

Events of motion and causation in Hong Kong Sign Language

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Abstract

Recent research that takes events as objects of linguistic analysis proposed that semantics of events features in the predicates of natural languages. Also, events are said to have an internal structure that are decomposable into parts with each organized around our cognitive perception of change, causation and the like. With an event of causation, it is generally assumed that it entails two sub-events—cause and result, and each is expressed by an independent predicate. Adopting the conceptual framework of motion event structure in Talmy (2000), we examine how the meaning components of event are mapped onto the grammar of signed language; in particular, we examine the grammatical processes involved in incorporating *Manner* and *Cause*¹ into the classifier predicates of Hong Kong Sign Language (HKSL). We observe that the mapping may involve a process of lexicalization where the semantic components of a motion event are realized by different phonological parameters of HKSL; namely, palm orientation is being selected for encoding manner of spatial configuration, handshape for agentivity, movement shape for manner of motion along a path and manner of causation. Lexicalization aside, we also observe other grammatical processes at the morpho-syntactic level. Incorporating manner of locomotion or manner of causation into the linguistic system will yield a class of imit-signs which, when occurring in a sign sentence, will normally precede a classifier predicate. We propose to analyze this sequence as a morphological V-V compound in HKSL. Incorporating *Cause* into the verb root whose semantics is devoid of *change of state* may result in the occurrence of a second, obligatory classifier predicate that is resultative in nature; this sequence of having two classifier predicates is amenable to complex predicates as discussed in the general linguistics literature.

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¹ The meaning components are italicized in this paper.

1. Introduction

One approach to the study of verb semantics is to identify meaning components, which are perceived as conceptual primitives, and to examine the way in which they are encoded in the grammar of natural language. Some researchers go even further by examining the lexicalization patterns cross-linguistically for a definitive set of universal ‘semantic primitives’, assuming that these primitives can be lexicalized into distinct grammatical categories such as nouns and verbs (Wierzbicka, 1988; Wunderlich, 1997; Talmy, 2000). Alternatively, they show how these primitives are incorporated into the morphological structure of the language. While attempts to delineate universal meaning components are not easy, many substantial observations have been made to analyze portions of the lexicon. Talmy (1985, 2000) discusses the lexicalization patterns of meaning components like *Figure*, *Path*, *Ground*, *Manner*, and *Cause* in events of motion and causation cross-linguistically. Other researchers like Jackendoff (1990) analyze the realization of meaning components like *Motion*, *Location* and *Cause* in natural language at the morphological and syntactic levels through positing a lexical conceptual structure (LCS). This paper discusses how meaning components of events of motion and causation are mapped onto the grammar of Hong Kong Sign Language (HKSL), in particular, we examine how the two supporting co-events *Manner* and *Cause* in Talmy’s conceptual framework are realized in the language. We will argue that lexicalization is not the only linguistic mechanism for incorporating meaning components through the verb root into the language; incorporating the meaning component of *Manner* or *Cause* may result in a more complex grammatical process at the morpho-syntactic level.

2. Talmy’s concept of event integration

Talmy (2000) argues that in the underlying conceptual organization of human language, there are ways to encode events as objects having an internal structure that corresponds to different degrees of complexity.² Therefore, a ‘macro-event’ is complex, consisting of a core or ‘framing’ event and some ‘co-event’ components. Examples of framing events are Motion and State Change, which are the focus of this paper. A framing event consists of four components. *Figure* is the first component to which focal attention is given in the event structure. This component reflects our perception of the most salient argument participating in the event. The second component is *Ground*. It acts as the reference point against which *Figure* is conceptually characterized. The third component is termed as ‘*Activating Process*’; it depicts the process whereby *Figure* makes a transition or stays fixed with *Ground*. A given event structure may reflect our general perception of dynamism or a lack of it. For instance, an entity traversing a distance or an external force on an object constitutes dynamism, whereas a resultant state lacks it. Finally, the fourth component sets up a predicative relationship between *Figure* and *Ground*. This component is referred to as ‘*Association Function*’, which contributes to the core schema of an event.³ For instance, in a transitive predicate, the dynamic association function entails that the *Figure* acts upon the *Ground*. In a locative predicate, on the other hand, the

² Talmy assumes that these complexities are reflected by the properties of the morphological and syntactic constituents that best encode the event and its internal structure.

³ The core schema may be set up by the *Association Function* alone or by the *Association Function* together with the *Ground* entity (Talmy, 2000:218).

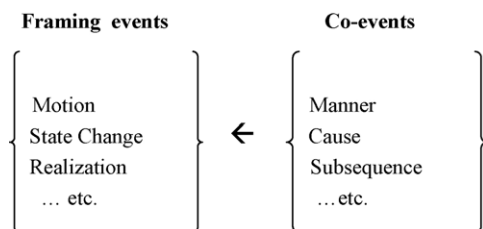


Fig. 1. Talmy's conceptual structure of a macro-event

non-dynamic association function implies that the *Figure* locates itself in relation to a *Ground* entity.

In this framework, a co-event can 'fill in, elaborate, add to, or motivate the framing event' (Talmy, 2000:220). There are a number of co-events that 'support' the framing event and the two most common ones are *Manner* and *Cause*, as shown in Fig. 1.

3. Structure of a motion event

Following Talmy's (1985) analysis, a motion event denotes a fundamental property of dynamism or its opposite, stationariness. It consists of four meaning components: *Figure*, *Ground*, *Motion*, and *Path*. A *Figure* entity either moves or locates itself in the event. A *Ground* entity is the second physical object having the role of a reference point with respect to which the *Figure* entity's site or path is characterized. *Motion* denotes the presence of translational motion or location of the *Figure* entity in the event. It is closely associated with *Path* which is defined as either the path followed, i.e. the trajectory that the *Figure* entity traverses, or the site occupied by the *Figure* entity relative to the *Ground* entity.⁴ The 'core schema' of a motion event is set up either by *Path* alone or *Path* together with *Ground*.

Talmy also suggests that typologically there are three lexicalization patterns for verb roots⁵: *Motion* + co-event (usually *Manner* or *Cause*), *Motion* + *Path*, *Motion* + *Figure*. Cross-linguistically, languages may be categorized according to whether they are verb-framed or satellite-framed, depending on whether the core schema of a motion event is conflated with the main verb or the satellite to the main verb. Assuming that the core schema of a motion event is either *Path* alone or *Path* together with *Ground*, English is said to be a satellite-framed language because *Path* is not lexicalized into the verb root. It is grammatically realized as locatives or directional PPs like 'into the room' and 'toward the gate', or as verb particles like 'climb up', 'hand down'. In English, *Manner* is lexicalized into verb root and forms the main predicate. Common examples are 'walk', 'swim', 'run' where the manner of locomotion is hypothesized to combine with the abstract morpheme MOVE in the lexicalization process. Verb-framed languages such as Spanish conflate *Path* but not *Manner* with the verb root (Talmy, 2000; Slobin and Hoiting, 1994).

⁴ In Talmy's analysis, the meaning component *Motion* precludes self-contained motion, such as rotation, oscillation, or dilation, which are representative of the co-event *Manner*.

⁵ The verb root, in the sense of Talmy (1985), is an abstract 'deep morpheme' in the lexicon, represented by MOVE or BE_L (BE-LOCATED-AT). It conflates with other meaning components in the lexicalization process.

4. Motion events and classifier predicates in signed language

Tamly's framework has been employed quite extensively in the analysis of grammatical constructions involving what are commonly known as 'classifier predicates' in signed language. His model provides a conceptual basis for researchers to examine the semantic and syntactic properties of this type of constructions (Supalla, 1986; Schick, 1990; Engberg-Pedersen, 1993; Wallin, 2000; Morford, 2002). Recently, meaning components like *Figure* and *Ground* which are represented by handshape in signed language are being translated into different argument types to examine how they interact with verb semantics as well as morpho-phonology of the constructions (Benedicto and Brentari, 2004).

Classifier predicates are made up of two morphological components: handshape and movement. Padden (1988) identified three verb types in ASL—spatial verbs, agreement verbs and plain verbs. Classifier predicates are closely associated with spatial verbs because they usually encode movement or location of an entity in space.⁶ In the literature, it is generally assumed that the handshape in a classifier predicate is a bound morpheme, having a classificatory function similar to the 'classifiers' in spoken languages (Frishberg, 1975). Previous studies have identified four main types of classifier handshape: semantic, size and shape, instrumental/handle, and bodypart (Supalla, 1982; Engberg-Pedersen, 1993; Liddell and Johnson, 1987). Semantic classifiers (or whole-entity classifiers) are similar to sortal classifiers in spoken language where the handshape refers to typical noun categories like humans, animals or vehicles. Size and shape classifiers, also known as size and shape specifiers (SASS) or descriptive classifiers, denote the physical properties of objects like length, width, extension, and dimension. For handle classifiers, the handshape refers to the way in which an instrument or object is handled or manipulated. Lastly, bodypart classifiers encode part of a body engaged in a human activity. Table 1 lists the classifier handshapes and examples of the predicates they may appear in:

Table 1
A sample of classifier predicates in HKSL

Classifier types	Handshape	Movement	HKSL examples
Semantic/whole entity	Y-handshape for humans	Motion	CL: A-PERSON-APPROACH-AN-ENCLOSURE (Fig. 2)
	B-handshape for vehicles	Motion	CL: A-VEHICLE-ARRIVE (Fig. 3)
SASS/descriptive	Curved 5-handshape for 3D round objects	Location	CL: A-SPHERICAL-OBJECT-BE-LOCATED (Fig. 4)
	B-handshape to trace the extent of a flat surface	Stative-descriptive	CL: A-FLAT-SURFACE (Fig. 5)
Handle	S-handshape for handling long and thin objects	Causation + manner	CL: TO-SNAP-A-LONG-AND-THIN-OBJECT (Fig. 6)
Body part	S-handshape for fists	Causation + manner	CL: TO-STRIKE-A-PERSON-WITH-A-FIST (Fig. 7)

The movement component is predicative in meaning and has the following types: contact/location, motion, manner of motion and stative-descriptive. Contact/location predicates are articulated by a downward movement of the hand ending in a hold, indicating the location of the

⁶ This system of verb classification has been applied to HKSL analysis (Lam, 2000; Tang, 2003).

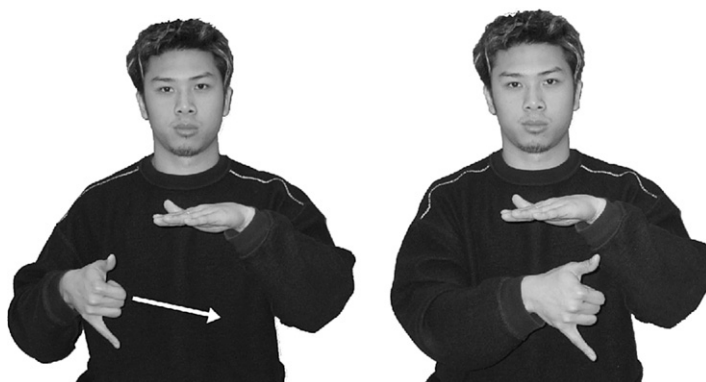
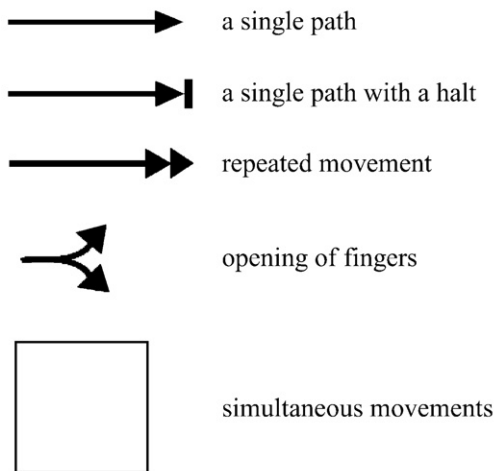
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Fig. 2. CL: A-PERSON-APPROACH-AN-ENCLOSURE.

entity in space. Motion predicates describe the movement of an entity through space, resulting in a path traversed by the entity to a different location. Manner of motion predicates, sometimes referred to as 'imit-signs', denote stylized actions, random paths, or speed of motion. Lastly, stative-descriptive or extension predicates denote the physical properties of the object through the handshape configuration or movement of the sign.

