

# Classifier Predicates Reanalyzed with Special Reference to Taiwan Sign Language\*

Jung-hsing Chang, Shiou-fen Su, James H-Y. Tai  
National Chung Cheng University

In this paper we reanalyze the so-called classifier predicates with special reference to Taiwan Sign Language, arguing that the so-called classifier morpheme is a superordinate and should be analyzed as a proform because of its primary anaphoric function. In addition, we develop an approach combining Talmy's (1985) motion events with the proform analysis to account for how Figure and Ground are represented concurrently with spatial verbs in spatial constructions and how the proforms of Figure and Ground are formed to satisfy such purpose. It is shown that in Taiwan Sign Language the proforms of Ground are more predictable than those of Figure, because the Ground usually takes the handshape by the non-moving hand as its proform, while the Figure usually adopts a new handshape which is not part of the given sign to serve as its proform.

Key words: Taiwan Sign Language, classifier predicates, proforms of Figure and Ground

## 1. Introduction

Taiwan Sign Language (thereafter, TSL) is widely used by approximately 110,000 deaf and hearing-impaired citizens of Taiwan.<sup>1</sup> It has two mutually intelligible dialectal forms: TSL of Taipei and TSL of Tainan. The grammatical structures for these two dialects are basically the same. The differences between these two dialects are primarily lexical (e.g., the words such as CAR, WINE, VEGETABLE, GREEN ONION, PINE APPLE, etc. are signed differently in these two dialects). As pointed out by Smith and Ting (1979), TSL belongs to the Japanese Sign Language family, not the Chinese Sign Language family, even though Taiwan and mainland China share spoken and/or written languages.<sup>2</sup>

---

\* This paper was presented at the International Symposium on Taiwan Sign Language Linguistics at the National Chung Cheng University, Taiwan, on March 1-2, 2003. We are grateful to Jean Ann, Susan Duncan, Hsin-Hsien Lee, Scott Liddell, Wayne H. Smith, Gladys Tang, and two anonymous referees for the helpful comments. All errors that remain are our own. We are also grateful to Yu-shan Gu for providing the TSL data in this paper.

<sup>1</sup> According to the latest census from the Ministry of the Interior, there are about 110,000 deaf and hearing-impaired citizens in Taiwan. The census does not provide information for the actual population using TSL. However, according to Smith (1989), there are approximately 30,000 deaf and hearing-impaired citizens who use TSL as their primary language in Taiwan.

<sup>2</sup> The reader should notice the distinction between Sign Chinese and Taiwan Sign Language on the one hand, and that between Sign Chinese and Chinese Sign Language on the other. Sign Chinese refers to the signed Mandarin Chinese, while Chinese Sign Language refers to the sign language used in mainland China. In Taiwan, Taiwan Sign Language is known as *ziran shouyu* 'natural sign language', while Sign Chinese is known as *wenfa shouyu* 'grammar sign language' (Smith 1989).

The research on sign languages in the past two decades has shown that signed languages and spoken languages have many things in common, both involving complex grammatical structures to encode the relationship between form and meaning (cf. Klima and Bellugi 1979; Fisher and Siple 1990, 1991; Liddell 2003). Signed and spoken languages share the same language faculty but they are expressed in different modalities (cf. Talmy 2003). The major difference between signed languages and spoken languages lies in how their words are produced and perceived. That is, the words of spoken languages are produced by actions within the vocal tract that result in sounds, and these sounds are perceived through audition, whereas those of signed languages are produced by actions of the hands, arms, torso, face, and head that produce signals, and these signals are perceived visually (Liddell 2003:1). Thus, the study of how sign languages are structured and why they are structured the way they are will help us understand more about the nature of human languages, at the same time showing the similarities and differences between signed and spoken languages.

Like many other sign languages, TSL has a category of polymorphemic predicates containing verbs of motion or location and handshapes referring to a class of more specific objects. The handshapes, like noun classifiers, are used to denote a group of referents that share similar features (e.g., shape and size). The example is shown in (1). Note that a single uppercase English word identifies a single TSL sign, while the hyphen between two signs indicates that the two signs are produced simultaneously with the same hand.

- (1) DOG ANIMAL-PASS.  
'The dog went past.'

In sentence (1), the subject is DOG and the predicate is ANIMAL-PASS, which is usually analyzed as involving a motion verb 'pass' and a classifier 'animal'. The predicates with this type of handshapes are generally termed as classifier predicates in the literature of sign language research (The problems with the term classifier predicates will be pointed out in Section 3).

In addition, it should be pointed out that when the same expression, as in (1) involves a location, e.g., HOUSE (to sign this word, the four fingertips of both hands connect as the shape of a roof), the given expression not only consists of the full sign of HOUSE but also involves a partial representation of this sign (i.e., only part of the full sign is left), as exemplified in (2). Note that in (2), the plus symbol + between two signs indicates that these two signs are produced concurrently with different hands, whereas *pro* is an abbreviation of proform.<sup>3</sup> Note also that in the two signs with a plus symbol, the sign by

---

<sup>3</sup> In addition to a partial representation of the full sign, the symbol *pro* is also used to refer to classifiers in

the left hand is represented first while the sign by the right hand is represented next.

(2) HOUSE DOG HOUSE<sub>pro</sub>+ANIMAL-PASS.

‘The dog went past the house.’

However, not all predicates in TSL are required to contain the handshapes of classifiers. For example, the predicates with the verbs such as LIKE and BELIEVE do not take classifier morphemes, as exemplified in (3) and (4).

(3) DOG BROTHER LIKES.

‘(My) brother likes dogs.’

(4) FATHER BELIEVE-ME.

‘(My) father believes me.’

The possibility of the so-called classifier morphemes to occur in sentence (1) and the possibility of the partial representation to occur in sentence (2) raise three interesting questions: First, what is the function of these morphemes? Second, how are these morphemes formed? Third, what is the motivation for the use of these morphemes? To find out the answers to these questions, this paper proceeds in the following order: Following the brief introduction in Section 1, section 2 discusses verb types and the so-called classifier predicates in TSL with the goal of finding out different semantic properties associated with these verbs. In section 3, following Sutton-Spence and Woll’s (1999:48) suggestion that the classifier morpheme is a proform, we develop an approach based on Talmy’s (1985) motion events to account for how the Figure and Ground roles are represented concurrently with spatial verbs in spatial constructions and how the proforms of Figure and Ground are formed in such constructions.

## 2. Verb types and classifier predicates in TSL

According to Sutton-Spence and Woll (1999:129-151), there are two different types of space that are used in sign languages, i.e., topographic space and syntactic space. Physically, the signing space is exactly the same, but the space is used in two very different ways by the language. Topographic space recreates a map of the real world. It is a spatial layout in signing space of representations of things and situations as they really are. In an example of a sentence using topographic space, one described his dining table as ‘a terrible mess.’ ‘My bowl (right) is broken. My food (center) is spilled. My glass (left) is empty.’ This description uses topographic space because it recreates a map of the dining table and everything is laid out as it is in the real world.

