Space and Nominals in Hong Kong Sign Language

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Abstract

Hong Kong Sign Language is the visual-manual language used by the local deaf as the major means of communication. One major difference between sign language and spoken language lies in the exploitation of space by the former in expressing meaning. This study aims at investigating the interaction of space and nominals in three aspects, namely, the representation of grammatical relations, referential properties and the use of spatial loci for a coreferential purpose.

A simple transitive sentence consists of two grammatical relations: subject and object. In general, spoken languages employ word order, verb agreement or case markings in differentiating these two grammatical relations. As the result of this study suggests, HKSL does not have overt case markers. If a linear representation is chosen, a simple transitive sentence must conform to the 'Subject –Verb – Object' pattern so that the grammatical relations can be clearly distinguished. Word order is relatively less important if the sentence is expressed spatially. An object classifier, which is static, can be incorporated into the verb to form a double-handed classifier predicate. A subject classifier is combined with the verb root directly in the same hand. On the other hand, a signer may first assign spatial loci to the referents involved and then use the orientation or movement direction of an inflecting verb to indicate subject and object.

With regard to the referential properties of nominals, it is found that HKSL uses the numeral 'ONE', the Cantonese loan word 'THERE-BE', a bare noun and eye contact with the addressee to mark a specific indefinite referent. A specific definite referent can be indicated by an optional determiner, a pronoun or a bare noun. Both the determiners and pronouns are realized as index signs, the directions of which are determined by the loci of the referents in space. The signer may also gaze at the loci of the referents when signing the nominals. A non-specific indefinite referent is marked by '$\text{ONE}_{(\text{Pathlength})}$', the movement path of which reflects the degree of uncertainty associated with the referent. A generic referent is normally represented by a bare noun. On the other hand, the way an object is realized may also affect the interpretation of the referential property.

In a narrative discourse, a signer may set up a token or surrogate in space to stand for a referent. As a conceptualized entity, a surrogate corresponds to the actual size of the referent whereas the size of a token is relatively smaller. Certain signs loaded with spatial information can reflect the exact location, the direction or an approximate area where a token or surrogate is situated. A referential locus may change as the discourse proceeds. This locus change reflects either a real topographical change of the referent or the signer's perspective in narration.

摘要

香港手語是本地聾人的主要溝通方法。手語跟口語其中一個最明顯的分別，是打手語者可以利用身體周圍的空間表達不同的意思，本研究旨在從三個不同方面探討香港手語中名詞和空間的相互關係。這三個方面包括語法關係、名詞的指稱特性以及指稱對象在空間中的位置。

一句簡單的及物句子包含了主語和賓語兩種語法關係，一般的口語都是透過語序、動詞表示時態的語素或名詞格標區分這兩種語法關係。據本研究結果所得，香港手語並沒有外顯的名詞格標，若採取線性的表達模式，一句簡單的及物句子必須按照 [主語 – 動詞 – 賓語] 的語序打出，以清楚分別主語和賓語。若打手語者運用空間來表達句子的意思，語序便變得略爲次要。打手語者可以將靜態的賓語量詞立體地併入動詞組中，主語的量詞則可以直接與動詞的動作結合。另一方面，打手語者可先將指稱對象指派至空間中的不同位置上，然後利用屈折變化動詞的手形方向或移動路線顯示指稱對象在句子中的語法關係。

至於名詞的指稱特性，香港手語利用數目字 '一' 、廣東話借詞 '有' 或單純名詞加上與受話者的眼神接觸來表達一個個別但不確定的指稱對象。個別且確定的對象，可以用一個非強制性的限定詞、代名詞或單純名詞表達出來。限定詞和代名詞同樣是一個指示的手勢，指尖的方向視乎指稱對象在空間中的位置。 這個位置亦可從打手語者的視線反映出來。非個別又不確定指稱對象，以一個食指左右擺動及手臂向外移動的手語作爲標記，手臂移動的幅度反映指稱對象可辯認的程度。普遍性的指稱對象一般以單純名詞表示。此外，賓語量詞和動詞的類別對該賓語所要表達的指稱特性亦有一定的影響。

在一個敘事性語編裏，打手語者可以想像指稱對象存在於他身處的空間之中，這些構想出來的指稱對象，可以跟實物大小相若，或縮小至一定的比例。一些帶有位置成分的手語，可以顯示出這些指稱對象的確實位置、方向或大概範圍。指稱對象的位置會隨著語編的法展而改變，以反映指稱對象在真實世界中位置的改變或打手語者敘事的角度。

