddell and Metzger (1998) 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.

Table 5.1 *Characteristics of observer and character perspectives in terms of event space projection and classifier types that are aligned or non-aligned with each perspective*

	Character perspective	Observer perspective	Perspective/classifier combination
Projection of event space	Event-internal vantage point Encompasses signer Life-sized	Event-external vantage point In front of signer Reduced size	
Classifier	Handling Entity	Entity Handling	Aligned Non-aligned

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 3 from TİD later in the text). These possible uses of perspective with non-aligned classifiers are also represented in table 5.1.

To date, not much is known about how frequently and under what conditions these different types of constructions, that is, different types of combinations of perspective and type of classifier or lexical predicates, appear in sign language discourse. For example, do signers prefer certain event predicate types in certain perspectives? Secondly, is there some event type (i.e. transitivity) that motivates the use of certain event predicates and perspective/classifier predicate combinations (i.e. aligned vs. non-aligned)? Finally, almost nothing is known about possible crosslinguistic variation between sign languages with regard to these questions.

3 The present study

In the present study, we investigate how different perspective and classifier and lexical predicate combinations occur in narratives that depict the location, motion, and action of referents. We compare these uses both qualitatively and quantitatively across two unrelated sign languages, namely in Turkish (TİD) and German Sign Language (DGS).

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 2003b; Aronoff, Meier, and Sandler 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 and Webb 1995; Newport and 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 chapter, we investigate similarities and differences between two sign languages in the use of classifier predicates and perspectives in sign language narratives. We discuss the implications of these findings in terms of whether and to what extent the iconic properties of the visual-spatial modality homogenize expressions related to spatial representation in different sign languages. 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 their historical and sociolinguistic properties. If there are differences between sign languages in terms of youth and sociolinguistic context, then the differences/similarities we find in uses of perspective and classifier predicates cannot be directly attributed to linguistic variation (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 contact 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, but there is no contact attested between them (Zeshan 2002).

In Turkey, the establishment of the first Deaf school is dated to 1902 (Deringil 2002).[7] From 1953 to the 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 in 1964 and since then has helped promote communication among the Deaf population throughout the country.

In Germany, the first schools for the Deaf were established in the late eighteenth century and used a manual method of teaching until the middle of the nineteenth century. In the second half of the nineteenth 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. DGS has been used continuously by members of the Deaf community since formal education united them, and since the establishment of the Federation of the Deaf in 1848 (Vogel 1999).

In both countries, Deaf people learn sign language either from their peers in the Deaf schools or through exposure to the community, e.g. in the Deaf clubs, without formal instruction in the schools. Thus, due to the historical and sociolinguistic similarities, possible differences in structure are less likely to be attributable to differences in the ages of the two sign languages, but may rather reflect structural variation between TİD and DGS.

3.2 *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 no later than 6 years of age). Signers were asked to view two short silent cartoons (from Westdeutscher Rundfunk television broadcast) 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 deaf signers who had not seen the movies.

3.3 *Coding*

Narratives were transcribed into DGS or TİD glosses with the help of hearing and deaf native/early signers. Since the aim of this study is the investigation of whether two different sign languages depict events differently, 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 (handling or entity) vs. lexical predicates. Each event predicate was then coded

[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.

Table 5.2 *Characteristics of observer and character perspective in terms of event space projection and their alignment with the direction or placement of the predicate in our coding*

	Character perspective	Observer perspective
Projection of event space to sign 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

with regard to whether and from which perspective it projected the event onto sign space. 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 was crucial. This is motivated by the way events are depicted in the stimulus films used (see the stills from the stimuli in appendix 2). In the 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 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 are directed either toward or away from the protagonists' bodies. Thus, location, motion, and action as represented from a character's perspective are mapped onto sign space along the sagittal axis – moving away from or towards the signer's body or referents associated with locations opposite the signer's body. (See examples 2–5 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 5.2).[8]

Types of event predicate and perspective alignments

In our previous work (Perniss 2007a, b; Perniss and Özyürek 2008), using the same data and the same coding scheme, we have identified different

[8] 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.