The linguistic structure of classifier predicates has been subject to much debate. Some researchers have raised concern against associating handshape with spoken language classifiers similar to those observed in predicate classifier languages proposed in [Allan \(1977\)](#). Meanwhile, various terminologies have been proposed in place of 'classifier predicates': polysynthetic signs ([Wallin, 2000](#)), productive signs ([Brennan, 1992](#)), polycomponential signs ([Slobin et al., 2003](#); [Schembri, 2003](#)), and polymorphemic verbs ([Engberg-Pedersen, 1993](#)), to name but a few. Although it is inappropriate to associate sign language classifiers with the suppletive classificatory verbs of the Athabaskan languages like Navajo, the bound handshape morpheme by and large denotes certain inherent semantic properties of noun categories, providing some basis

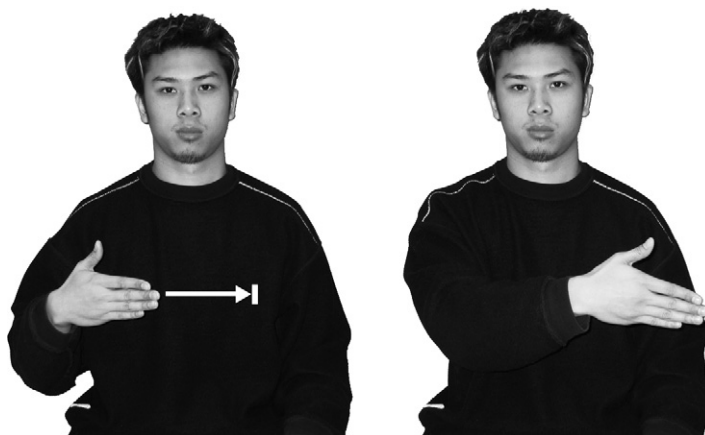


Fig. 3. CL: A-VEHICLE-ARRIVE (for significance of symbol, see Fig. 2).



Fig. 4. CL: A-SPHERICAL-OBJECT-BE-LOCATED (for significance of symbol, see Fig. 2).

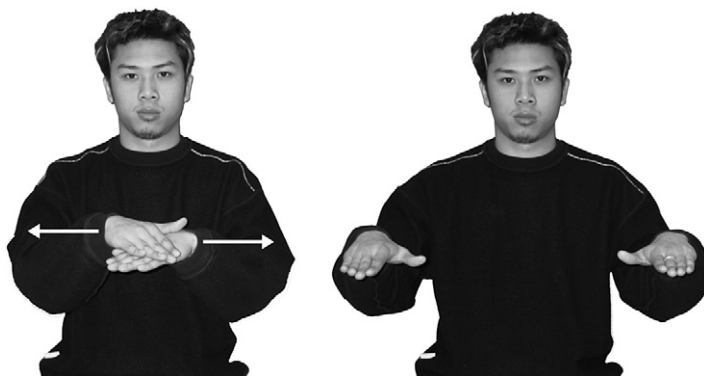


Fig. 5. CL: A-FLAT-SURFACE (for significance of symbol, see Fig. 2).



Fig. 6. CL: TO-SNAP-A-LONG-AND-THIN-OBJECT (for significance of symbol, see Fig. 2).



Fig. 7. CL: TO-STRIKE-A-PERSON-WITH-A-FIST (for significance of symbol, see Fig. 2).

for classification (Tang, 2000). Also, it is still unclear whether all classifiers in signed language fall into one single classificatory system, Grinevald (2003) suggests that signs specifying size and shape may behave more like lexical class terms and may fall into the lexicon. On the other hand, semantic classifiers in signed language behave more like the typical morphosyntactic verbal classifiers of spoken language. In the current analysis, we will continue to use the term ‘classifier’ to refer to the handshape component of classifier predicates.

The concern regarding movement is what counts as the verb root of a classifier predicate: handshape or movement per se, or, both handshape and movement combine to form the verb root of a predicate (Supalla, 1982; Schick, 1990; Engberg-Pedersen, 1993). Tang (2003) adopted the ‘movement-as-root’ hypothesis and maintained that the movement component was fundamental to a systematic account of verbs of motion and location because movement provided information about the qualitative domain of predication such as event, state and location. Based on Tamly’s conceptual model, Tang posited how the meaning components of a motion event were incorporated into verbs of motion and location in signed language (Fig. 8):

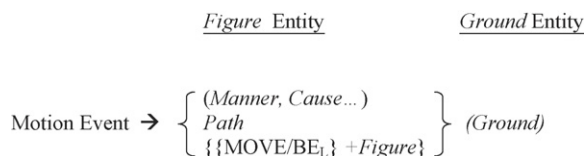


Fig. 8. Conceptual structure of a motion event in signed language

In this model, a motion event is captured semantically by an obligatory *Figure* entity which may or may not require a *Ground* entity with which an *Association Function* is set up for predication. In signed language, the meaning components *Figure* and *Ground* are mapped onto the handshape component of the predicate. The meaning component *Motion* is encoded by an abstract morpheme, MOVE or BE_L, which is phonetically realized by movement of the handshape component. MOVE initially conflates with *Figure* and forms the first abstract tier of the predicate. It further combines with *Path*, an obligatory component to reflect the semantic core of a motion event. It optionally combines with co-events like *Manner* or *Cause*. *Path* may be either the path followed (i.e. *Path_P*) or the site occupied (i.e. *Path_S*) by *Figure*. {MOVE + *Figure*} conflating with *Path_P* results in verbs that denote translational motion, that is, displacement of an entity through space. {BE_L + *Figure*} conflating with *Path_S* results in verbs that denote ‘locatedness’ (i.e. existence or location) of an entity in space. Assuming that MOVE or BE_L is the verb root, it follows that signed language is a figure-type language because the verb root consistently conflates with *Figure* in the predication.⁷

In what follows, we will discuss the grammatical consequences when these meaning components are incorporated into the classifier predicates of HKSL, in particular, we will show how *Manner* and *Cause* surface in the grammar of HKSL.

5. Motion events in HKSL: a general analysis

Typical motion events contain an underlying *Path_P* that conflates with {MOVE + *Figure*}, yielding intransitive predicates. The *Figure* entity may or may not be agentive and the predicate usually involves verbs of location and translational motion. Examples of this type of motion predicates are CL: A-PERSON-APPROACH-AN-ENCLOSURE and CL: A-VEHICLE ARRIVE (see Figs. 2 and 3 for illustration.)

When *Path_S* (site/stationariness) conflates with {BE_L + *Figure*}, locative or existential predicates result. In Fig. 4, the curved five-handshape may refer to a bowl, which is a three-dimensional round object. This classifier handshape combines with a downward movement with a hold to designate a locus in space, yielding a locative-existential predicate taking a theme argument as its grammatical subject and another argument that takes the role of location.

The *Ground* entity also refers to a nominal referent represented by a classifier handshape. As *Ground*, it is usually stationary in a motion event. In signed language discourse, *Ground* may occur first as location with reference to which the *Figure* entity is introduced into the discourse (i.e. ‘contact root’ as discussed in Liddell and Johnson, 1987). The example in (1) and Fig. 9 shows the spatial configuration of two entities in space. In this example, the lexical sign ‘TREE’ is introduced as the theme argument of the locative predicate. This lexical sign is followed by an

⁷ We assume that the choice of handshape for *Figure* is determined in part by the verb semantics and in part by some discourse pragmatic factors (Engberg-Pedersen, 1993; Grinevald, 2003, and Tang, 2003).

anaphoric, classifier handshake for TREE. The downward movement of the classifier handshake ends at a locus in space (indexed with ‘i’) and serves as the location where the theme argument (i.e. TREE) is situated. This classifier handshake for TREE, originally encoding *Figure* in the locative predicate, becomes *Ground*, (i.e. represented by LH) when the next predicate is set up. Notice that in the second predicate, this *Ground* entity is sustained in space to provide an ‘anchor’ for the *Figure* entity (i.e. the classifier handshake for CAR) to position itself in the ensuing discourse. The movement of the classifier handshake for CAR in a direction towards the classifier handshake for TREE constitutes a motion event and grammatically surfaces as a VP with a directional PP.

- (1) BH: TREE
Figure_i
 Theme
- LH: CL:A-TREE-BE-LOCATED-AT-i
 {{BE_L + *Figure_i*} + *Path_S*}
 Theme
 ‘A tree is located here;’
- BH: CAR
Figure_j
 Theme
- LH: { CL:A-TREE-AT-i
 Ground_i
 Goal
- RH: { CL:A-VEHICLE-MOVE-TOWARD-A-TREE
 {{MOVE + *Figure_i*} + *Path_P*}
 Theme
- ‘A car moves toward the tree (located here).’

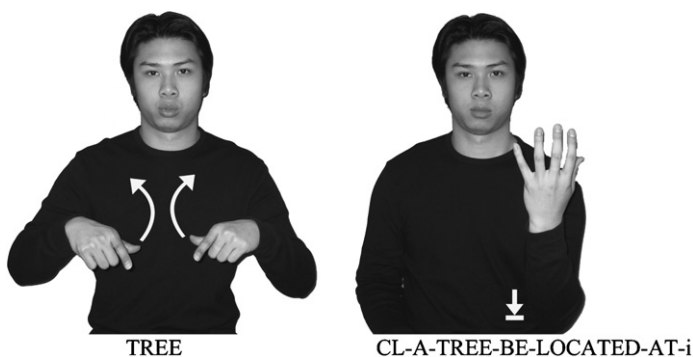


Fig. 9. A tree is located here; a car moves towards it (for significance of symbols, see Fig. 2).

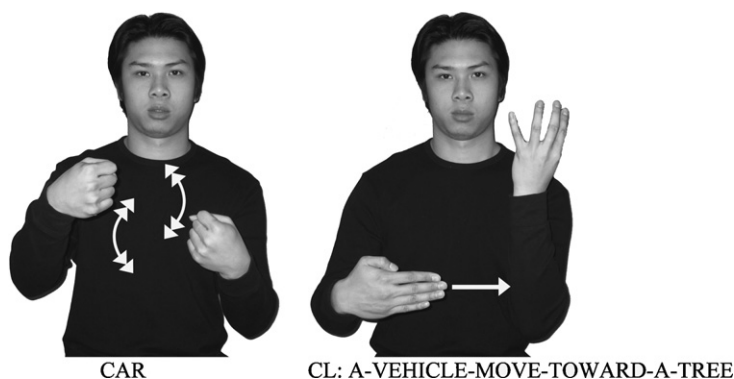


Fig. 9 (Continued).

Adopting this framework of analysis, *Ground* and *Figure* are perceived as displaying dynamic role relations in the predicate. The classifier handshape for TREE is initially *Figure*, but subsequently becomes *Ground* in the ensuing discourse. In terms of thematic roles, the *Ground* entity may be theme (i.e. the object in motion or in a certain location); source (i.e. the object from which motion proceeds) or goal (i.e. the object towards which motion proceeds).⁸ This analysis lends support to the claim made explicit in recent decades about the mapping relation between conceptual primitives and verb meaning representation (Jackendoff, 1990; Grimshaw, 1990; Pustejovsky, 1988, 1995; Levin and Pinker, 1992; Hale and Keyser, 1993; Levin and Rappaport, 1995, among many others). *Ground* and *Figure* are conceptual primitives that serve as the core meaning components for constructing the structure of a motion event. Signed language, therefore, provides clear evidence about how verbs in natural language have internal structures that are ‘decomposable’ in nature.

When a predicate has a compositional meaning, i.e. involving more than one conceptual primitive, the predication relation between the components may become complex, resulting in a complex structure. Although the grammatical analysis of classifier predicates remains unclear, it is highly likely that, being multimorphemic, classifier predicates are, structurally speaking, not lexical; rather, they may be phrasal, with the classifier handshape behaving like an anaphor that binds the lexical argument outside the grammatical domain of classifier predicates, hence the subscript for *Figure* and *Ground* for referential purposes.

