Classifier Predicates Reanalyzed, with Special Reference to Taiwan Sign Language[*]

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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 requirement. 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 of the non-moving hand as its proform, while the Figure usually adopts a new handshape that is not part of the given sign to serve as its proform.

Key words: sign language, Taiwan Sign Language, classifier predicates, proforms, Figure & Ground

1. Introduction

Taiwan Sign Language (hereafter, TSL) is widely used by approximately 110,000 deaf and hearing-impaired citizens of Taiwan.[1] 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; words like CAR, WINE, VEGETABLE, GREEN ONION, and PINEAPPLE,

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[1] 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.

for example, are signed differently in these two dialects. As pointed out by Smith & 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 written languages.[2]

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 (see e.g., Klima & Bellugi 1979, Fischer & Siple 1990, Siple & Fischer 1991, Liddell 2003). Signed and spoken languages share the same language faculty, but they are expressed in different modalities (see e.g., 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 words 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). An 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 handshape are generally termed **classifier predicates** in the lit-

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[2] The reader should notice the distinction between Signed Chinese and Taiwan Sign Language on the one hand, and that between Signed Chinese and Chinese Sign Language on the other. Signed 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 *zìrán shǒuyǔ* 'natural sign language', while Signed Chinese is known as *wénfǎ shǒuyǔ* 'grammatical sign language' (Smith 1989).

erature of sign language research. (Problems with the term *classifier predicate* will be dealt with in §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 like 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.[3] Note also that in the two signs with a plus symbol, the sign by the left hand is represented first while the sign by the right hand is represented next.

(2) HOUSE DOG HOUSE$_{pro}$+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 occurring in sentence (1) and the possibility of the partial representation occurring 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 §1, §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 §3, following Sutton-Spence & 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 concur-

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[3] In addition to a partial representation of the full sign, the symbol *pro* is also used to refer to classifiers in classifier predicates, since we claim that the classifiers in sign languages are fundamentally proforms.

rently 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 & 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 they give of a sentence using topographic space, one signer 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.

However, syntactic space is created from within the language and may not map onto the real world. For example, to express {*My father loves my mother.*}, the signer may place a sign referring to the father on the left side of his/her signing space and a sign referring to the 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.[4]

Sutton-Spence & Woll (1999) delineate 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 whether 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 & Woll (1999:135) are as follows:

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[4] For more detailed discussion of spatial verbs, see Supalla (1978, 1982).

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 & 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 shall discuss different verb types in TSL and the possibility of these verbs occurring with classifier morphemes.

2.1 Plain verbs in TSL

Words such as LIKE, REMEMBER, FAMILIAR, THINK, FEAR are plain verbs in TSL.[5] 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 rapid 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 below shows. Due to their use of body location, plain verbs are sometimes known as **body-anchored** verbs (Sutton-Spence & Woll 1999).[6]

Since plain verbs cannot move through space to show the information of gram-

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[5] For more examples of TSL plain verbs, see Smith (1989:302).

[6] As pointed out by Padden (1983), Janis (1992), Sutton-Spence & Woll (1999), and many others, not all plain verbs are body-anchored.

matical 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.'

a. DOG   b. BROTHER   c. LIKE
Figure 1

2.2 Agreement verbs in TSL

Examples of agreement verbs in TSL are BELIEVE, TELL, GIVE, ASK, SEE, PAY, 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 & Woll 1999).

Unlike plain verbs, agreement verbs change form 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.
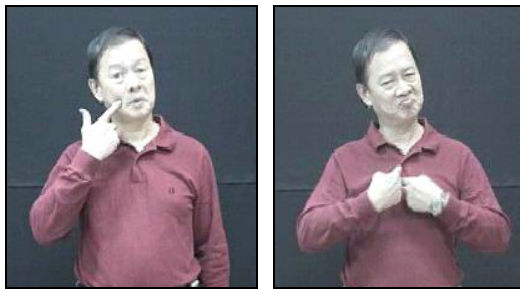
(6)   MOTHER   MOTHER$_{pro}$+FATHER   BELIEVES.
      '(My) father believes (my) mother.'

a. MOTHER   b. MOTHER$_{pro}$+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, agreement verbs such as INVITE, TAKE-FROM, or BORROW are exceptions to this generalization. These verbs show **backwards agreement** where the start point marks the object and the end point marks the subject.[7]

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[7] For different types of agreement verbs in TSL, see Smith (1989:90-125).