---

classifier predicates, since we claim that the classifiers in sign languages are fundamentally proforms.

However, syntactic space is created from within the language and may not map onto the real world. For example, to express that ‘my father loves my mother’, the signer places a sign referring to my father on the left side of his/her signing space and a sign referring to my mother on the right. The placing of the two groups is just created from within the language to allow the signer to refer to them in space.

The difference in use of space is important when we consider verb types. Padden (1983) illustrates three major verb classes in American Sign Language: Plain verbs, inflecting verbs, and spatial verbs. Plain verbs do not alter their form to agree in person with the subject or object, but can inflect for aspect. Inflecting verbs, like plain verbs, also accept aspectual inflections, but the properties which mark them as inflecting are (a) their ability to accept subject and object agreement morphemes, and (b) their ability to inflect for number (i.e., dual, trial). Spatial verbs consist of multiple morphemes which convey information about the location, orientation, and the moving entity.<sup>4</sup>

Sutton-Spence and Woll (1999) delineates three major types of verbs in British Sign Language, depending on what information they carry, i.e., the information that will tell us who is doing the action (the agent or, grammatically, the subject) and who or what is receiving the action (the goal or, grammatically, the object). For both the subject and object, they consider if the person involved is the signer or someone else, and how many people or things are involved. The three types of verbs defined by Sutton-Spence and Woll (1999:135) are as follows:

Plain verbs: They can be modified to show manner, aspect and class of direct object.

Agreement verbs: They can be modified to show manner, aspect, person, number, and class of direct object.

Spatial verbs: They can be modified to show manner, aspect and location, movement, and related noun.

In this paper, following Sutton-Spence and Woll, we classify TSL verbs into plain verbs, agreement verbs and spatial verbs. We do not follow Padden’s (1983) verb classification (plain verbs, inflecting verbs, and spatial verbs) for the reason that in TSL plain verbs and spatial verbs can also be inflected to show the grammatical relations. The difference lies in that plain verbs use eye gaze, agreement verbs use syntactic space, while spatial verbs use topographic space to show their grammatical relations. That is, all types of TSL verbs are considered to have inflections though they are inflected in different ways.

In the sections that follow, we will discuss different verb types in TSL and the possibility of these verbs to occur with classifier morphemes.

---

<sup>4</sup> For more detailed discussion of spatial verbs, see Supalla (1978, 1982).

## 2.1. Plain verbs in TSL

The examples such as LIKE, REMEMBER, FAMILIAR, THINK, FEAR, among others are plain verbs in TSL.<sup>5</sup> These plain verbs show relatively little modification and do not move through space to show grammatical information. Therefore, they are sometimes called non-agreement verbs (Smith 1989). Manner and aspect are marked in plain verbs by speed of repetition of the verb and presence of non-manual features. For example, to express the idea of doing something for a long time, the movement of the verb sign is typically lengthened. To indicate intensity, the verb sign is normally shortened and made with tense, retracted movements (Smith 1989:82-83).

Because plain verbs are frequently made using the body as the location, they usually do not give information about person and number of the subject and object by moving through space. For example, to sign the verb LIKE, the tips of the index finger and the thumb contact the facial location, as Figure (1c) shows. Due to their use of body location, plain verbs are sometimes known as ‘body-anchored’ verbs (Sutton-Spence and Woll 1999).<sup>6</sup>

Since plain verbs cannot move through space to show the information of grammatical relations, the subject (i.e., BROTHER) and the object (i.e., DOG) do not change the movement and orientation of the verb. The example with the plain verb LIKE is given in sentence (5), while its signs are shown in Figure 1.

(5) DOG BROTHER LIKES.

‘(My) brother likes dogs.’



Figure 1

## 2.2. Agreement verbs in TSL

Examples of agreement verbs in TSL are BELIEVE, TELL, GIVE, ASK, SEE, PAY,

<sup>5</sup> For more examples of TSL plain verbs, see Smith (1989:302).

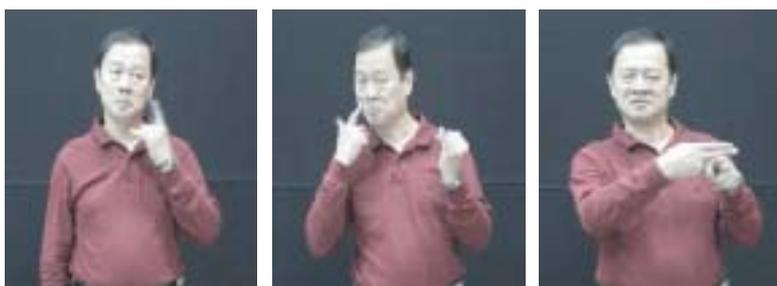
<sup>6</sup> As pointed out by Padden (1983), Janis (1992), Sutton-Spence (1999), and many others, not all plain verbs are body-anchored.

ANSWER, and many others. Agreement verbs allow the inclusion of information about person and number of the subject and object. This is accomplished by moving the verb in syntactic space. That is, information about who is carrying out the action, and who or what is affected by the action is shown by changes in movement and orientation of the verb. Since this group of verbs usually includes the changes in movement and orientation of the verb, they are sometimes called directional verbs (Sutton-Spence and Woll 1999).

Unlike plain verbs, agreement verbs change their forms in accordance with the subject or object of the sentence. The different forms that these verbs assume reflect different combinations of subjects and objects. Take the sentences in (6) and (7) for example, the agreement verb BELIEVE moves toward the position where the object is located. In (6) the verb moves toward the object position, i.e., MOTHER, whereas in (7) the signer is the object; therefore, the verb moves toward the signer himself.

(6) MOTHER MOTHER<sub>pro</sub>+FATHER BELIEVES.

‘(My) father believes (my) mother.’



a. MOTHER

b. MOTHER<sub>pro</sub>+FATHER

c. BELIEVE

Figure 2

(7) FATHER BELIEVE-ME.

‘(My) father believes me.’



a. FATHER

b. BELIEVE-ME

Figure 3

It should be pointed out that in an agreement verb, there is a start point (subject

agreement marker), a linear movement (verb stem), and then an end point (object agreement marker). In general, the starting point of these verbs is the location of the subject, while the end point is where the object is. However, the agreement verbs such as INVITE, TAKE-FROM, BORROW, etc. are exceptions to this generalization. These verbs show ‘backwards agreement’ where the start point marks the object and the end point marks the subject.<sup>7</sup>

### 2.3. Spatial verbs in TSL

As pointed out by Sutton-Spence and Woll (1999), spatial verbs use topographic space, not syntactic space. Spatial verbs include RUN, JUMP, WALK-TO, and many others. These verbs are called ‘verbs of motion and location’ (Supalla 1982) or ‘spatial-locative predicates’ (Smith 1989). Because spatial verbs usually contain information about location and cooccur with semantic classifiers, they are sometimes called ‘classifier verbs or predicates’. The term ‘classifiers’ is used in both spoken and signed languages. In the broadest sense, they label referents as belonging to a particular semantic class, such as referents that share the same shape or size. For example, Chinese uses *tiao*, as in *yi tiao yu* ‘one (long object) fish’, to refer to a group of referents with the long and thin shape (Tai and Wang 1990). In TSL, the sentence with a spatial verb such as RUN ABOUT and a classifier morpheme is shown in (8), in which a handshape for a class of objects (i.e., ANIMAL, see Figure 4c) is used to indicate a group of referents such as dogs, cats, frogs, bees, birds, scorpion, and the like. Such a handshape is a bound morpheme and cannot be used in isolation.