It is also possible that in a motion predicate, both *Figure* and *Ground* are in motion of some kind, as in (2) and Fig. 10:

- (2) RH: $\left\{ \begin{array}{l} \text{MALE} \\ \text{Figure}_i \\ \text{Theme} \end{array} \right\} \quad \left\{ \begin{array}{l} \text{CL: A-PERSON-BE-LOCATED-AT-}i \\ \{\text{BE}_L + \text{Figure}_i\} + \text{Path}_S \\ \text{Theme} \end{array} \right\}$
- ‘A male is located here;’

⁸ The definitions of the thematic roles are from Gruber (1967).

RH:	-----
LH:	<div> <div> FEMALE <i>Figure_j</i> Theme </div> <div> $\left\{ \begin{array}{l} \text{CL:A-PERSON-BE-LOCATED-AT-j} \\ \{ \{ \text{MOVE} + \textit{Figure}_j \} + \textit{Path}_s \} \\ \text{Theme} \end{array} \right\}$ </div> </div>
	‘A female is located here;’
RH&	$\left\{ \begin{array}{l} \text{CL:A-PERSON-MOVE-AFTER-(A-PERSON)} \\ \{ \{ \text{MOVE} + \textit{Figure}_i \} + \textit{Path}_p \} \\ \text{Agent} \end{array} \right\}$
LH:	$\left\{ \begin{array}{l} \text{CL:A-PERSON}_i\text{-MOVE-FORWARD} \\ \{ \{ \text{MOVE} + \textit{Ground}_j \} + \textit{Path}_p \} \\ \text{Theme} \end{array} \right\}$
	‘The male chases the female.’

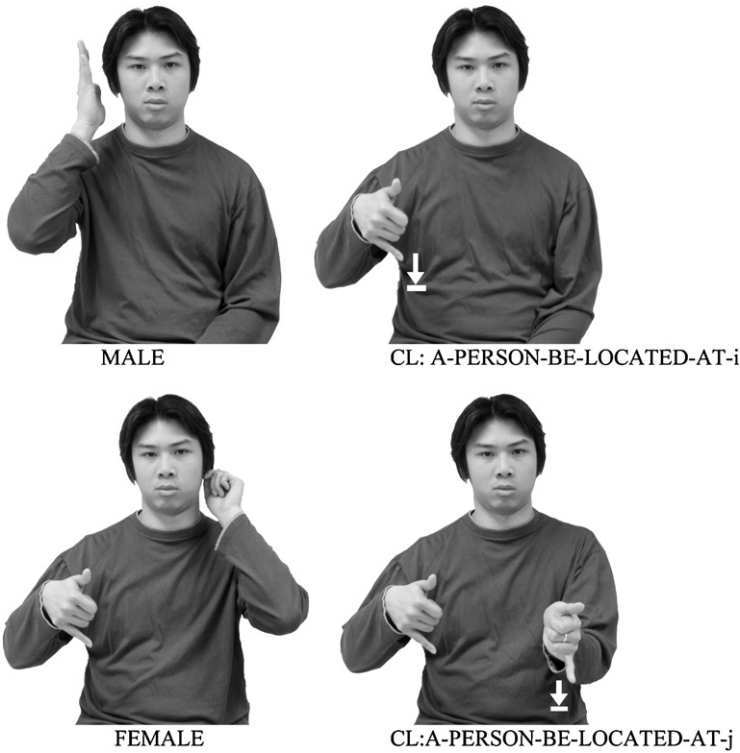
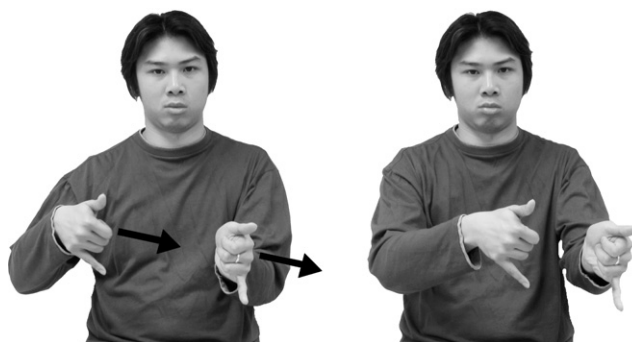


Fig. 10. A male is located here; a female is located here; the male chases the female (for significance of symbols, see Fig. 2).



CL:A-PERSON-CHASE-AFTER-A-PERSON

Fig. 10 (Continued)

In this example, both the *Figure* and the *Ground* entities are in translational motion. However, the spatial configuration of both entities together with the synchronous movement as required by the verb semantics of CHASE implies that the nominal referent is an agent argument that performs an act of ‘running after’ a theme argument. Conceptually, this motion event requires that both entities traverse the same $Path_P$ with the *Figure* entity following the *Ground* entity.

So far, we have dealt with some simple motion events involving two kinds of $Path$ concept in the lexicalization process: $Path_P$ and $Path_S$. In the following section, we will explore the grammatical consequences of incorporating *Manner* as a co-event.

5.1. The grammatical consequences of incorporating manner in a motion event

5.1.1. Manner of spatial configuration

In locative or existential predicates of HKSL, manner of spatial configuration is realized by palm orientation of the manual articulator (Tang, 2003). Locative-existential predicates involving manner of spatial configuration like CL:A-PERSON-SIT/STAND/LIE/LEAN adopt a Y-handshape in different palm orientations against the *Ground* entity to encode body posture in the predication (Figs. 11 and 12).⁹

⁹ The Y-handshape refers to an animate entity with a head and limbs. The thumb usually denotes the head and the pinky finger the limbs, in between the trunk. The general distinction between the human and animal categories lies in the orientation of the Y-handshape: vertical orientation for the human category and horizontal orientation for the animal category. However, different internal spatial configuration of the entity requires that the orientation of the Y-handshape be articulated appropriately. ‘A bird stands on a branch’, then, will require an upright Y-handshape.



Fig. 11. CL:A-PERSON-STAND.



Fig. 12. CL:A-PERSON-LIE.

Where orientation of the Y-handshape can generally encode different forms of spatial configuration, such as CL:A-PERSON-LIE-ON-ONE'S-SIDE/LEAN-AGAINST-A-WALL, adding an imit-sign to precede the classifier predicate becomes redundant, if not ungrammatical. However, there seems to be a human–animal distinction in the use of imit-signs to denote manner of spatial configuration in HKSL. Where the referent entity is an animal, to adopt an imit-sign before a classifier predicate is obligatory, as shown in (3) and Fig. 13; otherwise, the imit-sign is optional when the classifier handshape refers to a human being.

- (3) BH: CAT LIE-ON-ONE'S-BACK
 Figure_i *Manner*
 Theme
- LH &: { CL:A-FLAT-SURFACE
 Ground_j
 Location
- RH: { CL: AN-ANIMAL-LIE
 { {BE_L + *Figure_i* } + *Path_S* + *Manner* }
 Theme
- ‘A cat lies on its back on a flat surface.’

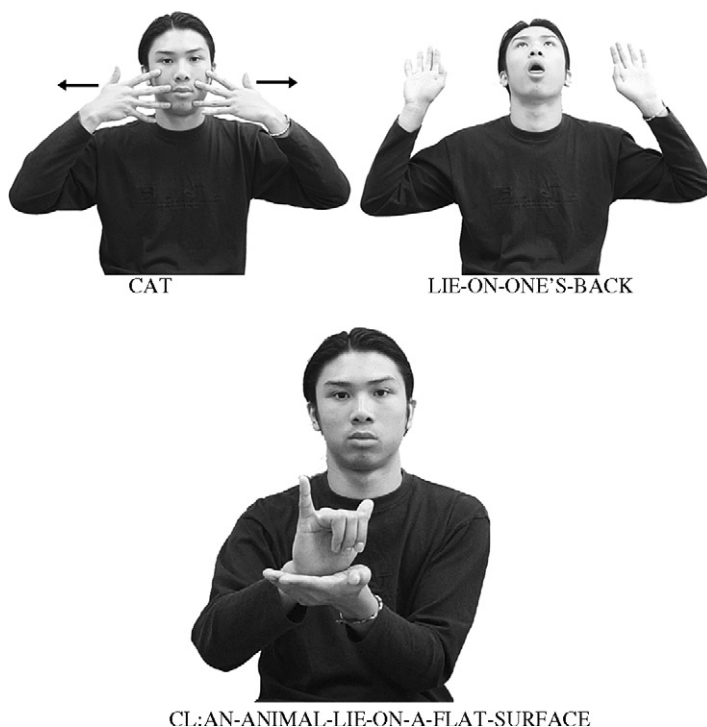


Fig. 13. A cat lies on its back on a flat surface (for significance of symbol, see Fig. 2).

That the Y-handshape is so common among a number of animate categories – humans, animals, and birds – observed so far provides some hints that visual perception plays a crucial role in nominal classification in HKSL. In fact, in HKSL, Chinese Sign Language, and Thai Sign Language, the Y-handshape denotes a legged animal category perceptually construed as having a head (i.e. thumb), a trunk (i.e. index, middle and ring in closed position), and lower limbs (i.e. pinky). Therefore, palm orientation is crucial in order for bodily spatial configuration to be coded in the predicate. Alternatively, it is realized by an imit-sign followed by a classifier predicate with the handshape showing neutral palm orientation (Tang, 2003).

5.1.2. Manner of motion

The adoption of an imit-sign before a classifier predicate to denote manner of motion along a path (i.e. *Path_P*) is also observed when the predicate involves an underlying MOVE morpheme, as shown in (4) and Fig. 14:

- (4) RH: FATHER
Figure_i
 Theme
- BH: RUN
Manner_a
- RH: $\left\{ \begin{array}{l} \text{CL:A-PERSON -MOVE- IN-A-CIRCLE} \\ \{ \{ \text{MOVE} + \textit{Figure}_i \} + \textit{Manner}_b + \textit{Path}_P \} \\ \text{Theme} \end{array} \right\}$

‘Father runs in a circle.’

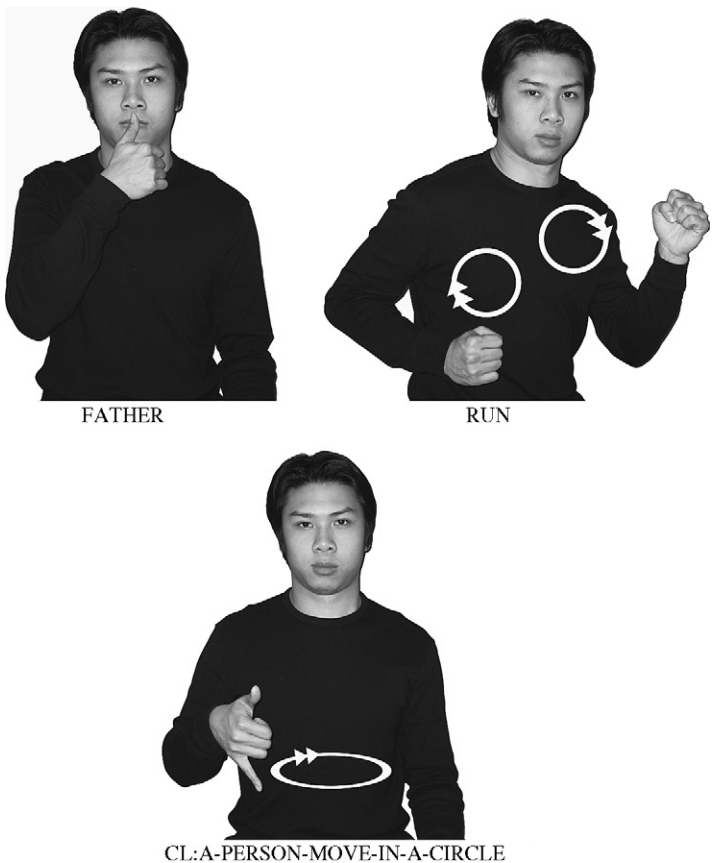


Fig. 14. Father runs in a circle (for significance of symbol, see Fig. 2).