2.3 Spatial verbs in TSL

As pointed out by Sutton-Spence & 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 *classifier* 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 a long, thin shape (Tai & 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$_{pro}$+ANIMAL$_{pro}$-RUN.ABOUT.
      'The dog is running about in the room.'
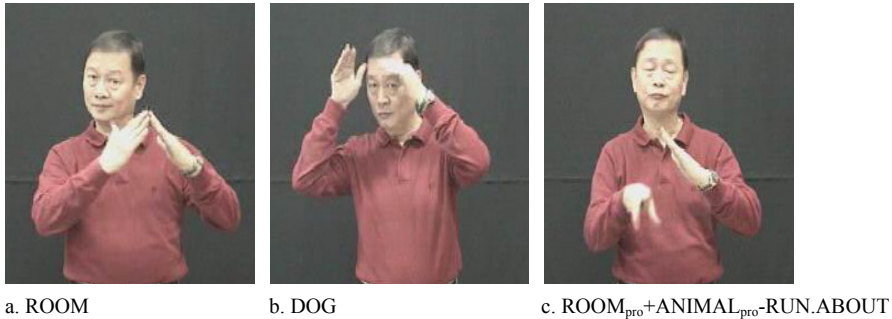
a. ROOM   b. DOG   c. ROOM$_{pro}$+ANIMAL$_{pro}$-RUN.ABOUT
Figure 4

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 with similar features. It is observed that the full sign (e.g., 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 & 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.[8]

2.4 Summary

Following Sutton-Spence & 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 shall 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 so-called 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 & Woll 1999, Zwitserlood 1996) and have argued against the analysis of the spatial structures as containing classifiers (Cogill 1999, Edmondson 1990, Engberg-Pedersen & Pedersen 1985, Engberg-Pedersen 1993).[9] 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 and connected) is used when these two signs occur in spatial constructions. The fact that two signs not belonging to the same semantic classification may involve the same handshape in the spatial constructions argues against the analysis of the spatial con-

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[8] For different types of spatial verbs, see Supalla (1982), Liddell & Johnson (1987), and Sutton-Spence & Woll (1999:147-148).

[9] For more detailed discussion of this issue, see Schembri (2003).

structions as containing classifiers.

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 should be able to classify a set of objects sharing 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 not classifiers, then what are they? As pointed out by Sutton-Spence & 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 & 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 & 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). Note that hierarchies of superordinate-subordinate relations are often referred to as taxonomies. A taxonomy is a system for classifying things. Since the proform (known as classifier in previous analyses) is a superordinate, it thus still contains a classificatory function. In addition, like the function of proforms in spoken languages, this superordinate has an anaphoric function, co-referring to a more specific sign in syntax or discourse. An example in which a superordinate can be co-referential with an antecedent subordinate (also known as hyponym) is given in (9).

(9) <u>A gun</u> lay on the table beside the guard, who checked nervously that <u>the weapon</u> was within easy reach. (Miller 1991:177)

In (9), the weapon mentioned in the second clause is a superordinate whereas the gun introduced in the first clause is a subordinate. It has been noted by Miller (1991:177f.) 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 superordinate), just like a proform, has an anaphoric function.[10] Analyses of treating classifier handshapes as a type of proform are also proposed by Baker & Cokely (1980) and Kegl & Wilbur (1976).

Following Sutton-Spence & Woll's (1999) view, we treat the primary function of the so-called classifier in spatial constructions as a proform. We shall show in the following sections that the analysis of the so-called classifier as a proform is more appealing and is able to capture greater generalization of occurrence of proforms in TSL.