(8) ROOM DOG ROOM<sub>pro</sub>+ANIMAL-RUN.ABOUT.

‘The dog is running about in the room.’



Figure 4

As shown in Figure (4), the predicate RUN ABOUT contains information about the movement of the subject, and the classifier handshape ANIMAL is used for any animals

<sup>7</sup> For different types of agreement verbs in TSL, see Smith (1989:90-125).

with similar features. It is observed that the full sign (e.g., the dog) is normally produced first, followed by the classifier morpheme (e.g., ANIMAL). The full sign is usually needed to identify the referent; otherwise, it is impossible to identify what the referent really is. As defined in Supalla (1982), and Valli and Lucas (1992), spatial predicates have two parts—a movement morpheme and a classifier handshape morpheme.

In addition, spatial verbs may inflect to show manner and aspect, but they do not inflect for person or number. They can give information about the path, trajectory and speed of movement of the action described by the verb, and about the location of the action.<sup>8</sup>

## 2.4. Summary

Following Sutton-Spence and Woll (1999), we have categorized TSL verbs into plain verbs, agreement verbs and spatial verbs according to the type of information they can include. Plain verbs do not move through space to show grammatical relations. Agreement verbs contain considerable information about the subject and object and they do this by movement through syntactic space, or at least by the orientation of the hand. Spatial verbs include information about movement and location of the object, and frequently contain information about the class to which the subject belongs.

In the sections that follow, we will point out the problems of using the term classifiers and reanalyze the classifier handshape morphemes in classifier predicates as proforms, and develop an approach which combines Talmy's (1985) analysis of motion events with the proform analysis to account for why and how the classifiers are formed in TSL.

## 3. Classifier predicates reanalyzed

### 3.1. Classifiers as proforms

A number of researchers have raised questions about the use and function of the so-called 'classifier' in sign languages (Brennan 1986; Deuchar 1987; Johnston 1991; Sutton-Spence and Woll 1999; Zwitserlood 1996) and have argued against the analysis of the spatial structures as containing classifiers (Cogill 1999; Edmondson 1990; Engberg-Pedersen and Pedersen 1985; Engberg-Pedersen 1993).<sup>9</sup> We do not follow the analysis of the spatial constructions as containing classifiers for the reason that in TSL two signs without sharing any semantic properties may use the same handshape. For example, the signs of TRAIN and SNAKE do not belong to the same semantic category, but the same handshape, i.e., the ZONG (棕) handshape (the index and middle fingers are extended) is used when these two signs occur in spatial constructions. The fact that two signs which

---

<sup>8</sup> For different types of spatial verbs, see Supalla (1982), Liddell and Johnson (1987), and Sutton-Spence and Woll (1999:147-148).

<sup>9</sup> For more detailed discussion of this issue, see Schembri (2003).

do not belong to the same semantic classification may involve the same handshape in the spatial constructions argues against the analysis of the spatial constructions as containing classifiers. More such examples are shown in Table 1 in Section 3.3.2, in which the set of objects referred to by a certain handshape (e.g., the HU (胡) handshape) does not seem to share any features.

In addition, it is also found that in TSL certain handshapes such as the SHI (十) handshape can only be used to refer to a single sign, i.e., SHRIMP. This fact suggests that classification may not be the primary function of the so-called classifier handshape morphemes. Because a classifier classifies a set of objects which share certain features, the handshape is not truly a classifier if it classifies only one object. This is the second reason why we think the term classifier to be problematic.

If the so-called classifier morphemes are classifiers, then what are they? As pointed out by Sutton-Spence and Woll (1999:48), most sign linguists restrict the use of the term ‘classifier’ to elements that meet the following criteria: (a) They stand for a group of different signs which refer to entities and objects, (b) they are proforms, substituting for more specific signs, and (c) they occur in verbs of motion or location. Sutton-Spence and Woll view the primary function of the so-called classifier in spatial constructions as a proform. A proform is anything that refers to and stands in the place of something previously identified. Because the so-called classifier is a bound morpheme and is used to substitute for a more specific sign, we feel justified to follow Sutton-Spence and Woll by treating the so-called classifier in spatial constructions as a proform.

However, if the so-called classifier is a proform, then why does it still have classificatory function (though not all the so-called classifiers have such function)? In our analysis, the so-called classifier is a proform and it is a superordinate (sometimes called a hypernym). Like the function of proforms in spoken languages, this superordinate has anaphoric function, co-referring to a more specific sign in syntax or discourse. The example in which a superordinate can be co-referential with an antecedent hyponym is given in (9).

- (9) A gun lay on the table beside the guard, who checked nervously that the weapon was within easy reach.

In (9), the weapon mentioned in the second clause is a superordinate whereas the gun introduced in the first clause is a hyponym. It has been noted by Miller (1991:177-178) that a superordinate can be used to co-refer to a noun phrase previously mentioned in syntax or discourse (here, the gun is the antecedent of the weapon). The fact that the gun and the weapon can be co-referential in (9) supports our analysis that the so-called classifier can be considered as a proform, because the so-called classifier (a



In English sentence (11), the Manner ‘running’ is incorporated in the verb while the Path ‘up’ is encoded in an external phrase. In Spanish sentence (12), the information is differently packaged: The Path is encoded in the verb and the Manner is encoded in an external phrase (Talmy 1985:62, 69).

A third possible pattern of conflation combines the Figure with the Motion: The information about what is moving. According to Talmy, Atsugewi, a Hokan language of northern California, is a good example of this pattern. In Atsugewi, the verb root can also have an agentive meaning, as illustrated in (13).

(13) Verb root of motion with conflated Figure:

-<sup>ʔ</sup>staq- ‘for runny icky material (e.g., mud, manure, rotten tomatoes, guts, chewed gum) to move/be-located’

The verb root in (13) typically functions in the expression of events of location, of nonagentive motion, and of agentive motion. Expressions with -<sup>ʔ</sup>staq- refer to guts (an instance of ‘runny icky material’), as exemplified in (14). Note that an independent nominal for ‘guts’ can be included along with the verb, thus providing a separate reference to the Figure entity beside the one already provided by the verb root. Example (14) shows how the two semantic components (i.e., Figure and Motion) are conflated in an Atsugewi verb (Talmy 1985:73-74). This pattern is represented schematically as in (15).