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Chapter 1: Introduction

(1.1) Research questions

It is a well-known fact that the major distinction between sign languages and spoken language lies in the exploitation of space by the former in the grammar system. Spoken languages, which are conveyed in the audio-vocal mode, make use of sequential combinations of sound segments in representing meaning whereas the visual-manual modality of sign languages allows a manipulation of the three-dimensional space in front of the signer's torso, making simultaneous polymorphemic constructions possible. This thesis aims at exploring how space interacts with the domains of nominal expressions, including the realization of grammatical relations, referential properties as well as the spatial representation of referents.

(1.1.1) Space and spoken languages

Space can generally be defined as the whole area without boundaries or limit in which everything that exists is found. Space can be temporal or geographical, physical in nature or just a mental projection of one's conceptualization of the real/imagined worlds. Despite the usual claim by sign linguists that the exploitation of space in sign languages is unique and that no parallel can be found in spoken languages, it must not be mistaken that spoken languages do not include elements of space. On the contrary, the relation of space and language on the basis of spoken languages has been attracting much attention in the past few decades.

It is an undeniable fact that spoken languages allow us to describe the space surrounding us by lexical items which accommodate spatial concepts. Prepositions in English, for instance, are a useful tool for denoting spatial relations among entities. Pairs like *on top of / under*, *in front of / behind,* etc. not only code spatial information, but also reflect the speaker's perspective from which the spatial relation is depicted.

Deictic items such as *this, that, these, those, here, there* depict the degree of proximity of the referents from the centre of an extended dexis network. Yet space is not just something that we can talk about in spoken languages. Researches have suggested that human beings conceptualize the world in terms of a complex spatial network. Abstract concepts such as power and happiness, for instance, can be denoted by linguistic expressions with the underlying metaphorical concept 'up', which underlies a more extensive three-dimensional conceptual system (Lakoff & Johnson 1980). The conduit metaphor (Saussure 1959), on the other hand, is also a revealing example of how abstract concepts are embodied spatially. This metaphor states that words are viewed as a container having both horizontal and vertical dimensions; abstract ideas are held inside the word container just like a physical substance; and communication is comparable to the transmission of a physical object from one place to another. Studies on gestures accompanying speech lend further support to the claim that some images or abstract ideas are spatially processed and represented in our mind (McNeill 1992). Metaphoric gestures, for instance, capture abstract ideas as 'a bounded, supportable, spatially localizable physical object.' Deictic gesture, on the other hand, indicates 'a palpable space in which a concept could be located as if it were a substance'.

On a discourse level, Fauconnier (1985) and his followers (Fauconnier & Sweetser 1996) postulate that mental spaces other than the real space occupied by the speaker are set up throughout the discourse. Certain linguistic expressions, such as 'in John's mind' or 'from her point of view', 'in 1929', 'at the factory', 'probably', etc, necessarily establish mental domains, or *spaces,* which are distinct from the real, base space occupied by the speaker in the immediate speech context. These spaces represent new discourse dimensions which may be geographically or temporally distinct from the speech context. They may represent the inner thoughts or

psychological state of a character or may be just a hypothetical world where the possibilities of events are under discussion. These mental spaces are linked to or embedded within each other, and each of these embedded spaces has its own restrictions on the validity or factuality of the embedded materials. The mental spaces help explain such various linguistic phenomena as spatial deictics (Rubba 1996) in non-immediate speech context, shifting perspectives in narratives (Matsumoto 1996, Redeker & Sanders 1996), subjunctive mood (Mejias-Bikandi 1996), counterfactuals (Fauconnier 1985, Sweetser 1996), and conditionals (Fauconnier 1985), to name just a few.

Sign languages, as a natural manifestation of human's innate linguistic ability, are believed to have the spatial elements/concepts of spoken languages discussed so far. In spoken languages, however, these spatial elements/concepts are being 'talked about', 'reflected' indirectly through certain linguistic expressions or are just abstract conceptual constructions postulated by linguists. The claim that the human conceptualization may be spatially structured by no means entails that spoken languages are also spatially structured. As Bierwisch (1996) comments, 'we can talk about spatial aspects of our environment with any degree of precision we want, even though linguistic expressions (in spoken languages)... do not exhibit spatial structure in any relevant way' (p.31). This is precisely where sign languages differ from spoken languages. In sign languages, besides talking about space or thinking in a spatial way, signers actually employ space as a medium in communicating thoughts. Although whether this medium is linguistic or gestural is still controversial, it is an undeniable fact that sign languages are more 'spatial' than spoken languages in a fundamental sense.