3.2 Figure and Ground in Talmy's analysis of motion events

Talmy (1985:60-61) identifies the five major semantic components associated with motion events.[11] These include the following:

Figure: The moving object.
Ground: The reference-point object with respect to which the Figure moves.
Motion: The presence *per se* of motion or location in the event.
Path: The course followed or the site occupied by the Figure object with respect to the Ground object.
Manner: The type of motion.

These components can be identified in a straightforward way as illustrated in the following English sentence.

(10) Charlotte   swam   away from   the crocodile.
      [Figure]   [Manner+Motion]   [Path]   [Ground]

Talmy has pointed out differences between languages in how these semantic components are typically combined or conflated in verbs and verb phrases, comparing, for example, how Manner information is conflated in English and how Path information is conflated in Spanish, as exemplified in (11) and (12), respectively.

(11) He ran up the stairs.   English

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[10] Or more precisely in this example, *weapon* is cataphoric to *gun*.
[11] The analysis of motion events in Talmy (1985) has been revised with more details in Talmy (2000). We adopt Talmy's (1985) analysis of motion events because it is simpler and meets our need in this paper.

(12) Subió   las   ecaleras   corriendo.   Spanish
      went-up the   stairs   running
      'He ran up the stairs.'

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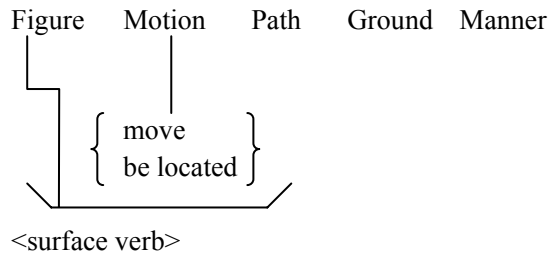
A third possible pattern of conflation combines the Figure with the Motion, the information about what is moving. According to Talmy, Atsugewi (a Hokan language of northern California) is a good example of this pattern. In Atsugewi, the verb root can also have an agentive meaning, as illustrated in (13).

(13) Verb root of motion with conflated Figure:
      -*st̓aq̓-* '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 non-agentive motion, and of agentive motion. Expressions with -*st̓aq̓-* 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--*[a] '3rd person subject (factual mood)'
      b. Combined underlying form
          /*'-w-uh-st̓aq̓-ik·-*[a]/
      c. Pronounced as
          [ẇost̓aq̓ík·a]
          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   Motion   Path   Ground   Manner

$$\left\{ \begin{array}{l} \text{move} \\ \text{be located} \end{array} \right\}$$

<surface verb>

In this paper, we shall use Talmy's (1985) terms 'Figure' and 'Ground' to describe the asymmetrical relation between entities in spatial situations: Figure refers to the moving object to be located, whereas Ground refers to the reference object to locate the Figure. We propose that in sign languages both Figure and Ground components have proforms and the so-called classifier in the literature is the proform of Figure used to be combined with the Motion component.

3.3 The formation of proforms of Figure and Ground

As we have mentioned before, spatial verbs usually occur with a so-called classifier handshape. For example, the verb RUN INTO in sentence (16) is a spatial verb, and there is a MIN (民) handshape (the thumb and pinky extended) associated with this spatial verb.[12] In our analysis, the MIN (民) handshape is considered as a proform used to substitute for a more specific sign, i.e., the CHILD.

In addition to the MIN (民) handshape, the SHOU (手) handshape in Figure 5c also receives special attention. The SHOU (手) handshape is the partial representation of the referent HOUSE (the four fingertips of both hands connect like the shape of a roof). Because this partial representation is used to substitute for the referent HOUSE, we also treat this partial representation as a proform.

(16)   HOUSE CHILD   HOUSE$_{pro}$+HUMAN.BEING$_{pro}$-RUN.INTO
       'The child ran into the house.'