(14) Atsugewi expressions of motion with conflated Figure

a. Morphological elements:

Locative suffix: -ik ‘on the ground’

Instrumental prefix: uh- ‘from “gravity” (an object’s own weight) acting on it’

Inflectional affix-set: '-w--<sup>a</sup> ‘3<sup>rd</sup> person subject (factual mood)’

b. Combined underlying form

/'-w-uh-<sup>ʔ</sup>staq-ik-<sup>a</sup>/

c. Pronounced as

[w<sup>ʔ</sup>ostaq<sup>ʔ</sup>ik<sup>a</sup>]

Literal meaning: ‘Runny icky material is located on the ground from its own weight acting on it.’

Instantiated: ‘Guts are lying on the ground.’

(15) Conflation of Motion with Figure

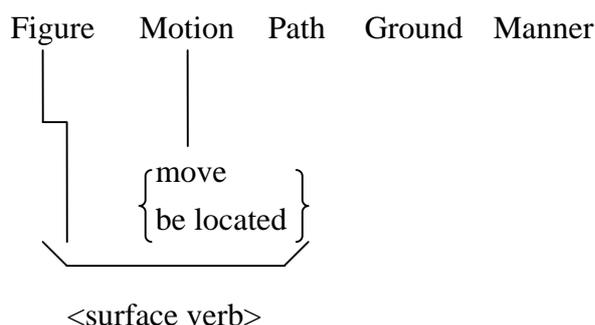




Figure 5

In sentence (16) the CHILD is the actor of the action expressed by the spatial verb RUN INTO, whereas the HOUSE is the location of the action. In Talmy’s term, the CHILD is the Figure since it is the moving object, while the HOUSE is the Ground since it is the reference-point object with respect to which the Figure moves. It is interesting to note here that the Figure adopts a new handshape for its proform, whereas the Ground takes its partial representation as its proform.<sup>12</sup> There arises a question how the proforms of Figure and Ground are formed. In the following two sections, we will discuss about the formation of the proforms in TSL.

### 3.3.1. Proforms of Ground

For purposes of presentation, we will first discuss how the proforms of Ground are formed in this section. If a two-handed sign is produced with a non-moving hand and a moving hand, the handshape produced with a non-moving hand will usually be the proform of Ground of the given sign.<sup>13</sup> For example, the word LEAF, as in Figure (6) is produced with two handshapes: The YI (一) handshape and the LIU (六) handshape. The LIU (六) handshape is produced with the thumb and index finger of a non-moving hand which extend with the palm facing down, while the YI (一) handshape is produced with the extended index finger of the moving hand, moving up and down repeatedly. Since the LIU (六) handshape is produced with a non-moving hand, it is used as the proform when the word LEAF plays the role of Ground, as the Figure in (7) shows.

---

<sup>12</sup> One of our reviewers suggests that the partial representation of a full lexical item in our analysis should be regarded as a reduced form rather than a proform since each form represents only one lexical sign rather than a class of signs. We do not take this view for the following reasons: First, some signs of Ground use a new handshape which is not any part of the given sign (e.g., CHILD), and second, the partial form or a new handshape is used to refer to the noun phrase previously mentioned. For these two reasons, the partial representation should be regarded as a proform rather than a reduced form.

<sup>13</sup> The distinction between moving and non-moving hands is generally equivalent to that between dominant/non-dominant, and strong/weak hands. We feel that the distinction we adopt is more direct and transparent. However, it needs to be further scrutinized whether these terms are used to refer to exactly the same thing in the literature.



Figure 6. LEAF



Figure 7. handshape: LIU (六)

Likewise, the word TRAIN, as in Figure (8), is composed of two handshapes: The SHOU (手) handshape and the ZONG (棕) handshape. The SHOU (手) handshape is produced with the fingertips of one hand which point forward with the palm facing aside, while the ZONG (棕) handshape is produced with the extended index and middle fingers of the other hand, drawing circles at the palm of the non-moving hand. Since the SHOU (手) handshape is produced with the non-moving hand, and therefore, it is used as the proform when the word TRAIN plays the role of Ground, as Figure (9) shows.



Figure 8. TRAIN



Figure 9. handshape: SHOU (手)

However, not all signs are composed of two handshapes, in which one is produced with a non-moving hand and the other is produced with a moving hand. For example, the word such as HOUSE, as in Figure 10, is composed of two identical handshapes, i.e., the SHOU (手) handshape. To sign the word HOUSE, the four fingertips of both hands connect as the shape of a roof. Because the given sign has two identical handshapes and neither handshape is produced with movement, either of the SHOU (手) handshapes can be used as a proform of the Ground. It should be pointed out that the same handshape (SHOU) can be associated with different signs (e.g. TRAIN and HOUSE), but the orientation of this handshape is different when different signs are referred to. This example shows that proforms do not have clear function of classification.



Figure 10. HOUSE

Though the Ground usually takes a handshape produced with a non-moving hand as its proform if the given sign is two handed, a Ground role may take a different handshape as its proform, which is not the partial representation of the given sign. For example, the word CHILD, as shown in Figure (11), is composed of two identical handshapes (the SHOU (手) handshape), these two handshapes are produced with the palms of two hands facing up, and these two hands shake left and right in turns above the shoulders. However, the CHILD takes neither of the SHOU (手) handshapes as its Ground proform. Rather, the MIN(民) handshape (the thumb and pinky extend) is adopted as its proform.



Figure 11. CHILD



Figure 12. handshape: MIN (民)

We have pointed out that the proforms of Ground may be formed in different ways. The most common handshape used for the proform of Ground is usually the handshape produced with a non-moving hand if the two-handed given sign is produced with one moving handshape and a non-moving handshape (e.g., TRAIN). However, if the given sign is produced with two identical non-moving handshapes (e.g., HOUSE), either handshape can be the proform of that given sign.<sup>14</sup> In addition, a proform of Ground can be a new handshape which is not any part of the given sign (e.g., CHILD).

### 3.3.2. Proforms of Figure

In contrast with the handshapes for the proforms of Ground, the handshapes for the proforms of Figure are usually represented with a moving hand if a two-handed sign is produced with both a non-moving hand and a moving hand. As discussed in the previous

---

<sup>14</sup> The choice of handshape depends on whether the signer is left-handed or right-handed.

section that the word TRAIN, repeated in Figure (13), comprises two handshapes: The SHOU (手) handshape and the ZONG (棕) handshape. The SHOU (手) handshape is produced with the fingertips of one hand which point forward with the palm facing aside, while the ZONG (棕) handshape is produced with the extended index and middle fingers of the other hand, drawing circles at the palm of the non-moving hand. Since the ZONG (棕) handshape is produced with the moving hand, and therefore, it is used as the proform of Figure when the word TRAIN plays the role of Figure, as Figure (14) shows.