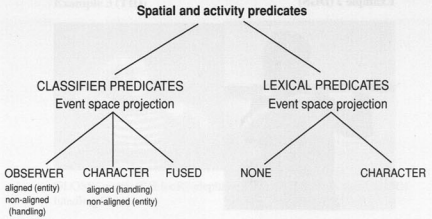


Figure 5.1 Different construction types of spatial and activity predicates observed in our data[9]

construction types based on our definitions of observer and character perspective event space projections and on how they combine with different types of predicates (see fig. 5.1). First, we divided the spatial and activity predicates into two main categories: classifier predicates and lexical predicates. Within the classifier predicates group, we categorized them as aligned or non-aligned with respect to their use in observer and character perspectives. We also identified a novel construction type which we call *fused* perspective. This construction combines elements from both character and observer perspective into the event space projection. Further, we split the lexical predicates category into occurrences with or without an event space projection. Figure 5.1 shows all types of spatial and activity predicates that have been attested in our TİD and DGS data.

Based on the classification scheme outlined above, we identified different event predicate and perspective construction types in the data in a systematic way. These include the types below with examples.

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

[9] Note that observer or fused perspectives could have also potentially co-occurred with lexical predicates, but we have not observed any combinations of these types in our sample.

Example 2 (DGS)

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

appendix 2) are located on the right and left sides of the screen, and activity and motion between them is depicted along the lateral axis. In example 2, 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.

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 3, the signer uses handling classifiers (i.e. to depict holding the pans) located on the left and right side of sign space to depict the scene where the mouse and elephant flip the pancake back and forth between each other (appendix 2, still 2).

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

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

Example 3 (TİD)

GLOSS: mouse(RH:locR)-elephant(LH:locL) hold/flip-pan(LH+RH: handlingCL)

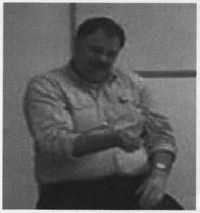
Example 4 (TİD)

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

are located along the sagittal axis, as corresponds to an event space projection from a character's vantage point within the event. In example 4, the signer depicts the mouse flipping the pancake into the air (see appendix 2, still 2). 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.

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 rather only partially mapped onto the signer. In this case, (at least) one of the signer's hands will not represent the hand of the character, but will instead

Example 5 (DGS)



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

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

represent another referent through the use of an entity classifier. (It is also possible for both hands to represent other referents with entity classifiers, while the character remains mapped onto the signer's head and torso.) In example 5, the signer is depicting the mouse flipping the pancake, which then lands on the floor in front of it (see appendix 2, still 4). The image in example 5a shows an aligned character perspective representation with a handling classifier for holding the pan. In 5b, 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).

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. 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 signer's view of the stimulus events). The signer exhibits movements of the head and torso that are attributable to the character, but the representation of referent location and motion is within an event space projection as viewed from an observer perspective. Example 6 shows a use of the *fused* perspective construction by a Turkish signer. In this example, the signer is depicting the scene where the elephant enters the kitchen (appendix 2, still 5).

Example 6 (TİD)

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

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

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 two-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. Thus, we see here an overlay of both character and observer 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 3). There is no topographic mapping of locations and actions onto sign space.

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.

Example 7 (TİD)

GLOSS: PLAY

Example 8 (DGS)

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

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 3). In the stimulus event, 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 one of the characters, that of the mouse in this case.[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, but in this particular narrative, the mouse stays mapped to the location of the signer's body throughout.

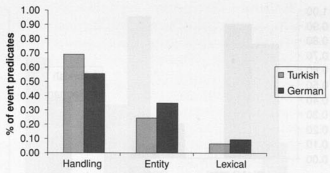


Figure 5.2 The percentages of different event predicate types in the two sign languages

Finally, the DGS data sample used for this study included only one instance of a "double-perspective 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 2007a 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.

3.4 Analysis and 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.

Event predicate types across languages In the first analysis, we investigated whether signers preferred classifier predicates (handling vs. entity) or lexical predicates in representing the location, motion, and action of referents and whether this varied across the two languages. For this, we calculated the percentages of the different predicate types over all the spatial and activity predicates used. Figure 5.2 shows that, regardless of the perspective choice, signers of both languages preferred to use classifier predicates over lexical ones, that is, predicates that contained more specific semantic specification about the referents themselves. Furthermore, handling classifiers were observed more often than entity classifiers in both languages. This may be due to the fact that the events in the cartoons contained a lot of manual activity events. However, the quantity of handling and entity classifiers was not equally distributed across the two languages. Turkish signers used relatively more handling and fewer entity classifiers than the German signers. This shows that even though event

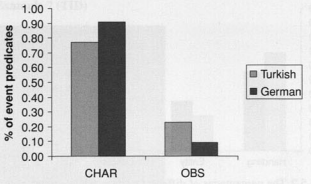


Figure 5.3 The percentages of perspective types across the two sign languages

types of the cartoon might drive the prominent use of handling classifiers, this preference can be mediated by the specific language used.