In (4), the manner verb RUN occurs before the classifier predicate which encodes a ‘path’ verb glossed as MOVE. The manner of motion is conceptually distinguished by the direction of motion of the *Figure* entity, that is, in a circular motion. This finding is similar to the studies reported in Supalla (1990) and subsequently in Slobin and Hoiting (1994). They argue that incorporating manner in a motion event in ASL results in a kind of ‘serial verb constructions’. They further distinguish two kinds of manner: manner of locomotion and manner of motion along a path. Manner of locomotion is realized as the first verb of the series (i.e. locomotion verbs), which makes use of a bodypart classifier to refer to the part of the body involved in the locomotion. Manner verbs in the form of imit-signs like RUN and SWIM in HKSL which encode the manner of locomotion generally stem from gestures to imitate the real world activity. The second verb is in the form of a classifier predicate denoting the path in a motion event. In ASL, the handshape for the path verb is normally that of an unmarked kind, represented by a 1-handshape (i.e. sometimes known as Gd-handshape). In HKSL, the path verb is associated with an upright Y-handshape, which is the unmarked handshape for the human category.

5.1.3. Why imit-signs?

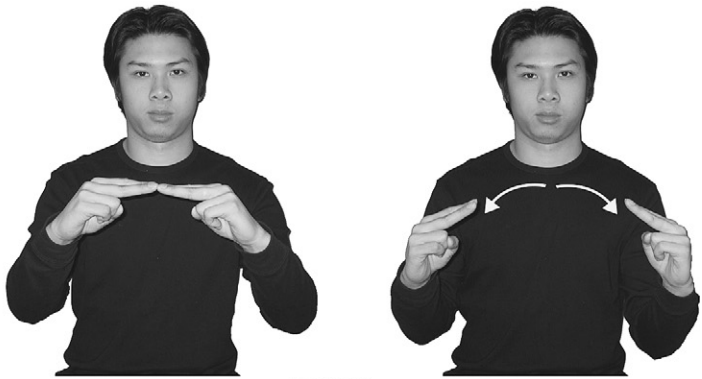
To recapitulate, in HKSL as well as in ASL, manner of locomotion seems to be explicitly expressed through a gestural, imit-sign, and the following classifier predicate is left to encode *Path_p*. It seems that imit-signs are part of the verbal predicate in HKSL. A closer inspection shows that it may not be the case, as in (5) and Fig. 15, the imit-sign is not required due to the choice of a handshape which has the potential for encoding locomotion:

(5)	LH:	CHILD <i>Figure_i</i> Theme	
	BH:	BRIDGE <i>Ground_j</i> Location	
	LH&	$\left\{ \begin{array}{l} \text{CL:A-NARROW-SURFACE} \\ \text{Ground}_j \\ \text{Location} \end{array} \right.$	$\left\{ \begin{array}{l} \text{CL:A-LEGGED-PERSON-WALK} \\ \{ \{ \text{MOVE} + \text{Figure}_i \} + \text{Path}_p + \text{Manner} \} \\ \text{Theme} \end{array} \right.$
	RH:		

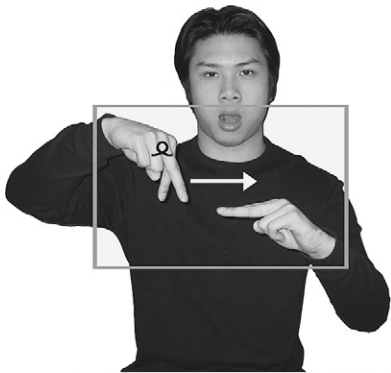
‘A child walks on a bridge.’



CHILD



BRIDGE



CL: A-LEGGED-PERSON-WALK-ON-A-NARROW-SURFACE

Fig. 15. A child walks on a bridge (for significance of symbols, see Fig. 2).

In (5), instead of incorporating an imit-sign, an inverted V-handshape is adopted for the classifier predicate and the manner of locomotion is encoded by trilled movement (i.e. wiggling) of the two selected fingers. In other words, the linguistic system of signed language is accommodating manner of locomotion through different handshape configuration, hence rendering the use of imit-signs in the verbal predicate unnecessary. However, where the formational characteristics fail to encode *Manner* linguistically, an imit-sign is added to satisfy the semantic requirement of predication. For instance, verbs like MARCH will require both an imit-sign articulated by propelling the arms (i.e. *Manner_a*) and a ‘mannered’ path verb articulated by a V-handshape (i.e. propelling the legs as encoded by *Manner_b*), as in (6) and Fig. 16:

- (6) RH: SOLDIER
Figure_i
 Theme
- BH: MARCH
Manner_a
- LH & RH: { CL:AN-ENCLOSURE
 Ground;
 Goal
 CL:A-LEGGED-PERSON-WALK-INTO
 { {MOVE + *Figure_i* } + *Path_p* + *Manner_b* }
 Theme } }
- ‘A soldier marches into an enclosure.’

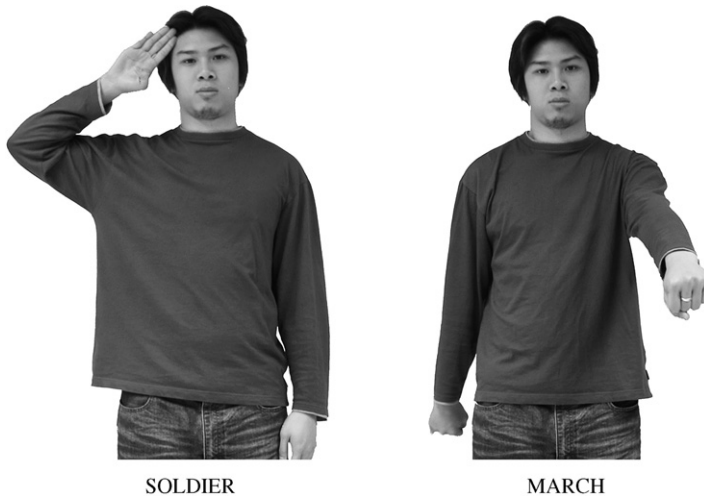
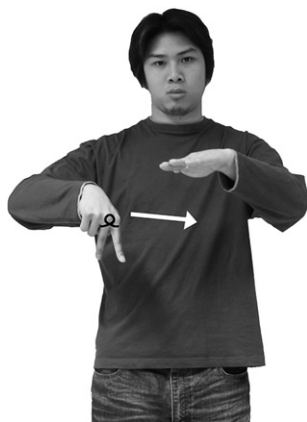


Fig. 16. A soldier marches into an enclosure (for significance of symbol, see Fig. 2).



CL: A-LEGGED-PERSON-MARCH-INTO-AN-ENCLOSURE

Fig. 16 (Continued)

In (6), the verb MARCH which is an imit-sign only entails the propelling of the upper limbs (i.e. *Manner_a*); therefore, the manner of locomotion involving the lower limbs needs to be incorporated into the path verb that selects a V-handshape to encode the manner of locomotion along a path (i.e. *Manner_b*). This example is interesting because *Manner* is mapped onto both a manner verb and a path verb, contrary to Slobin and Hoiting's (1994) observation in ASL that the path verb does not encode manner and selects an unmarked handshape. In HKSL, the predicative meaning would be 'enter an enclosure' but not 'march into an enclosure' if a Y-handshape is adopted. Given this piece of evidence, we may conclude that the role of an imit-signs is supplemental in encoding *Manner*. We will further explore this issue in the next section.

5.2. Grammaticalization of *Manner* in HKSL

If certain types of *Manner* can be incorporated into the verb root in HKSL through some linguistic mechanisms like incorporating different handshapes or palm orientations, we need to ask whether there is a pathway of grammaticalization of *Manner* for verbs of location and verbs of motion in HKSL. We posit that manner of motion and location is initially expressed through gestures which will subsequently evolve into imit-signs. These imit-signs are then incorporated into the verb root of classifier predicates. Verbs of spatial configuration like LIE-ON-ONE'S BACK, STAND-IN-ONE-LEG or manner of locomotion verbs like RUN, MARCH, CRAWL and SWIM do reveal a gestural origin in a lot of signed languages. However, in signed language, there are language internal mechanisms that allow the incorporation of certain gestures into the language, transforming them into linguistic units and imit-signs are a typical example. Klima and Bellugi (1979) also observed that gestures enter the linguistic system principally through their conforming to the phonological system of the target signed language. Recent studies also suggest that gestures and signs are co-produced in signed language utterances (Duncan, 2003; Liddell and Metzger, 1998; Liddell, 2003; Emmorey, 1999). The HKSL data above show that palm orientation provides a linguistic basis for incorporating manner of spatial configuration in locative or existential predicates. On the other hand, handshape or movement types are adopted to encode manner of motion and locomotion. In both cases, where the formational characteristics fail to accommodate the meaning component of *Manner*, an imit-sign to precede the classifier

predicate appears to be the default strategy. For instance, RUN requires an imit-sign and disallows a V-handshape for the path verb because the default meaning as implied by the V-handshape is ‘WALK’, which is in tangent with the verb semantics of RUN. In this case, a manner verb RUN is needed, and the path verb adopts an unmarked Y-handshape articulated with a speedy, tensed movement.

As mentioned previously, the pathway of grammaticalization of *Manner* in HKSL appears to interact with the human-animal distinction. Intuitive judgments of native deaf signers show that omission of the imit-sign is preferred if the *Figure* entity is human, but ungrammatical when the handshape refers to the animal category, as in (7), compared with (3) above:

* (7)	BH:	GRASS Ground _i Location	
	BH:	CAT <i>Figure</i> _j Theme	
	LH &:	$\left\{ \begin{array}{l} \text{CL:A-FLAT-SURFACE} \\ \text{Ground}_i \\ \text{Location} \end{array} \right.$	$\left. \begin{array}{l} \\ \\ \end{array} \right\}$
	RH:		
		$\left\{ \begin{array}{l} \text{CL: AN-ANIMAL-LIE-ON-ITS-BACK} \\ \{ \text{BE}_L + \text{Figure}_j \} + \text{Path}_S + \text{Manner} \} \\ \text{Theme} \end{array} \right.$	$\left. \begin{array}{l} \\ \\ \end{array} \right\}$

‘A cat lies on its back on the grass.’

When the same classifier predicate is adopted to encode ‘a person lying on his back on the grass’, the imit-sign can be omitted. One possible explanation is that the classifier predicate in the human case is a lexical item. There is evidence that the predicate sign in (7) has been lexicalized to become a verb. In the lexicon of HKSL, the sign SENT-TO-HOSPITAL (in a stretcher) is articulated by the same hand configuration with an added path movement. These signs when referring to a human whole entity do not require an imit-sign to precede them.

Similar grammaticalization process is also underway with manner of locomotion. To recapitulate, the V-handshape in HKSL that denotes the legs’ involvement in manner of locomotion of the legs is more prone to be selected, to the extent that in HKSL, this classifier predicate is evolving into an independent verb WALK. If the wiggling of the selected fingers of the V-handshape denotes the default meaning of manner of locomotion, it stands to reason why WALK does not require an imit-sign to denote this manner property.

5.3. Some structural consequences

Is the imit-sign part of the verbal predicate? Contrary to Supalla (1990) who suggested that incorporating *Manner* results in serial verbs constructions, we propose that the sign sequences are not serial verb constructions, but morphological V-V compounds the composition of which is based on a universal conceptual schema. In this schema, *Manner* precedes *Direction* which in

turn precedes *Goal* (Slobin and Hoiting, 1994). This universal sequence is attested in many spoken languages like English, Chinese and now in signed language. That verb sequences like ‘RUN + classifier predicate’ or ‘MARCH + classifier predicate’ form an uninterrupted sequence in both ASL and HKSL also suggests they are V-V compounds with the manner verb modifying the second verb, assuming that the second verb encoded in the classifier predicate is the main verb of the verbal predicate.