(1.1.2) Space and sign languages

A signer's hands are the two major articulators in sign languages. The hands assume various handshapes, make contact at different locations of the body and move through the space in different patterns to express meanings. The space where signs are usually produced is called the signing space. It can be seen as a defined rectangular area that starts at waist level, extends to slightly above the signer's head, reaches out no more than a foot in front of the body and rarely extends more than a foot left or right beyond the torso (Brown & Tennant 1998). Alternatively, the space can be thought of forming a bubble that extends outwards in front of the signer from extreme right to extreme left. Space serves several important linguistic functions in sign languages, including phonological contrast, morphological inflection, coreference and anaphora, temporal and locative expressions, as well as discourse organization (Emmorey 1996). We would like to briefly introduce some of these functions here.

At a sublexical level, spatial distinction can signal phonological contrasts owing to the fact that location is one of the phonological parameters (Brentari 1998) that compose a sign. Take the HKSL signs for 'SMART' and 'FAMOUS' for instance. These two signs form a minimal pair, with the difference resting with the place of articulation only. Both signs are one-handed signs assuming a L-handshape ().[1] In 'SMART' (Illustration 1-1), the signer uses the tip of index finger to touch the temple of the same side of the signing hand and the closes the index finger to the fist as the whole hand moves away towards the ipsilateral side (the same side as the hand making the sign). In 'FAMOUS' (Illustration 1-2), the handshape and movement are the same as 'SMART' but this time the point of contact is the ipsilateral ear. This minimal

[1] The handshapes, fonts and some of the photos in the illustrations are borrowed from the research project 'A Study of Sign Language Variety in Hong Kong' (RGC grant no.: 221100080) supported by the Research Grant Council. I would like to thank Prof. G. Tang, the project supervisor, for her

pair suggests that a location difference can mark a phonemic contrast.

Space can also be used to mark morphological inflection. Klima & Bellugi (1979) identify nine types of verbal inflections involving different dynamic movement contours or planes in space. These inflections can show the various aspects of verbs or agree with the plurality of the object NPs. Despite a lack of in-depth research, preliminary observation of HKSL suggests that a modification of movement root in space can mark morphological inflection, too. Take the verb 'INTRODUCE' (Illustration 1-3) in HKSL for instance. When the sign is produced with a circular movement on the horizontal plane, the meaning would be 'introducing oneself to each other within a group of people' (Illustration 1- 4).

Space can be employed to reflect the topographical locations of real entities. One way to express locative information in HKSL, as in other sign languages, is to make use of classifiers. Classifiers are pro-forms which are usually combined with a verb root of motion or location to form a predicate. The way classifiers are placed in the space may correspond directly to the exact spatial relation among the entities. Illustration 5 to 7 indicate how two person classifiers are placed in relation to each other to express various locative meanings:

Illustration 1- 5: two persons sit close to each other.

Illustration 1- 6: two persons sit widely apart.

Illustration 1- 7: one person sits behind another.

Apart from a topographical function, space in sign languages can also perform a referential function. Simply put, a nominal can be associated with a particular location, normally known as locus, in the signing space. Once this relationship is established,

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kindness in letting me use the handshapes, fonts, and photos she painstakingly compiled for the project.

the signer can refer to the same referent again by either pointing towards the locus or by directing verbs to the locus. In the following HKSL example, the referent 'DOG' is established at a locus on the signer's right while the referent 'CAT' is on the signer's left. To indicate that the dog bites the cat, the verb 'BITE' begins at the locus of the dog and ends with the cat's (Illustration 1- 8):

(1) DOG CL: ANIMAL_{R}, CAT CL:ANIMAL_{L}, CL: $_{R}\text{BITE}_{L}$
Subj. Predicate , Subj. Predicate , Predicate
'A dog is at 'R'. A cat is at 'L'. The dog bites the cat.'