Figure 13. TRAIN



Figure 14. handshape: ZONG (棕)

In addition, the word LEAF, as shown in Figure (15), is composed of a YI (一) handshape and a LIU (六) handshape. The LIU (六) handshape is produced with the thumb and index finger of a non-moving hand which extend with the palm facing down, while the YI (一) handshape is produced with the extended index of the moving hand, moving up and down repeatedly. The handshape for the proform of Figure is not derived from the YI (一) handshape, though the YI (一) handshape is produced with a moving hand. Rather, the SHOU (手) handshape is taken as the proform of Figure, as shown in Figure (16).



Figure 15. LEAF

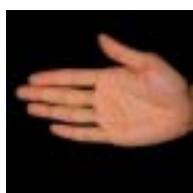


Figure 16. handshape: SHOU (手)

Take the word FROG for another example. It is produced with the five fingers of one hand bent with the palm facing down (i.e., the JIU (九) handshape), and then the palm hits the other hand from the wrist to the elbow. Like the example of LEAF, neither handshape of the given sign is taken as the proform of Figure. Rather, a new handshape is adopted to be the proform of Figure. This handshape is known as BUDAIXI (布袋戲), in

which the index extends and the thumb and middle fingers bend with the palm facing down, as Figure (18) shows.



Figure 17. FROG



Figure 18. handshape: BUDAIXI (布袋戲)

As discussed before, the handshape produced with a moving hand can be taken as the proform of Figure if the given sign is produced with a moving hand and a non-moving hand (e.g., TRAIN). However, the most common handshape for a proform of Figure is adopted from a new handshape different from the parts of a given sign (e.g., LEAF and FROG). It has been previously pointed out that the handshape adopted for a proform of Figure is not necessarily used to refer to a group of entities that shares some common physical or semantic features. Below is the list of handshapes often used as proforms of Figure and the more specific signs they refer to.

Name of handshape	Handshape	Referred objects
HU (胡)		BOOK, LUGGAGE, RUBBER BOAT, WHALE, etc.
SHOU (手)		LEAF, PAPER MONEY, FLAT METAL PIECE, TRUCK, TRAIN (TSL of Tainan), etc. <sup>15</sup>
TONG (同)		BALL, ROCK, BOTTLE, CHARACTER, PAPAYA, APPLE, etc.
WAN (萬)		DRAGON EYE FRUIT
BUDAIXI (布袋戲)		DOG, FROG, BIRD, BABY, BUTTERFLY, etc.
LIU-SHI (六十)		BICYCLE, MOTORCYCLE, etc.

<sup>15</sup> The SHOU (手) handshape is usually used as the proform when these entities play the role of Figure; however, some signers sometimes use the HU (胡) handshape as their proform of Figure.

MIN (民)		HUMAN BEINGS (e.g., man, child, etc.), PERSONIFIED ANIMALS, etc.
YI (一)		POLE (power line), TREE, RIVER, PEN, etc.
CHONG (蟲)		ANT, EARTH WORM, SILKWORM, etc.
ER (二)		PENGUIN (when STANDING), LEG, DOG/HUMAN BEING (when jumping into somewhere), etc.
ZONG (棕)		TRAIN (TSL of Taipei), Rabbit (TSL of Tainan), SNAKE
SHI (十) the full signs TRAIN and SNAKE		SHRIMP

Table 1: Handshapes commonly used as proforms of Figure

In the previous two sections, we have discussed how the proforms of Figure and Ground are formed. In what follows, we will discuss what motivates the formation of these proforms.

### 3.4. Proforms as agreement markers

Verb agreement is sometimes called cross-reference, verb coding, concord, or participant reference on verbs (Payne 1997:250). Verb agreement is anaphoric when it can constitute the only reference to an argument in the clause. For example, in Spanish the *-o* suffix in the word *hablo* ‘I speak’ constitutes an adequate reference to the subject argument; therefore, the suffix *-o* is said to be anaphoric. Languages such as Spanish that have anaphoric verb agreement are called pro-drop languages or pronominal argument languages (Jelinek 1988). According to Payne (1997:251), verb agreement almost always arises from a diachronic process extending from free pronouns, through anaphoric clitics, to grammatical agreement. For this reason, verb agreement markers are often similar in form to the free pronouns.

As previously mentioned, in TSL the handshapes used to substitute for more specific signs are superordinates and should be regarded as proforms because they have anaphoric function, constituting an adequate reference to the subject argument and allowing pro-drop in discourse. For this reason, it seems viable to consider the given proforms as agreement markers in TSL.

Recall that agreement verbs allow the inclusion of information about the grammatical

relation of subject and object. This is accomplished by moving the verb in syntactic space. That is, information about who is carrying out the action, and who or what is affected by the action is shown by changes in movement and orientation of the verb. It has been pointed out that in an agreement verb, there is a start point then a linear movement (verb stem) and then an end point. The start point is usually the location of the subject, while the end point is usually where the object is. Since the start point and the end point indicate the grammatical relation of subject and object, they are considered as agreement markers in syntax.<sup>16</sup>

It has been pointed out in section 2 that only spatial verbs use topographic space (i.e., it recreates a map of the real world) for the grammatical relations. As for why all sign languages use the proforms of Figure (i.e., the classifiers) with spatial verbs universally, as pointed out by Sutton-Spence and Woll (1999), the importance of Figure proforms can be seen most clearly when we think about full signs which either use both hands or are anchored to the body. Because proforms of Figure use only one hand, they can be placed in different locations with the movement. In other words, the use of Figure proforms allows signers to give information about the path of the action described by the verb, at the same time showing the relation of the moving object (i.e., Figure) and the reference-point object (i.e., Ground) with respect to which the Figure moves. It is thus suggested the proforms of both Figure and Ground which refer to the grammatical relation of subject and oblique can also be considered as agreement markers.

Note that the major difference between agreement verbs and spatial verbs lies in that agreement verbs use syntactic space to represent the relation of the referents, while spatial verbs use topographic space to do so. If the start point and the end point of an agreement verb used to indicate the subject and object can be considered as agreement markers in syntax, the proforms of Figure and Ground used to refer to the grammatical relation of subject and oblique can also be considered as agreement markers in sign languages, because the proform of Figure participates in the initiation of the action, while the proform of Ground is involved in the end point of the action. As pointed out by Meir (2001:84), both spatial and agreement verbs contain a Path morpheme that agrees with its source and goal arguments. That is, both classes show source-goal agreement. Therefore, we suggest that a start point and an endpoint of the movement in syntactic space for the agreement verbs and the proforms of Figure and Ground in the start point and the end

---

<sup>16</sup> One of our reviewers pointed out to us that our analogy between the handshapes of spatial verbs and agreement markers of agreement verbs does not hold. He mentioned that the subject and object of agreement verbs can be associated (on a somewhat metaphorical level) with the notions of Source and Goal roles (and hence their association with the initial and final points of the verb), while Figure and Ground cannot be thus associated because they are conceptual, but not syntactic notions. In our analysis, the Figure and Ground roles are participants in semantic structure, and these semantic roles will be linked to syntax according to the roles they play in semantic structure. Hence we claim that the notions of Figure and Ground with spatial verbs, like Source and Goal with agreement verbs, can be associated with the grammatical relations.

point of the movement in topographic space for the spatial verbs are both grammatical devices used to agree with their referents. The assumption that the proforms of Figure (i.e., the classifiers in classifier predicates) can be considered as agreement markers is also found in Supalla (1982), Glück and Pfau (1998, 1999), Zwitserlood (2003), and Benedicto and Brentari (to appear).