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[12] The reader can refer to the appendix for identifying the names of TSL handshapes.

a. HOUSE   b. CHILD   c. HOUSE_pro+HUMAN.BEING_pro-RUN.INTO
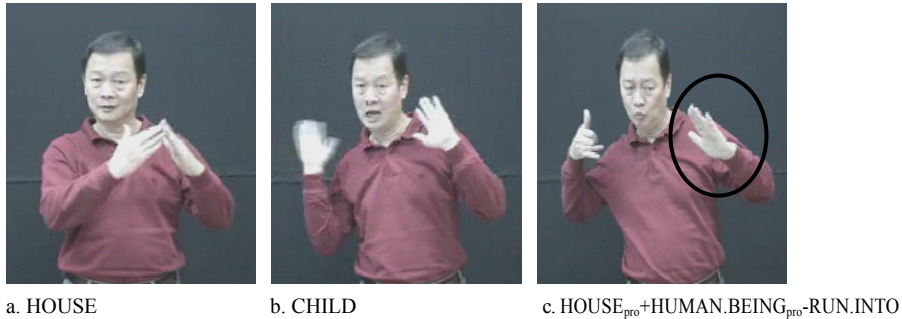
Figure 5

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 terms, 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.[13] There arises a question how the proforms of Figure and Ground are formed and what semantic considerations are involved. In the following two sections, we shall discuss the formation of the proforms in TSL.

3.3.1 Proforms of Ground

For purposes of presentation, we shall 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.[14] For example, the word LEAF, as in Figure 6 is produced with two handshapes: The YI (一) handshape and the LIU (六) handshape.

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[13] 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 two reasons. First, some signs of Ground use a new handshape that 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.

[14] 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.

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 Figure 7 shows.


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, it is therefore used as the proform when the word TRAIN plays the role of Ground, as Figure 9 shows.
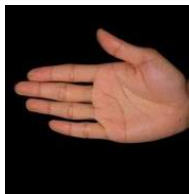
Figure 8: TRAIN   **Figure 9:** handshape: SHOU (手)

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, a 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 like 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 a 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.[15] In addition, a proform of Ground can be a new handshape that is not any part of the given sign (e.g., CHILD).

As for why the CHILD takes a new handshape rather than a part of the given sign as its proform of Ground, we suggest that the choice between the partial lexical representation and the classificatory handshape of a given sign as its Ground proform is determined by the visual motivation of the given sign; that is, how the sign in question is visually motivated. To clarify this point, we need to make distinction between two kinds of visually motivated signs that represent an image of the referent. The first kind represents the image by tracing the shape of the referent. The second kind uses the handshape form which can represent the referent (Mandel 1977). Since the sign of TRAIN belongs to the second kind, the non-moving hand can be the proform of Ground. The sign of HOUSE also belongs to the second kind; therefore, either of the non-moving hands can be the proform of Ground. As for the LEAF, the form of the non-moving hand (i.e. the LIU (六) handshape) is visually motivated by the second kind and the form of the moving hand (i.e. the YI (一) handshape) is by the first kind. The LIU (六) handshape can be taken as the proform of Ground and a new handshape is taken as the proform of figure (see the following section for a more detailed discussion). The sign of CHILD is motivated by mimicking the action of a child rather than by showing an image of the referent; neither handshape of both hands can be the proform of Ground. Therefore, the sign of CHILD requires a new handshape as its proform of Ground, at the same time showing that the selection between the two forms (i.e. the partial lexical representation and the classificatory handshape) is not determined solely by the phonological form of the noun.

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 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

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[15] The choice of handshape depends on whether the signer is left-handed or right-handed.

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.
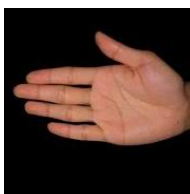
Figure 15: LEAF   **Figure 16:** handshape: SHOU (手)

Take the word FROG as 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. In this case, there are two possible proforms for the FROG. First, the handshape JIU (九) produced with the moving hand becomes its proform of Figure, and second, a new handshape is taken as its proform of Figure. This new 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.
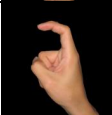
Figure 17: FROG
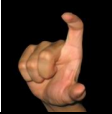
Figure 18: handshape: BUDAIXI (布袋戲)

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). 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.[16]
TONG (同)		BALL, ROCK, BOTTLE, CHARACTER, PAPAYA, APPLE, etc.
WAN (萬)		DRAGON EYE FRUIT
BUDAIXI (布袋戲)		DOG, FROG, BIRD, BABY, BUTTERFLY, etc.