The analysis above also shows that there is a close interaction between gesture and *Manner* in the mapping process in signed language, yielding verbal compounds that consist of an imit-sign and a classifier predicate. Yet, grammaticalization of gesture is seen to manifest itself when certain types of *Manner* like manner of spatial configuration is encoded by palm orientation of the handshape component of the classifier predicate. It could be that during the process of grammaticalization, the first gestural, imit-sign is a manner adjunct of some kind before it eventually acquires a verbal status; and it eventually incorporates into the language system through certain phonological parameters of classifier predicates (Tang, 2003). In line with Cabrera (1998), Zeshan (2003) argues that grammaticalization and lexicalization are interacting in the evolution of signed language. It is likely that some grammatical constructions like classifier predicates are being lexicalized. Citing motion and locative predicates of Indo-Pakistani Sign Language as examples, Zeshan argues that the grammatical properties of a classifier predicate may change as a result of increasing lexicalization. Quoting Jenzen (1999), Zeshan also suggests that it is unique to signed language that non-linguistic materials like facial expressions and manual gestures can enter the grammaticalization pathway.

Assuming that lexicalization is a continuous linguistic process, example (3) shows that this process concerning certain classifier predicates like LIE-ON-ONE’S-BACK is far from complete because an imit-sign before the classifier predicate is still required when the grammatical subject involves an animal category. Moreover, verbs of locomotion like RUN and MARCH that require the incorporation of both manner of locomotion and motion along a path are seen to be more resistant to lexicalization. As such, there is a division of labor in the encoding process: imit-signs for manner of locomotion and classifier predicates for manner of motion along a path, if required. Examples of some fully lexicalized classifier predicates are found with verbs like WALK and SWIM. Both involve a V-handshape to denote the propelling of the two legs alongside a path movement, but differ in orientation: WALK in downward finger orientation and SWIM in sideward finger orientation. To conclude, the phonological parameters of handshape and movement of classifier predicates are sites for the incorporation of the four basic meaning components of a motion event. The co-event *Manner* is realized either phonologically by palm orientation or morphologically by a gesture-like, imit-sign. In the following analysis, we further explore the incorporation of another co-event *Cause* into the classifier predicates of State Change, to see if the same phonological and grammatical processes result.

6. Conceptual structure of an event of causation

An event of causation is generally perceived as having a composite of two independent but interrelated sub-events (Jackendoff, 1990; Grimshaw, 1990; Levin and Rappaport, 1995; Pustejovsky, 1995; Wunderlich, 1997; Talmy, 2000, among many others). The first event is a causing event which may or may not be agentive (i.e. either a volitional agentive causer or an inanimate causer/cause). It involves an activity or a process that leads to a transition or a change of state. The second sub-event is the resultant state itself. While there are different analyses to

account for the mapping of these semantic properties onto syntax, Talmy (2000) put forward a lexicalization account for the meaning component of *Cause* cross-linguistically.

Conceptually, an event of causation in Talmy's model is a macro event of two components: (a) a causing event with the meaning component *Cause* as a co-event, and (b) a framing event indicating the result of causation, which is an event of 'State Change'.¹⁰ Talmy proposes that the causing event is incorporated into the macro-event structure through an 'agent causal chain', linking itself to the event of 'State Change'. Since a change of state is a necessary component of a causative structure, it constitutes the framing event structure of causation. Evidence from spoken language shows that in the absence of a causing event, a causative structure still suffices in the form of an unaccusative construction which normally encodes a change of state due to internal causation, as in (9a), where an external, agentive causer is missing, contrary to (9b):

- (9) a. The ball rolled across the room.
- b. The man rolled the ball across the room.

The core schema of causation – change of state – is also evident in the causative structure of (9b). In Talmy's analysis, 'state change' has a linguistic parallel to 'motion' and both of them are framing events of a macro-event structure. On the other hand, the meaning component *Cause* is only amenable to the co-event structure, not the framing event, similar to *Manner*. In other words, the difference between (9a) and (9b) is the type of causation; that is, whether it is internal or external causation. In other words, the difference is one of the causal chain.

Applying this model to our analysis of signed language, an event of causation is temporal in nature, with the causing event conceptually preceding the framing event 'state change'. The causing event has an underlying morpheme {MOVE + *Figure*} that conflates with the co-event *Cause*.¹¹ The association function of linking the causing event and the 'state change' is set up by the *Figure* entity 'acting on' the *Ground* entity, which we argue can be abstractly perceived as *Path_C*. Therefore, conceptually, in a prototypical event of causation, an agent/causer is a *Figure* entity while the affected theme/causee is a *Ground* entity,¹² mediating between them is a co-event *Cause* supported by *Path_C*. This happens when causative force comes from an external source. Otherwise the event schema will require the *Ground* entity to be identified with the *Figure* entity in the framing event of state change as the causative force comes from the *Figure* entity itself.

Being the framing event of a composite, the event for 'state change' projects a schema which involves a combination of the type of transition together with the resultant state (i.e. entering a new state through a transition) represented by an underlying abstract morpheme BE_R. This morpheme obligatorily conflates with *Figure*, *Path* and *Cause*, or optionally with any other co-events. The general conceptual framework of the two sub-events of causation is presented in Figs. 17 and 18:¹³

¹⁰ In this model, *Cause* is similar in status to *Manner*, and it undergoes a lexicalization process as *Manner* does in spoken language (ref. Fig. 1).

¹¹ In Talmy's framework, MOVE can be conceptualized into an abstract verb encompassing agentive or non-agentive motion. For instance, agentive motion, _AMOVE, is equivalent in meaning to 'ACT-ON'. 'I killed him' can be conceptualized as 'I _AMOVED him to death'.

¹² Talmy suggests that all five types of framing events may be captured by a generic event structure similar to that of a motion event.

¹³ The label 'causing event' is adopted from Talmy (2000). Instead of 'caused event', we adopt the term 'framing event' to refer to either a change of state resulting from external causation or from internal causation. In Talmy's analysis, an event of 'state change' is the core, framing event of an overarching macro-event structure.

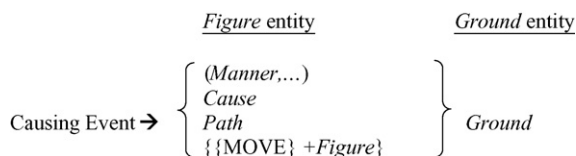


Fig. 17. Conceptual structure of a causing event in signed language

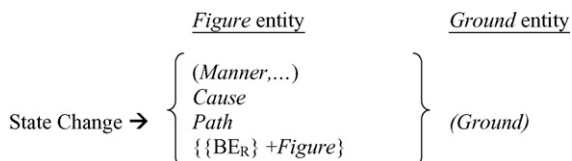


Fig. 18. Conceptual structure of an event of ‘State Change’ in signed language

Note that in both sub-events of causation, *Path* is retained because it is perceived as an abstract primitive adopted to encode a range of functions, from stereotypical points of traversal of an object to a transfer of acts or a change of state. This amounts to saying that various conceptualizations of *Path* may be set up to encode relations between the *Figure* entity and the *Ground* entity in both events of motion and causation.

7. Event of causation in HKSL

In the following discussion, we will first examine whether there are lexical causatives in HKSL, then we analyze the grammatical patterns of causative constructions when a change of state in the framing event is required by the grammar to be specified explicitly. We argue that in events of causation in HKSL, the incorporation of *Cause* does not necessarily involve a lexicalization process. Other grammatical processes at the morpho-syntactic level are also at work.

7.1. Lexical causatives

Are there lexical causatives in HKSL? To answer this question, we examine typical causative predicates commonly observed in many signed languages: classifier predicates that involve a handle classifier. Recent analysis has shown that the handle classifier is associated with a causative predicate denoting a causing event¹⁴ (Supalla, 1982; Schick, 1990; Kegl, 1990; Lau and Tang, 2001; Lau, 2002; Benedicto and Brentari, 2004). A typical causative predicate in HKSL is shown in (10) and Fig. 19, which is articulated by a handle classifier referring to a volitional agent holding and breaking a cylindrical object. Lau and Tang (2001) and Lau (2002) suggest that the handle classifier in HKSL carries an agentive morpheme that is co-referential with the grammatical subject of the sentence. The handshake configuration denotes an internal argument by way of the inherent semantic properties of its size and shape (i.e. how the agent holds the theme to act on it). In terms of thematic structure, the configuration of the handle classifier

¹⁴ In this paper, a causative predicate is defined as one that denotes a causing event only.

handshape is associated with the affected theme (i.e. the direct object) of a causative construction. Recently, [Benedicto and Brentari \(2004\)](#) argue that the handpart and selected fingers of a handle classifier are sites of the agentive morpheme and object-related morpheme, respectively. We leave this proposal open in our investigation for the time being as future research is necessary to verify whether such an analysis can account for HKSL data.

- (10) RH: FATHER
Figure_i
 Agent
- BH: ROD
Ground_j
 Theme
- BH: { CL: BREAK-A-CYLINDRICAL-OBJECT (BY-HAND) }
 { {MOVE + *Figure_i* } + Cause + *Manner* + *Path_C* }
 Agent

‘Father breaks a rod (by snapping it).’

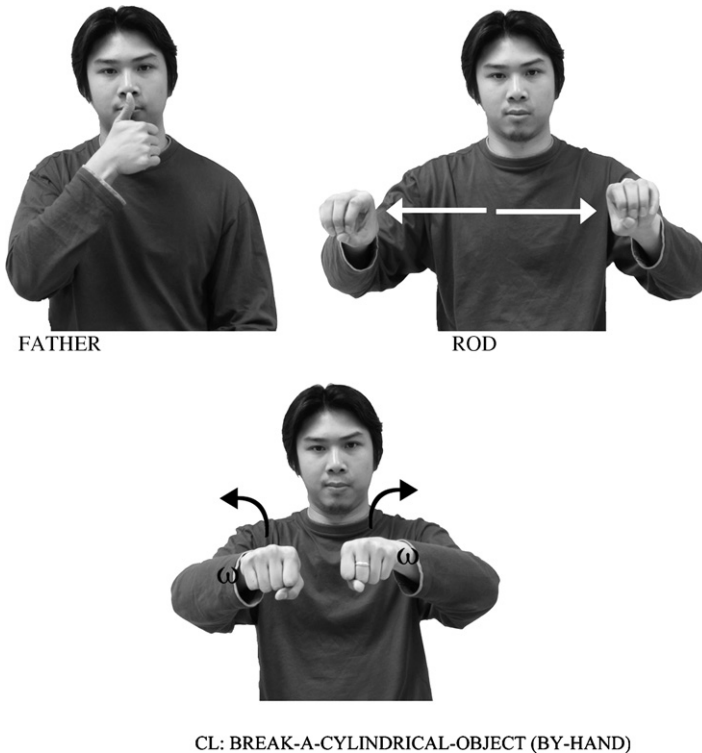


Fig. 19. Father breaks a rod (by snapping it) (for significance of symbols, see Fig. 2).

In (10), there is a single classifier predicate. Note if the causative predicate and the predicate denoting a change of state co-occur in the same sentence, the result is ungrammatical:

- *(11) RH: FATHER
 Figure_i
 Agent
- BH: ROD
 Ground_j
 Theme
- BH: { CL: BREAK-A-CYLINDRICAL-OBJECT (BY-HAND) }
 { {MOVE + *Figure_i* } + *Cause* + *Manner* + *Path_C* }
 Agent }
- BH: { CL: A-CYLINDRICAL-OBJECT-BREAK }
 { {BE_R + *Figure_i* } + *Cause* + *Manner* + *Path_C* }
 Theme }

‘Father breaks a rod by snapping it with his hands.’

As shown in (10), transitivity is encoded by a handle classifier in the predicate, and the framing event which denotes a change of state is not explicitly lexicalized, but implicated. This indicates that the meaning component *Cause* may combine with *Manner* of causation, as has been well documented in spoken language (Hale and Keyser, 1993). (10) also shows that the manner of breaking is expressed through an external agent (i.e. *Figure* entity) acting upon the affected theme by ‘snapping’ it. The arc movement, articulated by rotating the wrists, semantically denotes the *Cause* and *Manner* of causation, as well as the resultant state of the direct object.