### 3.5. Conflation of Figure and Ground proforms with Motion in TSL

As we have mentioned before, Figure and Ground are two entities participating in a motion event. It appears that spatial verbs in TSL as well as other sign languages require the Figure and Ground components to occur with the Motion component simultaneously. However, as noted by Sutton-Spence and Woll (1999), the full signs of Figure and Ground often use two hands or are anchored to the body, the simultaneous occurrence of the Motion component with the Figure and Ground components is extremely difficult, if not impossible. The use of proforms of Figure and Ground satisfies the requirement that Figure and Ground should occur with the Motion component simultaneously, at the same time specifying the grammatical relations.

In example (15), both signs of LEAF and TREE use two hands such that the occurrence of these two signs with the movement is not allowed. Because the LEAF is the Figure while the TREE is the Ground, the SHOU (手) handshape is used as the proform of Figure, while the partial representation of the TREE described by the other hand with the middle finger bent inside and the other fingers extended up is used as the proform of Ground. The use of the proforms allows the predicate FALL DOWN to contain information about the movement of the subject and the location of the movement, as Figure (19c) shows.

- (15) LEAF TREE TREE<sub>pro</sub>+LEAF<sub>pro</sub>-FALL.DOWN  
 ‘A leaf is falling down from the tree.’

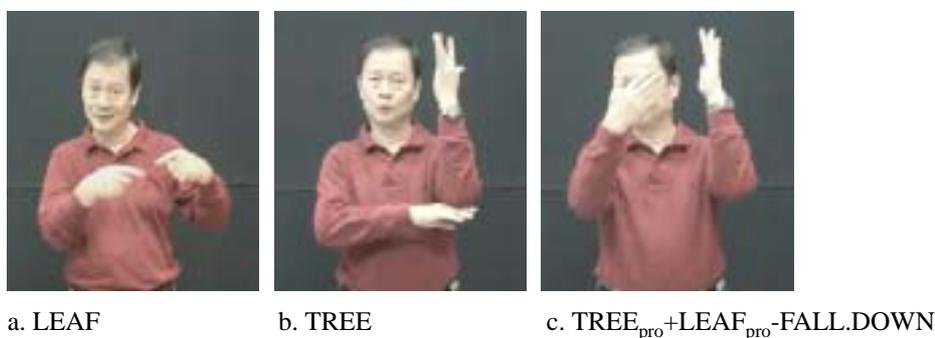


Figure 19

Examples (16) and (17) show that the same handshape (e.g., MIN 民) can be used as the proforms of Figure and Ground. In example (16) the MIN (民) handshape refers to the CHILD, whereas in example (17) the MIN (民) handshape refers to the signer himself. Note that INDEX<sub>1</sub> in (17) refers to the first person.

(16) HOUSE CHILD HOUSE<sub>pro</sub>+HUMAN.BEING<sub>pro</sub>-RUN.INTO  
 ‘The child ran into the house.’



Figure 20

(17) TRUCK INDEX<sub>1</sub>+TRUCK<sub>pro</sub> HUMAN.BEING<sub>pro</sub>-RUN PAST+ TRUCK<sub>pro</sub>  
 ‘The truck was running past me.’

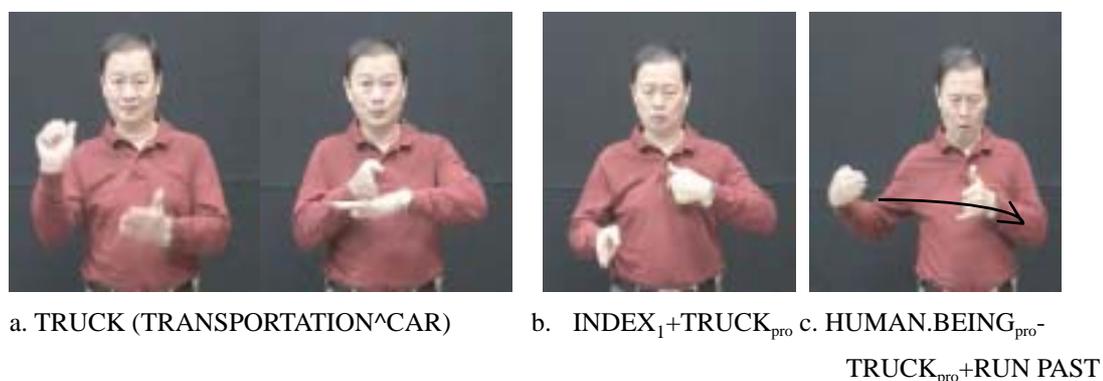


Figure 21

In example (16), there are two entities participating in the spatial verb: The CHILD is considered as the Figure because it is the moving object, while the HOUSE is the Ground because it is the location associated with the Figure. As discussed in section 3.3.1, the proform of the Ground HOUSE is the partial representation of the full sign (i.e., the SHOU (手) handshape), while the proform of the Figure CHILD is produced with a MIN (民) handshape.

In example (17), the two entities are the Figure TRUCK and the Ground the signer.

The SHOU (手) handshape is used as the proform of TRUCK, while the MIN (民) handshape is used as the proform of the signer. With the proforms of Figure and Ground, the signers are able to show the movement described by the verb and the entities participating in the action at the same time.

The examples in both (18) and (19) involve the sign FROG. In (18) the FROG plays the role of Figure while in (19) it plays the role of Ground. Unlike the example of CHILD, the sign FROG takes different handshapes as the proforms of Figure and Ground. When it is the Figure, the proform is produced with the BUDAIXI (布袋戲) handshape, as Figure (22) shows, while when it is the Ground, the partial representation of the given sign is used as the proform, as Figure (23) shows.

- (18) POND FROG POND<sub>pro</sub>+FROG<sub>pro</sub>-JUMP.AROUND.  
 ‘The frog is jumping around beside the pond.’



a. POND                      b. FROG                      c. POND<sub>pro</sub>+FROG<sub>pro</sub>-JUMP.AROUND

Figure 22

- (19) FROG FROG<sub>pro</sub>+FISH<sub>pro</sub>-SWIMS.  
 ‘The fish is swimming beside the frog.’



a. FROG                      b. FROG<sub>pro</sub>+FISH<sub>pro</sub>-SWIM

Figure 23

Note that in sentence (19) the lexical sign of FISH is the Figure and its proform happens to be the same as the lexical sign. In such case, it seems that the lexical sign can be optional. The possibility of the given sentence to also involve the lexical sign confirms

our observation, as exemplified in (20).