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[16] The SHOU (手) handshape is usually used as the proform when these entities play the role of Figure; however, signers sometimes use the HU (胡) handshape as their proform of Figure.

LIU-SHI (六十)		BICYCLE, MOTORCYCLE, etc.
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)		SHRIMP

Table 1: Handshapes commonly used as proforms of Figure

As for why in the sign of LEAF the handshape YI (一), produced by a moving hand, cannot be used as the proform of Figure, we propose that the handshape produced with a moving hand can be the proform of Figure when this moving handshape is a part of the visually motivated sign, namely, the given handshape is used to represent an image of the referent. Since the YI (一) handshape of the LEAF is used to represent the referent by tracing the shape of it, the handshape cannot be taken as the proform of Figure, though this handshape is produced with a moving hand. This analysis automatically accounts for why the ZONG (棕) handshape produced with a moving hand can be the proform when the TRAIN plays a Figure role. It is noted that the sign of FROG has two possible Figure proforms: when the moving hand of the given sign is considered to be motivated by showing an image of the referent, this moving handshape (i.e., the handshape JIU (九)) can be used as the proform of Figure, whereas when the moving hand is considered to be motivated by something associated with the referent, a new handshape (i.e., the BUDAIXI (布袋戲) handshape) is adopted to be the Figure proform. Like that

of Ground proforms, the formation of the Figure proforms involves semantic considerations.

In the previous two sections, we have discussed how the proforms of Figure and Ground are formed. In what follows, we shall 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.[17]

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[17] 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. This reviewer 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 par-

It has been pointed out in §2 that only spatial verbs use topographic space (i.e., they recreate a map of the real world) for the grammatical relations. As for why all sign languages use the proforms of Figure (i.e., classifiers) with spatial verbs universally, as pointed out by Sutton-Spence & 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 if we follow Lehmann (1988) and Blake (1994) and define verb agreement as the spelling out of the pronominal features of the arguments on the verbs.

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 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 & Pfau (1998, 1999), Zwitserlood (2003), and Benedicto & Brentari (to appear).

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ticipants 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.

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 & Woll (1999), the full signs of Figure and Ground often use two hands or are anchored to the body, so that 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 (17), both LEAF and TREE use two hands so 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.

(17) LEAF TREE TREE$_{pro}$+LEAF$_{pro}$-FALL.DOWN
      'A leaf is falling down from the tree.'
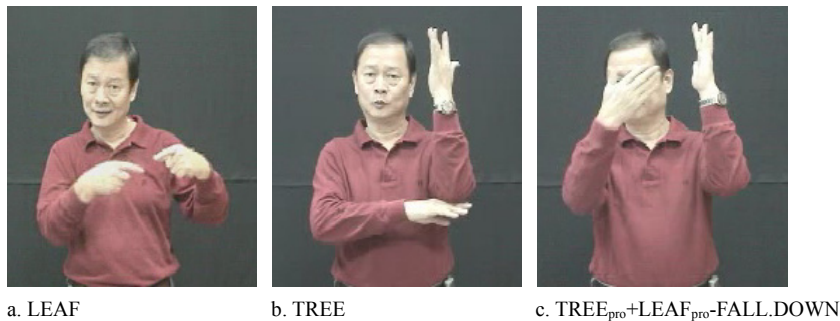
a. LEAF   b. TREE   c. TREE$_{pro}$+LEAF$_{pro}$-FALL.DOWN
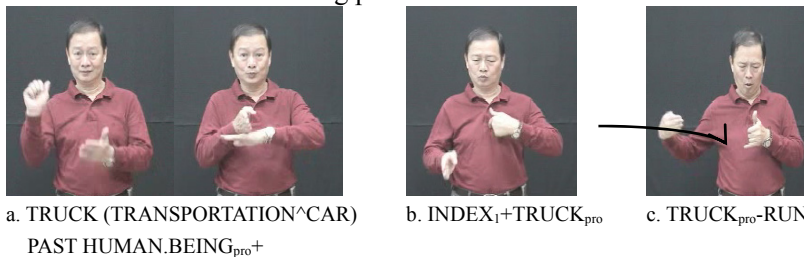**Figure 19**