Perspective types across languages In the second analysis, we looked to see whether the two languages exhibited differences in the dominant choice of perspective to depict events. Figure 5.3 shows that signers of both languages used more character than observer perspective (in this analysis, the *fused* perspective use found in the Turkish Sign Language data contributed both to the use of observer and character perspective in the counts and was used 11% of the time by Turkish signers). However, we also see that German signers used slightly more character perspective than Turkish signers, while Turkish signers used more observer perspective than German signers.

Event predicate/perspective type alignments In the final analysis, we directly investigated the preference of the event predicate type given the choice of a certain perspective in the two languages to see whether certain perspectives motivate the choice of certain event predicates (see fig. 5.4). First, we took into account only the classifier predicates. As fig. 5.4 shows, in most cases and in both languages, character perspective was used with handling classifiers, and observer perspective was used with entity classifiers. This pattern fits with the expected alignments we proposed in the introduction. However, the occurrence of non-aligned constructions shows that perspective does not totally predict the type of the classifier predicate. Furthermore, the preference for these alignments differed across the languages. In the aligned constructions, character perspective with handling classifiers was more frequently preferred by Turkish signers, while observer perspective with entity classifiers was more likely to be preferred by German signers. In the non-aligned constructions, Turkish signers preferred to use handling classifiers with observer perspective

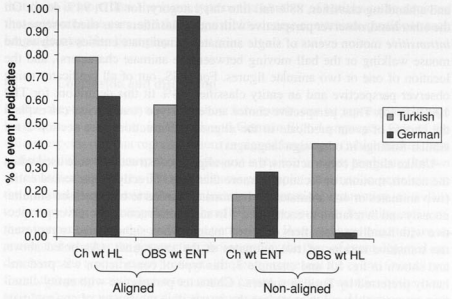


Figure 5.4 The distribution of combinations of different event space projections (character, observer) with different types of classifier predicates (aligned, non-aligned) in the two sign languages

more than German signers, while the German signers used entity classifiers in character perspective more than Turkish signers.

A separate analysis of the lexical predicates showed that lexical predicates, when used, were mostly used with character perspective in DGS (95%), and were rarely used with an event space projection by TİD signers (i.e. 75% of the lexical predicates were used in neutral space in TİD). Since the use of lexical predicates was quite small overall (<10%) for both sign languages, these percentages should be taken with caution.

Event type analysis Since these results show that perspective choice does not determine the type of event predicate in a one-to-one way, we now ask what can motivate the choice of event predicate types and the aligned vs. non-aligned constructions? In order to answer this question, we investigated whether different event types predict certain event predicate types or the event predicate/perspective combinations that we see in fig. 5.4.

For the aligned constructions, we saw that signers used character perspective with handling classifiers mostly for depictions of *transitive events* that involved the manual activity of single animate characters, such as flipping a pancake, bouncing a ball, etc. For DGS, out of all predicates using character perspective

and a handling classifier, 88% fall into this category; for TİD, 94% do so. On the other hand, observer perspective with entity classifiers was used to represent *intransitive* motion events of single animate or inanimate entities (such as the mouse walking or the ball moving between the animate characters), and the location of one or two animate figures. For DGS, out of all predicates using observer perspective and an entity classifier, 94% fit this definition; for TİD 100% do so). Thus, perspective choice and event type (transitivity) can explain the choice of event predicate in the aligned constructions (see section 2 for similar findings in other sign languages).

Unlike aligned constructions, the non-aligned constructions were used when the action, motion, or location of more than one "directly" represented entity (two animates or one animate/one inanimate) needed to be expressed simultaneously and in relation to each other.[12] In such constructions observer perspective with handling classifiers occurred mainly when signers tried to represent the transitive actions of two animates at the same time. (As noted above, and shown in fig. 5.4 and example 3, this type of construction was predominantly preferred by Turkish signers.) Character perspective with entity classifiers was mostly used to represent the intransitive movement of an inanimate object towards or away from an animate figure (as, for example, to represent the pancake falling in front of the mouse in example 5b, or to represent the elephant approaching the mouse by moving an entity classifier toward the signer's body). Out of all predicates with character perspective and entity classifiers, 90% of DGS descriptions and 76% of TİD descriptions (excluding the *fused* perspective constructions) fit into this category. One could propose, then, that events that require the simultaneous representation of the location, motion, and/or action of two "directly" represented entities in relation to each other (two animates or one animate/one inanimate) motivate the use of non-aligned constructions. Furthermore, in the non-aligned constructions we still see that transitive events are represented by handling predicates while intransitive ones are represented by entity predicates, as found in the aligned constructions.