Another example is SMASH where we observe that the eventuality of causation is brought about phonologically by a path movement of the articulator and a local movement of finger extension, as shown in (12) and Fig. 20:

- (12) RH: FATHER
 Figure_i
 Agent
- RH: CUP
 Ground_j
 Theme
- RH: { CL: BREAK-A-CYLINDRICAL-OBJECT-(BY-THROWING-IT) }
 { {MOVE + *Figure_j* } + *Cause* + *Manner* + *Path_C* }
 Agent }

‘Father smashes a cup.’

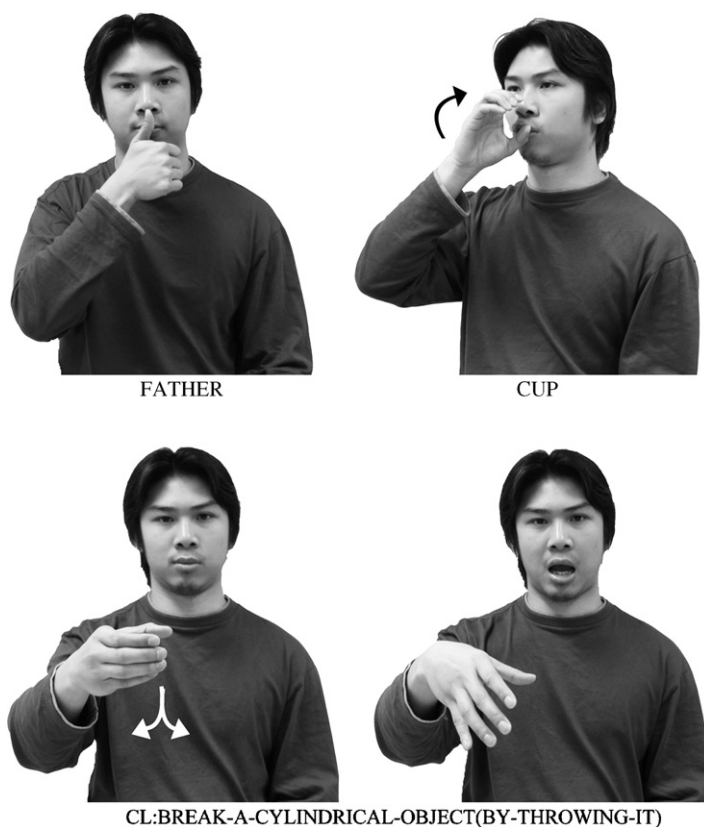


Fig. 20. Father smashes a cup (for significance of symbol, see Fig. 2).

(12) shows that phonologically both a local and a path movement are adopted for SMASH. The change of aperture of the C-handshape from curved to open along a path movement away from the signer imitates the real world activity of “breaking an object by shaking it off one’s hand with force”. In other words, for verbs of destruction,¹⁵ a handle classifier together with movement may bring out the semantics of causation; therefore, an independent construction to encode ‘state change’ will become underspecified in the grammar of HKSL.

Note that with verbs of destruction the semantics of state change seems to saturate when *Cause* and *Manner* (of destruction) conflate with the mid-level morpheme derived from {MOVE + Figure}. In other words, these causative predicates are already encoded with a result, in the sense that the change of state is already lexicalized into the verb root of the predicate, hence an additional construction for the framing event becomes redundant. To explicate the phenomenon further, the causative predicate BREAK as seen in (10) is already encoded with a change of state, which serves to provide an endpoint to the causative event by measuring out the

¹⁵ Other verbs that do not allow the co-occurrence of a causative predicate and a change of state predicate are TEAR, WRING, SQUEEZE, and CRUMPLE. For these verbs, the underlying causing event and framing event indicating ‘state change’ surface in one classifier predicate in the grammar.

result. An event can only be measured out once (Tenny, 1994; Wyngaerd, 2001), hence (11), which violates the constraint on event measure, is naturally ruled out.

The linguistic device for incorporating *Cause* is much more complex than *Manner*. In an event of causation, it seems that the presence of a handle classifier is neither a necessary nor a sufficient condition for encoding the meaning component *Cause* in the predicate. Other linguistic devices are needed for such a mapping process. In order to verify this phenomenon, we examine other causative constructions that involve an instrument or natural force as an external causer.

7.2. Causative predicates involving instruments and natural force

In HKSL, an instrument may also be an external causer (Lau, 2002). When this happens, the instruments behave a little differently in the classifier changing properties between the causing and the framing events. Classifier predicates in examples (13) and Fig. 21 and (14) and Fig. 22 imply the existence of an instrument that must be instigated by a volitional agent in order to bring about a change of state denoted by the verb. The data shows that under these circumstances, the instrument is being adopted to refer to a volitional agent.

- (13) BH: WOOD
Figure_i
 Theme
- LH: $\left\{ \begin{array}{l} \text{CL:VERTICAL-FLAT-OBJECT-BE-LOCATED-AT-}i \\ \{ \{ \text{BE}_L + \text{Figure}_i \} + \text{Path}_S \} \\ \text{Theme} \end{array} \right\}$
- ‘A wooden panel is located here.’
- RH: FATHER
Figure_j
 Agent
- LH &: $\left\{ \begin{array}{l} \text{CL:A-VERTICAL-FLAT-SURFACE} \\ \text{Ground}_i \\ \text{Theme} \end{array} \right\}$
- RH: $\left\{ \begin{array}{l} \text{CL:DRILL-WITH-A-LONG-AND-CYLINDRICAL-OBJECT} \\ \{ \{ \text{MOVE} + \text{Figure}_j \} + \text{Cause} + \text{Manner} + \text{Path}_C \} \\ \text{Instrument} \end{array} \right\}$
- ‘Father drills the wooden panel with a screwdriver.’

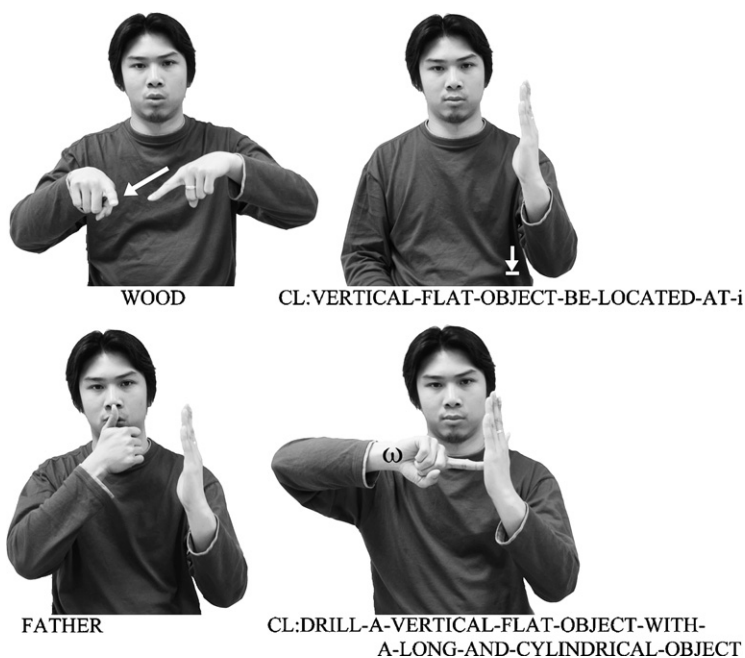


Fig. 21. A wooden panel is located here; father drills it with a screwdriver (for significance of symbol, see Fig. 2).

- (14) RH: MOTHER MEAT
Figure_i *Ground_j*
 Agent Theme

LH &: { CL:A-3D-ROUND-OBJECT
Ground_j
 Theme

RH: { CL: CUT-WITH-A-FLAT-OBJECT
 {{MOVE + *Figure_i*} + Cause + Manner + Path_C}
 Instrument

‘Mother slices the meat with a chopper.’

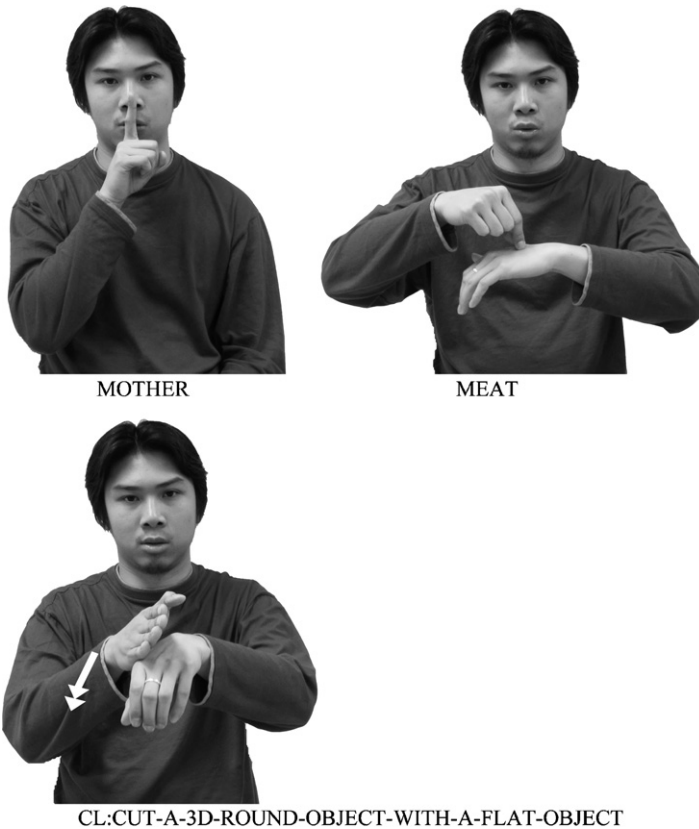


Fig. 22. Mother slices the meat with a chopper (for significance of symbol, see Fig. 2).

In both examples, the instrument represented by a SASS becomes the *Figure* entity even though the grammatical subject of the sentences indicates that the classifier is associated with a volitional agent. Deaf informants remarked that the use of a handle classifier in (13) was highly marked and required extra contextual materials to introduce it into the discourse ('HOUSE UNDER-RENOVATION, FATHER TAKE SCREWDRIVER. . .). In (14), the use of a handle classifier was not acceptable in any context, according to the deaf informants. Following Schlesinger (1989), although instruments are not prototypical agents, they are the 'proximate causes of action' (p. 193). Quite understandably, an instrument can be an extension of an agent, a 'co-causer' of an event, besides the volitional agent per se. Quoting Lyons (1968:298), Schlesinger points out that in some languages in Russia, the same morphological marker is adopted for both the agent and the instrument. Therefore, even though the *Figure* entity is the volitional agent and grammatical subject of the sentences in (13) and (14), it is the instrument which the agent 'handles' and which becomes a co-causer of the eventuality, leading to a change of state of the *Ground* entity in the causing event.

In sum, although it is generally accepted in the literature that a predicate involving a handle classifier can derive a causative construction, the data from HKSL at least indicates that SASS for instruments in an event of causation also shows up in causative constructions. Under these specific circumstances, the SASS is perceived as a surrogate of the agentive

Figure entity and surfaces as grammatical subject. The data also suggests that the handle classifier contains an agentive rather than a causative morpheme, encoding the manner of causation by way of showing how a volitional agent handles the instrument in the event. Kegl (1990) claims that the handle classifier marks causation; our analysis shows in fact it marks causation by involving an agentive morpheme through the handshake configuration of the handle classifier.

The data so far suggests that the lexical semantics of a certain class of verbs may project both the framing event and co-event through a single classifier predicate that involves either a handle classifier or a SASS. However, we do observe that there are transitive causative predicates in HKSL which involve two classifier predicates occurring in a sequence.