Examples (18) and (19) show that the same handshape (e.g., MIN 民) can be used as the proforms of Figure and Ground. In example (18) the MIN (民) handshape refers to the CHILD, whereas in example (19) the MIN (民) handshape refers to the signer himself. Note that INDEX$_1$ in (19) refers to the first person.

(18) HOUSE CHILD   HOUSE_{pro}+HUMAN.BEING_{pro}-RUN.INTO
      'The child ran into the house.'
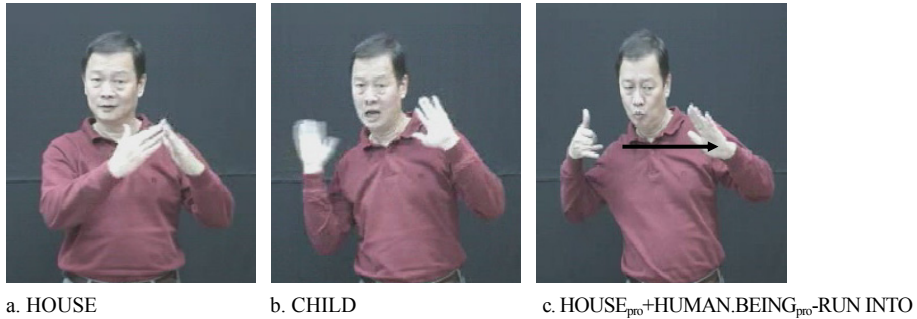
a. HOUSE   b. CHILD   c. HOUSE_{pro}+HUMAN.BEING_{pro}-RUN INTO
Figure 20

(19) TRUCK INDEX_1+TRUCK_{pro} HUMAN.BEING_{pro} + TRUCK_{pro}-RUN PAST
      'The truck was running past me.'

a. TRUCK (TRANSPORTATION^CAR)   b. INDEX_1+TRUCK_{pro}   c. TRUCK_{pro}-RUN
   PAST HUMAN.BEING_{pro}+
Figure 21

In example (18), 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 §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 (19), 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, 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 (20) and (21) involve the sign FROG. In (20) the FROG plays the role of Figure while in (21) 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.

(20)　POND FROG POND$_{pro}$+FROG$_{pro}$-JUMP.AROUND.
　　　'The frog is jumping around beside the pond.'
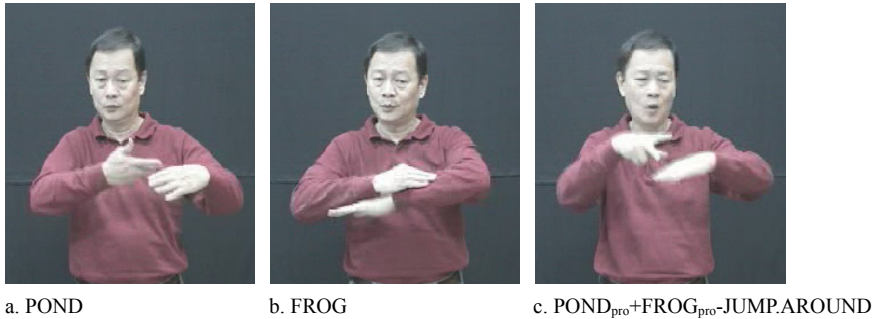
a. POND　　　　　　b. FROG　　　　　　c. POND$_{pro}$+FROG$_{pro}$-JUMP.AROUND
Figure 22