(20) FISH FROG FROG<sub>pro</sub>+FISH<sub>pro</sub>-SWIMS.

‘The fish is swimming beside the frog.’

It should be pointed out that the word order of the two entities (the Figure and the Ground) is not fixed in TSL. The flexibility of the word order is not surprising if we treat the proforms of Figure and Ground as agreement markers. Because these proforms already identify who is doing the action and where the action takes place, the requirement of fixed word order is not obligatory.

#### 4. Conclusion

This paper has discussed classifier predicates in TSL. We developed an approach which combines Talmy’s (1985) analysis motion events with the proform analysis of classifiers to account for how the participants of Motion or Ground are related to the predicates. It has proposed that the handshape used to denote a class of more specific objects are proforms, and that these proforms can be treated as agreement markers used to identify the arguments of the given predicate.

In addition, we identified two kinds of proforms: Figure proform and Ground proform, suggesting that the proforms of Figure and Ground are used for the purpose of conflating the Figure and Ground with the Motion component. We have also discussed the formation of Figure and Ground proforms. The proforms of Ground are more predictable than those of Figure, because the Ground usually takes the handshape by the non-moving hand as its proform, while the Figure usually adopts a new handshape which is not part of the given sign to serve as its proform.

As for why only spatial verbs have classifiers, but not plain verbs or agreement verbs, the answer to that lies in the fact that only spatial verbs use topographic space for the grammatical relations. The use of Figure and Ground proforms allows signers to give information about the path of the action described by the verb, at the same time showing the relation of the moving object (Figure) and the reference-point object (Ground) with respect to which the Figure moves.

#### References

- Aronoff, Mark, Irit Meir, and Wendy Sandler. 2000. Universal and particular aspects of sign language morphology. *University of Maryland Working Papers in Linguistics* 10:1-33.
- Baker, C., and D. Cokely. 1980. *ASL: A Teacher’s Resource Text on Grammar and*

*Culture*. Silver Spring, MD: T. J. Publishers.

- Benedicto, Elena, and Diane Brentari. to appear. Where did all the arguments go? Argument-changing properties of classifiers in ASL. To appear in *Natural Language and Linguistic Theory*.
- Brennan, M. 1986. Linguistic perspectives. *Signs of Life: Proceedings of the Second European Congress on Sign Language Research*, ed. by B. T. Tervoort, 1-16. Amsterdam: Dutch Foundation for the Deaf and Hearing Impaired Child, Institute of General Linguistics, University of Amsterdam, & Dutch Council of the Deaf.
- Cogill, D. 1999. Classifier predicates: Linguistic structures or templated visual analogy? Unpublished manuscript, University of New England.
- Deuchar, M. 1987. Sign language research. *New Horizons in Linguistics 2*, ed. by J. Lyons, R. Coates, M. Deuchar, and G. Gazdar, 311-335. London: Penguin.
- Edmondson, W. 1990. A non-concatenative account of classifier morphology in signed and spoken languages. *Current Trends in European Sign Language Research: Proceedings of the Third European Congress on Sign Language Research*, ed. by S. Prillwitz and T. Vollhaber, 187-202. Hamburg: Signum Press.
- Engberg-Pedersen, E., and A. Pedersen. 1985. Proforms in Danish Sign Language: Their use in figurative signing. *SLR'83: Proceedings of the III International Symposium on Sign Language Research*, ed. by W. Stokoe and V. Volterra. Silver Spring, MD & Rome: Linstok Press & Instituto di Psicologia CNR.
- Engberg-Pedersen, Elisabeth. 1993. *Space in Danish Sign Language: The Semantics and Morphosyntax of the Use of Space in a Visual Language*. Hamburg: Signum.
- Fischer, Sudan D., and Patricia Siple. (eds.) 1990. *Theoretical Issues in Sign Language Research, vol. 1: Linguistics*. Chicago: The University of Chicago Press.
- Fischer, Sudan D., and Patricia Siple. (eds.) 1991. *Theoretical Issues in Sign Language Research, vol. 2: Psychology*. Chicago: The University of Chicago Press.
- Glück, Susanne, and Roland Pfau. 1998. On classifying classification as a class of inflection in German Sign Language. *Proceedings of ConSole VI*, ed. by T. Cambier-Langeveld, A. Lipták, and M. Redford, 59-74. Lisbon: University of Lisbon.
- Glück, Susanne, and Roland Pfau. 1999. A distributed morphology account of verbal inflection in German Sign language. *Proceeding of ConSole VII*, ed. by T. Cambier-Langeveld, A. Lipták, M. Redford, and E. J. van der Torre, 65-80. Bergen: University of Bergen.
- Janis, W. D. 1992. *Morphosyntax of ASL Verb Phrases*. New York: State University of New York at Buffalo Ph.D. dissertation.
- Jelinek, Eloise. 1988. The case split and pronominal arguments in Choctaw. *Configurationality: The Typology of Asymmetries*, ed. By Laszlo Maracz and Pieter Muysken, 117-41. Dordrecht: Foris.
- Johnston, T. A. 1991. Spatial syntax and spatial semantics in the inflection of signs for the marking of person and location in Auslan. *International Journal of Sign*

*Linguistics* 2.1:29-62.

- Kegl, J., and R. Wilbur. 1976. When does structure stop and style begin? Syntax, morphology and phonology vs. stylistic variation in American Sign Language. *Papers from the 12<sup>th</sup> meeting of the Chicago Linguistic Society*, ed. by S. Mufwene and S. Steever, 376-396. Chicago: University of Chicago Press.
- Klima, Edward, and Ursula Bellugi. 1979. *The Signs of Language*. Cambridge: Harvard University Press.
- Liddell, Scott K. 2003. *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge: Cambridge University Press.
- Liddell, Scott K., and Robert E. Johnson. 1987. An analysis of spatial-locative predicates in American Sign Language. Paper presented at the Fourth International Conference on Sign Language Research, Lappeenranta, Finland.
- Meir, Irit. 2001. Motion and transfer: The analysis of two verb classes in Israeli Sign Language. *Signed languages: Discoveries from international research*, ed. by Valerie Dively, Melanie Metzger, Sarah Taub, and Anne Marie Baer, 74-87. Washington: Gallaudet University Press.
- Miller, George A. 1991. *The science of words*. New York: Scientific American Library.
- Padden, Carol. 1983. *Interaction of Morphology and Syntax in American Sign Language*. San Diego: University of California Ph. D. dissertation.
- Payne, Thomas E. 1997. *Describing Morphosyntax: A Guide for Field Linguists*. Cambridge: Cambridge University Press
- Schembri, Adam. 2003. Rethinking 'classifiers' in signed languages. *Perspectives on Classifier Constructions in Sign Languages*, ed. by Karen Emmorey, 3-34. New Jersey: Lawrence Erlbaum Associates.
- Smith, Wayne H. 1989. *The Morphological Characteristics of Verbs in Taiwan Sign Language*. Bloomington: Indiana University dissertation.
- Smith, Wayne H., and Li-fen Ting. 1979. *Shou Neng Sheng Chyau* [Your Hands Can Become a Bridge]. Taipei: Deaf Sign Language Research Association of the Republic of China.
- Supalla, Ted. 1978. Morphology of verbs of motion and location in American Sign Language. *Proceedings of the Second National Symposium on Sign Language Research and Teaching*, ed. by F. Caccamise. Silver Spring, MD: National Association of the Deaf.
- Supalla, Ted. 1982. *Structure and Acquisition of Verbs of Motion and Location in American Sign Language*. San Diego: University of California dissertation.
- Sutton-Spence, Rachel, and Bencie Woll. 1999. *The Linguistics of British Sign Language: An Introduction*. Cambridge: Cambridge University Press.
- Tai, James H-Y., and Lianqing Wang. 1990. A semantic study of the classifier *tiao*. *Journal of the Chinese Language Teachers Association* 25:35-56.
- Talmy, Leonard. 1985. Lexicalization patterns: Semantic structure in lexical forms.