7.3. Conditions for specifying Change of State

There are certain kinds of causative predicates in HKSL which require the change of state to be specified explicitly in surface syntax.¹⁶ Verbs that imply a change of size and shape of the affected theme usually result in an additional stative-descriptive predicate articulated by a SASS. Causative predicates such as CL: MOULD-SOMETHING-INTO-ROUND-OBJECTS (with the manner of rolling the object between the hands), CL: FLATEN-SOMETHING-BETWEEN-HANDS, and SHRED are good examples as in (15) and Fig. 23:

- (15) RH: FEMALE
 Figure_i
 Agent
- BH: PAPER
 Ground_j
 Theme
- BH: $\left\{ \begin{array}{l} \text{CL:TEAR-A-FLAT-OBJECT} \\ \{ \{ \text{MOVE} + \textit{Figure}_i \} + \textit{Cause} + \textit{Manner} + \textit{Path}_C \} \\ \text{Agent} \end{array} \right\}$
- BH: $\left\{ \begin{array}{l} \text{CL:LONG-THIN-OBJECTS} \\ \{ \{ \text{BE}_R + \textit{Figure}_k \} \} \\ \text{Theme} \end{array} \right\}$

‘A female shreds a piece of paper.’

¹⁶ Some of the lexical causatives may alternate with an unaccusative predicate where the theme argument becomes the grammatical subject. In the sign linguistics literature, the unaccusative predicates involve a SASS. An example is ROD CL: A-CYLINDRICAL-OBJECT-BREAK (‘A rod breaks’).

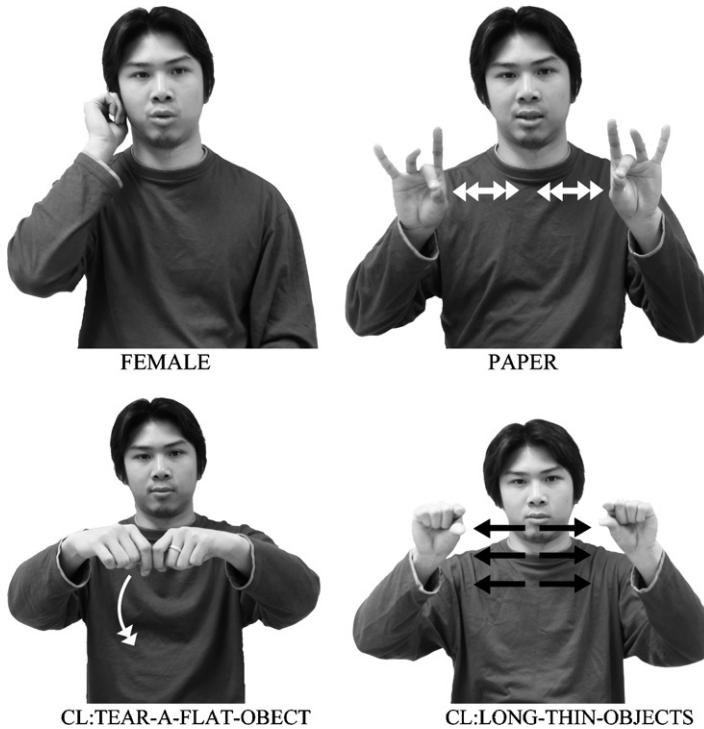


Fig. 23. A female shreds a piece of paper into long and thin pieces (for significance of symbols, see Fig. 2).

We argue that in this example it is the verb semantics of ‘shred’ that requires the change of state to be explicitly expressed through a SASS classifier predicate to specify the resultant size and shape of the internal argument. In line with Talmy’s conceptual framework introduced earlier, the *Ground* entity (i.e. the internal argument in the causing event) becomes the *Figure* entity of the State Change (i.e. framing) event. It is expressed by tracing the resultant size and shape of the theme argument in space (i.e. the piece of paper becomes a composite of smaller strips).

Therefore, verbs that involve the manner of transforming objects into a certain size and shape seem to require that the change of state be specified explicitly. Syntactically, the sentence will involve two classifier predicates: a causative predicate followed by a resultative predicate having a stative-descriptive root. From a lexicalization point of view, the conflation of *Cause* and this particular *Manner* of causation does not yield a lexical causative, rather it yields a relatively more complex construction involving two classifier predicates: a causing event expressed by a transitive, causative predicate, and the resultant state, which is the framing event, expressed by an unaccusative predicate. The fact that the framing event of a causative structure is covertly expressed in the case of verbs of destruction on the one hand, and obligatorily overtly expressed when the resultant state expresses a change of size and shape of the affected theme on the other hand, seems to manifest that in HKSL causative predicates involve either lexical formation or morpho-syntactic processes, yielding single classifier predicates and two classifier predicates, respectively.

Another piece of evidence can be observed in constructions involving the use of bodypart classifiers to encode the eventuality of causation. In (16) and Fig. 24 and (17) and Fig. 25, the bodypart classifiers are associated also with a volitional agent and both the manner of causation and manner of motion are coded explicitly in a sequence of two classifier predicates:

- (16) BH: DOOR
Ground_i
 Theme
- RH: FATHER
Figure_j
 Agent
- LH &: { CL:A-VERTICAL-FLAT-SURFACE
Ground_i
 Theme }
 RH: { CL:A-LEGGED-PERSON-KICK
 { {MOVE + *Figure_j*} + *Cause* + *Manner* + *Path_C* }
 Agent }
- LH: { CL:A-VERTICAL-FLAT-SURFACE-SWING-OPEN
 { {BE_R + *Figure_i*} + *Cause* + *Manner* + *Path_C* }
 Theme }
- ‘Father kicks the door open.’

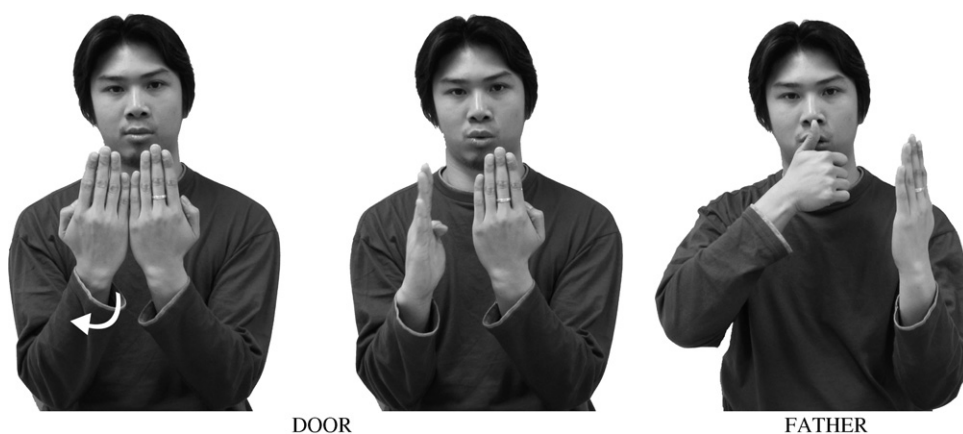


Fig. 24. Father kicks the door open (for significance of symbol, see Fig. 2).



CL:A-LEGGED-PERSON-KICK-A-
VERTICAL-FLAT-OBJECT



CL:A-VERTICAL-FLAT-OBJECT-SWING-OPEN

Fig. 24 (Continued)

- (17) LH: $\left\{ \begin{array}{ll} \text{GLASS} & \text{CL:VERTICAL-FLAT-SURFACE-BE-LOCATED-AT-i} \\ \text{Figure}_i & \{ \{ \text{BE}_L + \text{Figure}_i \} + \text{Path}_s \} \\ \text{Theme} & \text{Theme} \end{array} \right\}$

‘A glass panel is located here;’

RH: FATHER
Figure_j
Agent

LH &: $\left\{ \begin{array}{l} \text{CL:A-VERTICAL-FLAT-OBJECT-AT-i} \\ \text{Ground}_i \\ \text{Theme} \end{array} \right\}$

RH: $\left\{ \begin{array}{l} \text{CL:PUNCH- WITH-A-FIST} \\ \{ \{ \text{MOVE} + \text{Figure}_j \} + \text{Cause} + \text{Manner} + \text{Path}_C \} \\ \text{Agent} \end{array} \right\}$

LH: $\left\{ \begin{array}{l} \text{CL: VERTICAL-FLAT-OBJECT-SHATTER} \\ \{ \{ \text{BE}_R + \text{Figure}_i \} + \text{Cause} + \text{Manner} + \text{Path}_C \} \\ \text{Theme} \end{array} \right\}$

‘Father shatters a glass panel by punching it with his fist’

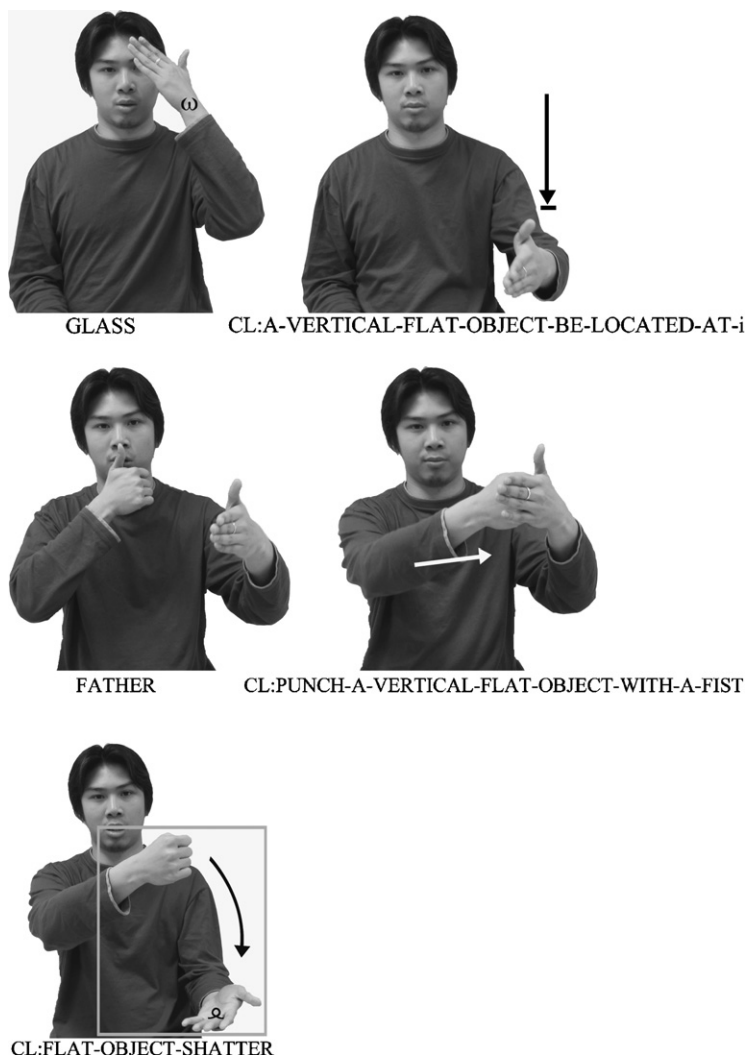


Fig. 25. Father shatters a glass panel by punching it with his fist (for significance of symbols, see Fig. 2).

In both examples, the bodypart classifiers are associated with a causing event, acting like an ‘instrument’ adopted by a volitional agent. The *Figure* entity of the causing event is the grammatical subject FATHER in both sentences and the bodypart classifier encodes the manner of causation in the event. As such, (16) and (17) can be translated into ‘The door swings open with the manner of father kicking it with his leg’ and ‘The glass shatters with the manner of father punching it with his fist’, respectively. We assume that the bodypart classifiers also encode agentivity as they are co-referential with the agent that has control over the eventuality. Moreover, in both examples, the change of state is encoded by another classifier predicate. Hence the event of causation is realized not by a single lexical causative predicate, but by a sequence of two classifier predicates. The first makes use of a causative predicate and the handshape component is associated with an ‘agentive’ bodypart classifier. The second predicate selects a



CL: FLAT-OBJECT-RISE-(ABOVE-HOUSE)

Fig. 26 (Continued)

In the classifier predicate of (18) the external causer HEAVY-RAIN is a two-handed sign represented by SASS. The movement component is represented by an upward motion of two flat hands to a level high enough to denote a change of state in which the affected theme HOUSE is gradually perceived as being submersed in it. Hence, the eventuality of a change of state for an event of causation saturates with the upward movement denoting the change of state and a second classifier predicate is unnecessary.

In fact, the movement component is crucial in an event of causation to encode the inchoation (i.e. change of state) of the affected theme, especially when the classifier is not associated with the causer.