Therefore, event type can predict the type of classifier predicate regardless of whether it is used in aligned or non-aligned perspective construction types. Whether an aligned or non-aligned construction is going to be used depends on the number of directly represented entities to be depicted. However, the differential distribution of these alignments across the two languages shows

[12] Note that aligned constructions also involve one animate and one inanimate entity where the latter is incorporated into the handling classifier, representing the object manipulated or acted upon. However, what is different about the non-aligned constructions is that the second entity is represented "directly" (as the whole entity itself), rather than "indirectly" (through a depiction of its manipulation by an agent). For example, in the non-aligned example in 5b both the mouse and the pancake (the former as an Agent and the latter as Theme argument) are "directly" represented entities (Zwitserlood 2003).

that there is more than the event type or the number of entities to be depicted that motivates the uses, and that linguistic/discourse constraints specific to each language may also be at play.

4 Conclusion and discussion

In this chapter, we have aimed to show how events can be represented in sign languages, in particular, in Turkish and German Sign Languages. One of the unique aspects of event representations in signed languages (which makes them radically different from spoken languages) is the use of event predicates known as 'classifier' predicates. These predicates can depict information pertaining to the size and shape of referents, their location, orientation, and motion, as well as to the way they are manipulated or handled. Furthermore, in depicting an event, their use necessitates the choice of a perspective. Here, we have tried to give an account of whether the perspective choice and/or the type of event depicted can determine the type of event predicate chosen to represent the event. Overall, we found that perspective choice to a certain extent, and the semantics of the event type to a greater extent, predicts the event predicate choice. However, we also found that characteristics of the specific language used mediate these choices, probably due to the presence of different linguistic/discourse constraints in different sign languages. The exact nature of these linguistic/discourse constraints needs further research.

We found in both sign languages that signers use semantically more specific predicates, i.e. classifier predicates, than lexical predicates to depict events in narratives (as shown in fig. 5.2). Furthermore, within the classifier predicates, the use of handling classifiers is more common than the use of entity classifiers. Finally, character perspective is used more frequently than observer perspective (as shown in fig. 5.3). These preferences may be due to the nature of the cartoons, which involve a lot of manual activity. It also fits with prior observations from Danish Sign Language narratives that signers choose to "depict" (i.e. enact) rather than "describe" the events, and prefer to do so from an "egocentric" perspective (Engberg-Pedersen 1993). Because depictions allow a more direct visual mapping of actions onto the body of the signer, this may have motivated the use of character perspective and handling classifiers.

However, the crosslinguistic data also revealed some tendencies for differences, first of all with regard to the use of handling vs. entity classifiers. Turkish signers showed a greater tendency to use handling classifiers than did the German signers (though without statistical evidence we cannot make a definitive claim about this). The tendency to use more handling than entity classifiers has also been documented in previous comparative research. For example, Aronoff *et al.* (2003) have shown that fewer types of entity classifiers are used in Israeli Sign Language than in American Sign Language. (Note that this

previous research is based on types rather than the frequency of use, as we have shown here.) This difference between ISL and ASL has been attributed to the difference in the age between the languages; ASL being more grammaticalized and having more frozen classifier predicates due to being an older language. However, as we have outlined, there is no apparent difference in age between Turkish and German Sign Languages, nor in the sociolinguistic context of these sign languages. Furthermore, Nyst (2004, 2007) has shown that in Adamorobe Sign Language (Ghana), there are no entity classifiers found even though this is a rather old sign language (approximately 200 years old, i.e. roughly as old as ASL). At the current point in research, then, it is not clear what can motivate these differences across languages and we think it is too soon to attribute these differences only or mainly to the age of the sign languages. It is, rather, possible that typological differences may exist between sign languages in this domain as they do in spoken languages. Typological differences may motivate and influence the use of different types of classifier predicates in addition to the influence of modality factors.

Another tendency showing a crosslinguistic difference that we have found is in the choice of perspective. German signers used more character perspective than Turkish signers. This difference suggests that choosing character perspective in narratives is not necessarily the default or the most "depictive" way of representing events in sign languages. In our previous research, we have speculated that this difference between languages could be due to the availability of a role-shift-marking device in German Sign Language to indicate switches in subject reference that involves a shift in shoulder/head/torso orientation. In DGS, different animate referents can be associated with different orientations of the torso, such that signers can "shift" into the role of a particular referent simply by shifting their shoulders (similar-looking devices have also been reported for Danish Sign Language: Engberg-Pedersen 1995; and ASL: Lillo-Martin 1995; Lillo-Martin and Klima 1990; McClave 2001). In TİD, such a shoulder-shift device does not seem to be systematically used to indicate switches in subject reference. TİD signers seem to prefer different devices to mark reference switches, such as the repetition of noun phrases or changes in facial expressions (Perniss and Özyürek 2004).[13] The existence of the shift in shoulder orientation within role-shift, as a linguistic/discourse device, then, might explain why German signers use character perspective more often than Turkish signers.