To appear in *Language and Linguistics*, 6.2. Special Issue: Taiwan Sign Language Linguistics

*Language Typology and Syntactic Description*, vol. 3, ed. by Timothy Shopen, 57-149. Cambridge: Cambridge University Press.

Talmy, Leonard. 2000. Lexicalization patterns. *Toward a Cognitive Semantics*, vol. II: *Typology and Process in Concept Structuring*, 21-146. Cambridge: The MIT Press.

Talmy, Leonard. 2003. The representation of spatial structure in spoken and signed language: A neural model. *Language and Linguistics* 4.2:207-250.

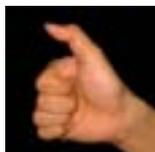
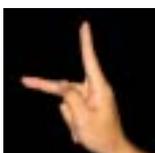
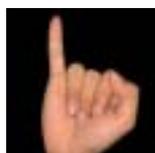
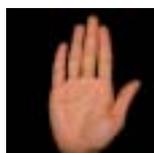
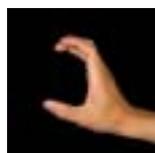
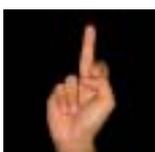
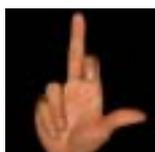
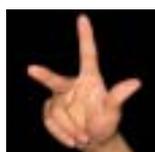
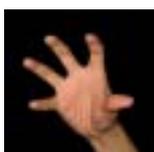
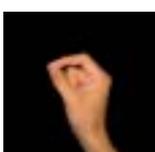
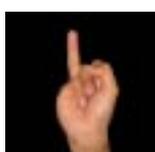
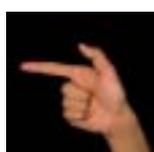
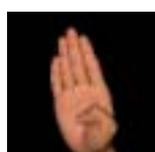
Valli, C., and C. Lucas. 1992. *Linguistics of American Sign Language*. Washington: Gallaudet University Press.

Wilbur, Ronnie B., Mark E. Bernstein, and Rebecca Kantor. 1985. The semantic domain of classifiers in American Sign Language. *Sign Language Studies* 46:1-38.

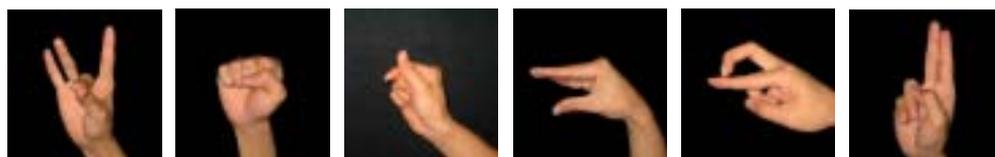
Zwitserslood, Inge. 1996. *Who'll Handle the Object?: An Investigation of the NGT Classifier*. Utrecht: Utrecht University master's thesis.

Zwitserslood, Inge. 2003. *Classifying Hand Configurations in Nederlandse Gebarentaal*. Utrecht: University Utrecht dissertation.

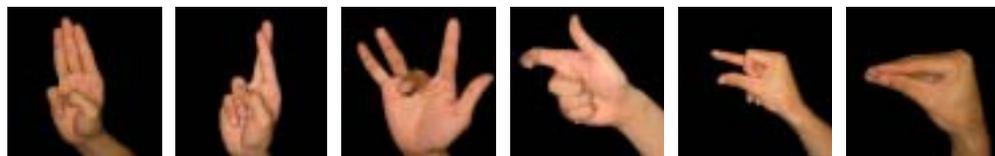
### Appendix: TSL handshapes\*

					
零 LING	一 YI	二 ER	三 SAN	四 SI	五 WU
					
六 LIU	七 QI	八 BA	九 JIU	十 SHI	二十 ER-SHI
					
三十 SAN-SHI	四十 SI-SHI	五十 WU-SHI	六十 LIU-SHI	七十 QI-SHI	八十 BA-SHI
					
(K) (K)	WC WC	千 QIAN	女 NY	手 SHOU	方 FANG
					
兄 XIONG	(奶奶) (NAINAI)	(高) (GAO)	(布袋戲) (BUDAIXI)	同 TONG	守 SHOU
					
呂 LY	男 NAN	姐 JIE	果 GUO	很 HEN	胡 HU

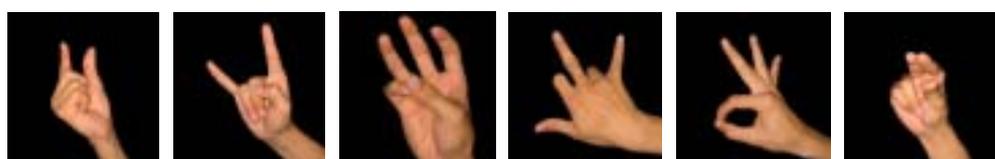
\* The names for the handshapes are from Smith and Ting (1979), but those with parenthesis are added by the project of NSC 90-2411-H-194-025. We thank Hsin-Hsien Lee for taking these pictures.



借 JIE	拳 QUAN	隻 ZHI	紳 SHEN	博 BO	棕 ZONG
----------	-----------	----------	-----------	---------	-----------



童 TONG	筆 BI	菜 CAI	(爺) (IE)	(矮) (AI)	萬 UAN
-----------	---------	----------	-------------	-------------	----------



像 XIAN	語 YU	(細) (XI)	飛機 FEI-JI	錢 QIAN	鴨 IA
-----------	---------	-------------	--------------	-----------	---------



龍 LONG	薑 JIANG	蟲 CHONG	雞 JI	(鵝) (E)	難 NAN
-----------	------------	------------	---------	------------	----------