(21)　FROG FROG$_{pro}$+FISH$_{pro}$-SWIMS.
　　　'The fish is swimming beside the frog.'
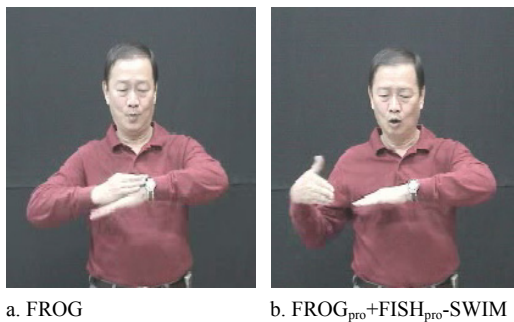
a. FROG　　　　　　b. FROG$_{pro}$+FISH$_{pro}$-SWIM
Figure 23

Note that in sentence (21) the lexical sign of FISH is the Figure and its proform happens to be the same as the lexical sign. In such a 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 (22).

(22)　FISH　FROG FROG$_{pro}$+FISH$_{pro}$-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, there is no requirement for fixed word order.
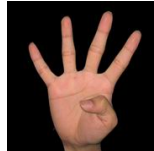
4. Conclusion

This paper has discussed classifier predicates in TSL. We developed an approach combining 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. We have 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.
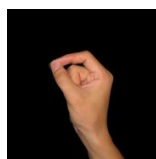
In addition, we identified two kinds of proforms: Figure proforms and Ground proforms, suggesting that the proforms of Figure and Ground are used for the purpose of conflating the Figure and Ground with the Motion component. We have also discussed the formation of Figure and Ground proforms. The proforms 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 that is not part of the given sign to serve as its proform.

As for why only spatial verbs have proforms associated with predicates, 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.

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 ERSHI
三十 SANSHI	四十 SISHI	五十 WUSHI	六十 LIUSHI	七十 QISHI	八十 BASHI
(K) (K)	WC WC	千 QIAN	女 NÜ	手 SHOU	方 FANG
兄 XIONG	(奶奶) (NAINAI)	(高) (GAO)	(布袋戲) (BUDAIXI)	同 TONG	守 SHOU
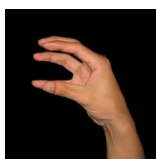
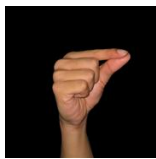|					
呂 LÜ	男 NAN	姐 JIE	果 GUO	很 HEN	胡 HU
借 JIE	拳 QUAN	隻 ZHI	紳 SHEN	博 BO	棕 ZONG
童 TONG	筆 BI	菜 CAI	(爺) (YE)	(矮) (AI)	萬 WAN
像 XIANG	語 YU	(細) (XI)	飛機 FEIJI	錢 QIAN	鴨 YA
龍 LONG	薑 JIANG	蟲 CHONG	雞 JI	(鵝) (E)	難 NAN
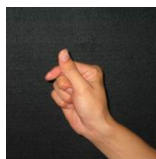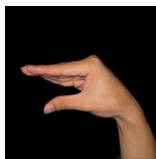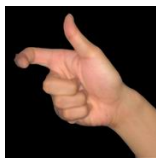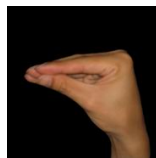
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以台灣手語爲例重新分析手語分類詞述語

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　　本文參照台灣手語語料，重新分析了傳統所謂的分類詞述語，作者認爲所謂的分類詞詞素是一個上位詞，而根據其主要的回指功能，此上位詞應被視爲一種代形詞。作者結合 Talmy (1985) 的動態事件和代形詞的分析，解釋了主體與背景如何在空間結構中與空間動詞共同出現，以及主體和背景的代形詞如何形成以達共現之要求。文中並提出台灣手語的「背景代形詞」比「主體代形詞」更容易預測，因爲背景的名詞通常以非移動的手形來作爲它的代形詞，而主體名詞通常是取一個全新手形作爲它的代形詞。

關鍵詞：台灣手語，分類詞述語，主體與背景之代形詞