Looking at the alignments between perspective type and the type of classifier predicate, we found that perspective choice can motivate classifier choice to some degree but not in a determinate way. The most frequent constructions were the aligned ones. However, the existence of non-aligned constructions shows that perspective can determine predicate type only to a certain extent. Thus, perspective choice is independent of, and orthogonal to, the predicate type, even though some visual conceptual features of both could make them align in most cases (Perniss 2007a,b).

[13] Note that DGS signers also used these different devices, but used lexical noun phrases to a much lesser extent than did the TİD signers, and that signers of both sign languages used combinations of multiple devices.

Our further analysis showed that the transitivity of the event types could be a better predictor of predicate type. Our finding that intransitive events are more likely to be represented by entity classifiers, while transitive events are more likely to be represented with handling classifiers has also been previously noted in the literature (e.g. McDonald 1982; Engberg-Pedersen 1993; Zwitserlood 2003). Here, however, we show that event type can furthermore even predict the use of aligned vs. non-aligned perspective-classifier type correspondences. While the aligned ones are used when the location, motion, or action of one entity is depicted (possibly incorporating a manipulated object in the use of handling classifiers), the latter is more likely to be used to depict the relationship between more than one *directly* represented entity (at least one animate). This preference also shows that classifier predicate use should not be analyzed on its own without taking into account the perspective with which they occur. We argue that predicate type-perspective type combinations are unified constructions, the uses of which are dependent on the event types to be depicted.

These findings show, then, that visual perspective, together with the semantics of the stimulus events, determine the use of event space constructions in signed languages. However, differences in crosslinguistic distributions suggest that other typological factors could also be involved. For example, the existence of a shoulder-shift mechanism to indicate the referent role taken as a linguistic device in DGS, but not in TİD, could motivate some of these differences. More research is needed to determine whether these crosslinguistic differences are due to linguistic or discourse constraints (or perhaps even to conceptual constraints that might differ across signers of different languages).

Finally, the fact that lexical predicates can be used without an event space projection, unlike classifier predicates, shows that the way lexical predicates are used to express events might be considered more akin to "describing" the event rather than to "depicting" it (Clark and Gerrig 1990).

To sum up, both similarities and differences between the two sign languages in the use of types of event predicates and in their combination with different perspectives were found in the qualitative analysis, as well as in the quantitative analysis. Perspective and the semantics of event type are influential factors in a signer's choice of event predicate, which is then further mediated by different linguistic/discourse constraints. Similarities in the use of space in these domains have been claimed by other researchers to be driven by modality effects (e.g. Newport and Supalla 2000; Meier 2002; Aronoff *et al.* 2005). However, the

present analysis shows that differences also exist, expanding our knowledge of the different ways the visual-spatial modality can be used for expression in the domains of event representation. Thus, our results suggest that although the visual-spatial modality might constrain and homogenize expressive possibilities in sign languages (e.g. Newport and 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 event representations in sign languages can be as diverse as those in spoken languages, even though the parameters that drive the diversity are modality-specific, and differ between signed vs. spoken languages.

Appendix 1 Event space projection

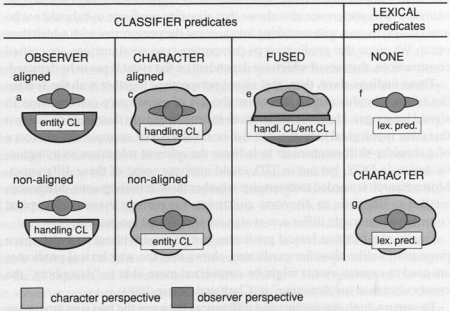


Figure 5.5 Schemas for different possible uses of predicate types and perspectives deployed in event space representations in signed narratives[14]

[14] 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 enters scene bouncing a ball
- Still 2: Mouse and Elephant each hold pan and flip pancake back and forth between them
- Still 3: Mouse and Elephant throw ball to each other
- Still 4: Pancake falls in front of Mouse
- Still 5: Elephant enters kitchen and Mouse sees Elephant