(19) BH: PAPER
Figure_i
 Theme

LH: { CL:A-FLAT-OBJECT-BE-LOCATED-AT-i
 { {BE_L + *Figure_i*} + *Path_S*} }

‘A piece of paper is located here;’

LH: -----
 RH: WIND
Figure_j
 Causer

RH: { CL:WIND-BLOW-FLAT-OBJECT-AWAY
 { {MOVE + *Figure_i*} + *Cause* + *Manner* + *Path_C*}
 Theme }

‘A piece of paper is located here; the wind blows the paper away.’

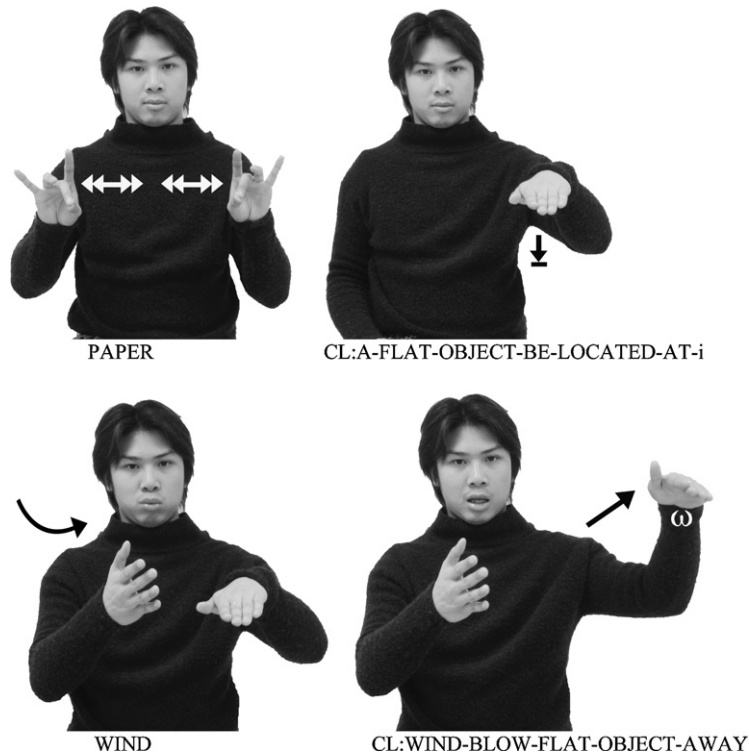
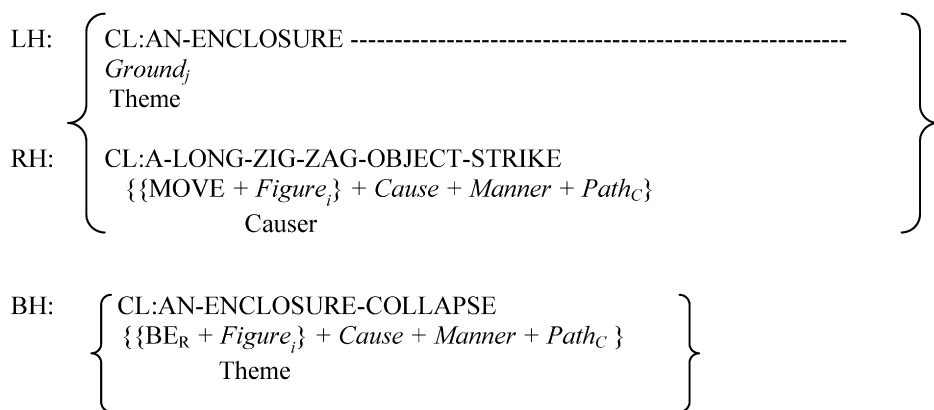


Fig. 27. A piece of paper is located here; the wind blows the paper away (for significance of symbols, see Fig. 2).

In (19) and Fig. 27, the SASS for the theme argument PAPER together with a ‘wavy’ path movement denotes the activity of ‘being blown by the wind’ as well as the result of causation (i.e. a change of location of the theme argument) in this event. The external causer WIND is represented by a ‘wavy’ path movement (i.e. manner of motion along a path) of the theme argument. It causes the PAPER to undergo a change of state from a state of fixity to a state of translational motion along a path. This is understandable since inchoation involves the general concept of a change of state, and the movement component of the classifier predicate is the phonological substrate to accommodate this semantic notion, therefore, a second unaccusative predicate is not required to encode the change of state brought about by the causing event. (20) below is different from (19) in that the causing event in (20) denotes an activity only (i.e. ‘the lightning strikes the house’):

- (20) BH: LIGHTNING HOUSE
 Figure_i *Ground_j*
 Causer Theme



‘The lightning strikes a house down.’

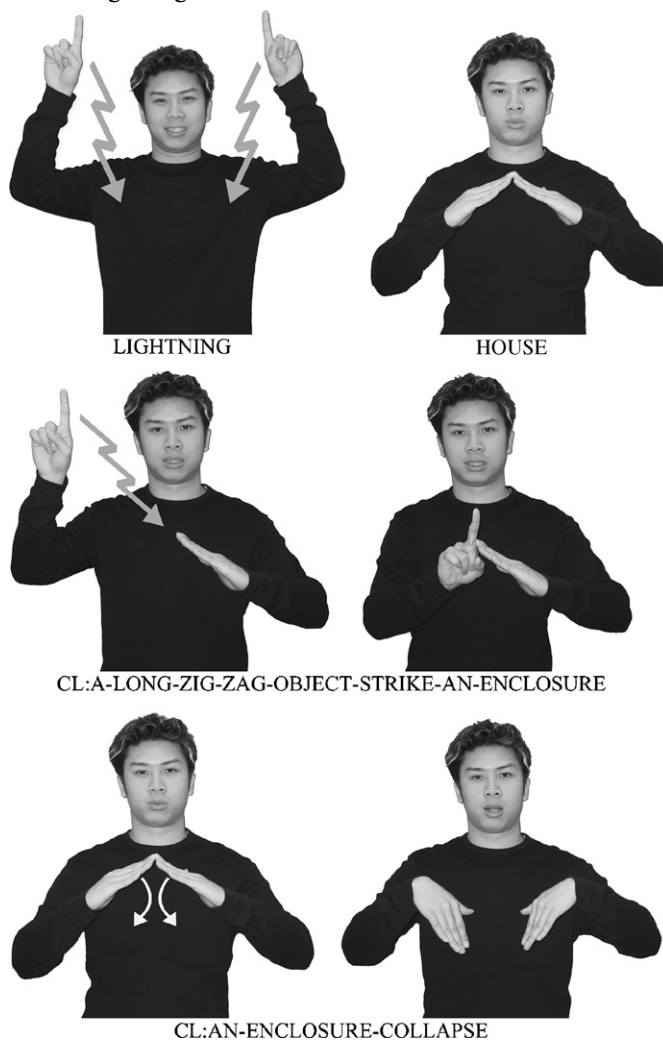


Fig. 28. The lightning strikes a house down (for significance of symbols, see Fig. 2).

In (20), the external causer LIGHTNING is represented by a SASS referring to a long and thin object. The causing event is conceptualized as an activity only, which is articulated by the movement component that brings the causer in contact with the affected theme (i.e. HOUSE). However, the result that ‘the hut collapses’ is not encoded in the causative predicate, hence a separate unaccusative predicate is required in order to encode the change of state of the affected theme, and this argument conceptually becomes the *Figure* entity in the unaccusative predicate (Fig. 28).

In sum, the HKSL data shows that the classifier *handshape* in a causative predicate like *handle* and *bodypart* denotes agentivity, not causativity. It is the movement component, which incorporates *Cause* and *Path_C*, that potentially expresses causativity. Where the movement denotes an activity only, a second unaccusative predicate is necessary for denoting a change of state. The data from natural force provides further support to our analysis that movement also has the propensity for encoding both activity and state change in a single event of causation.

7.4. The grammatical consequences of incorporating cause into an Event of Causation

Where a sequence of two classifier predicates is required in the predication, one needs to ask what grammatical processes are involved in the mapping process. We suggest reanalyzing the classifier predicates as having a phrasal rather than a lexical status. Lau and Tang (2001) made similar observations and proposed that this phenomenon may be analyzed within the general concept of a complex predicate. A consequence of this analysis is that the type of sentences is monoclausal but not bi-clausal because treating causative construction with two classifier predicates as bi-clausal would imply that each classifier predicate represents an independent yet coordinated phrasal constituent. The various analyses of causative structures in the generative tradition (Bowers, 1993, 2000; Hale and Keyser, 1993; Chomsky, 1995, among many others) also show that causative structures may be analyzed as involving complex predicates. Our discussion about the non-lexical causatives in HKSL indicates that the arguments and their respective predicates are structurally based. Example (16) shows that the first predicate contains KICK which is an activity verb; the fact that the second classifier predicate with the verb OPEN emerges in the structure is purely due to the requirement of causativity, but not because of the verb semantics of KICK. Therefore, causativity in (16) could be expressed by a complex predicate having a causative and a resultative predicate (i.e. ‘kick the door open’). Following this line of analysis, the direct object DOOR becomes a shared internal argument of the complex predicate composed of a causative predicate and a resultative predicate; this shared argument is conceptually perceived as the *Ground* entity in the ‘kicking’ activity and the *Figure* entity in the event of state change (i.e. Door ‘opens’). This leaves a very interesting working assumption for researchers who are interested in analyzing classifier predicates of signed language.

8. Conclusion

In this paper, we have shown data from HKSL that the meaning components of *Manner* and *Cause* in events of motion and causation do not necessarily conflate with the verb root of the classifier predicate only. Instead we observe that the language system incorporates the meaning components into the grammar at different linguistic levels. At this current state of research on HKSL, we observe that *Manner* may surface morphologically as a manner verb to co-occur with

a classifier predicate. Under this condition, the manner verb is observed to have a gestural origin. However, not all manner verbs are grammaticalized in a similar pace or manner. Manner of spatial configuration may eventually be incorporated into the verb root through the configuration of the handshape component of the classifier predicate. Manner of locomotion requires a choice of bodypart classifiers. Manner of motion along a path selects movement shape in the articulation. In Brentari (1998), one of the path features is movement shape, which can be specified as [straight], [arc] or [circular]. In other words, this stylized motion is eventually selected by the phonological process of sign articulation to denote manner of motion along a path.

As for event of causation, this lexicalization process applies only when both *Cause* and *Change of State* are mapped onto the verb root of the predicate, producing a lexical causative; otherwise, a separate predicate to encode *State Change* is necessary. In other words, the verb semantics determines whether a second classifier predicate is necessary for denoting a change of state. This observation shows that encoding an event of causation in HKSL may result in not only lexical causatives, but also complex predicates; this paves the way for a more in-depth analysis of the grammatical realization of the event structure of causation in this language.

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Appendix A. Notation conventions

In this paper, HKSL signs are glossed in capital letters. Glosses are hyphenated when they combine to form one sign. Capital letters with font 12 are lexical signs, while others with font 10 starting with an abbreviation 'CL' are constitutive of the productive signs for classifier predicates in signed language (ref. Brennan, 1992). In the text, the meaning components are italicized. The big brackets in the examples contain a simultaneous representation of the productive signs for classifier predicates. The list below provides an explanation of the notation conventions adopted in the paper:

A. Notations

1st tier	Glosses in capital letter
2nd tier	Meaning components and their representation as a conceptual structure
3rd tier	Thematic roles
4th tier	English translations
BH	Both hands
LH	Left hand
RH	Right hand
LH&RH	The left and the right hands represent independent morpho-syntactic units
———	The hand articulator is sustained in space
CL	classifier predicates

B. Event structure

→	‘Decomposable into’
{..}	Meaning components for incorporation into the verb root
(...)	Optional meaning components
MOVE	Abstract morpheme for ‘motion’ in the underlying conceptual structure. In event of causation, MOVE = ACT-ON
BE _L	Abstract morpheme for ‘locatedness’
BE _R	Abstract morpheme for the ‘resultant’ state
<i>Path_P</i>	Path traversed by an entity
<i>Path_S</i>	Site occupied by an entity
<i>Path_C</i>	Transfer of act in event of causation

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