Temporal relationships can be expressed by dividing the space into several areas along a given dimension, which is known as a time line. Engberg-Pedersen identifies five ways of setting up time lines in space in Danish Sign Language (1993). The deictic time line in her analysis, for example, is also observed in HKSL. The deictic time line begins slightly behind the signer, passes the shoulder, and then extends to the front. The idea is that the portion of the time line at the back of the signer represents the past. The neutral area roughly in front of the signer's body represents the presence, whereas the area extends away from the signer represents the future. This deictic temporal concept can be well reflected in signs such as 'YESTERDAY', 'NOW', 'TOMORROW' and 'FUTURE' in HKSL (Illustration 1- 9). The locations of these signs correspond to a particular portion of the deictic time line.

The above discussion only covers a few areas in which the role of space has been investigated so far in sign linguistics. In fact, a much wider range of researches have been conducted in other aspects of space, including verbs (Klima & Bellugi 1979, Padden 1988,1990; Engberg-Pedersen 1993), classifier predicates (Supalla, 1986, 1990; Engberg-Pedersen 1993; Schembri 1999; Aikhenvald 2000), non-manual agreement (Bahan 1996), discourse organization (Gee & Kegl 1983; Winston 1995), etc. All these serve as evidence suggesting that space lies at the core of the grammar

of sign languages.

Two different proposals have been suggested with respect to the types of space. The first view holds that signers use two types of space (or two functions) when describing referents: Topographical Space and Syntactic Space (Klima & Bellugi 1979, Poizner, Klima & Bellugi 1987, Bellugi, Corina & Emmorey 1995, Sutton-Spence & Woll 1999). These researchers claim that the syntactic space serves to express coreferentiality by associating a referent with a locus. When space is used *syntactically*, as they claim, the loci do not necessarily correspond to the actual locations of the referents in the real world, and the spatial relation between the loci bears no significance at all. In addition, signers can use space to convey the real spatial locations of the imagined referents by locating them on the signing space in a way that exactly matches the real world situation. In these cases, the space is used *topographically*. These researchers claim that the two spaces may sometimes overlap, in that spatial loci may bear a referential function as well. It is not necessary, however, for a referentially-based locus to convey significant topographical information. These researchers base their arguments mainly on the sign production of deaf signers who have suffered from brain injury to either the left or right cerebral hemisphere. It is found that right-hemisphere-damaged deaf patients fail to describe referents spatially according to the exact locations in the pictures, and yet retain the ability to use space for coreference and verb agreement.

On the other hand, Liddell (1994, 1995) adopts Fauconnier's mental space model (1985) and proposes three different kinds of space, namely, Real Space, Surrogate Space and Token Space. According to Fauconnier, mental spaces are conceptual structures being built up as the discourse proceeds. A mental space can be a person's conceptualization of their current physical environment, an event, an image, a hypothetical world, or many others (Liddell 1995). In Liddell's model, Real Space

refers to the actual space and environment currently occupied by the signers at the time of the utterances. Signers may also imagine that non-existing referents are present in the signing situation by invoking Surrogate Space or Token Space. In a Surrogate Space, the referents are conceptually represented by 'full-sized invisible entities' called surrogates. The signer may interact with these surrogates as if they were really present. The nature of the Token Space is very similar to the Surrogate Space except that the size of an imagined referent (i.e. token) is proportionally reduced so that they can be easily manipulated within the physical signing space.

The above review indicates clearly that space plays an important role in the various grammatical systems in sign languages. In this thesis, we would like to focus on the nominals in HKSL and see what role space plays in determining grammatical relation, referential properties and the representation of referents in a discourse.

(1.1.3) Nominals in Hong Kong Sign Language

As the current study investigates the interaction of space and nominals in HKSL, we find it necessary to give a general picture of what constitutes a noun phrase in HKSL. In general, nouns can be classified into three major subclasses, namely, proper nouns, pronouns and common nouns. All of these three categories can be found in HKSL. Very often, a proper noun can function as a proper name to refer to the person, place, institution, etc. that bears the name. In HKSL, proper names can be formed by various mechanisms, ranging from an iconic representation of a salient feature of the referent to a compound consists of two or more common nouns (Sze 1998).[2] As in

[2] Our general observation is that the pronunciation of the name or the meaning of the characters involved in Chinese and the spelling of the names in English may have a strong influence on the way these name signs are created. If the proper noun is a name sign, one of the following methods would be chosen :

(i) distinctive personal feature. e.g. the sign 'a pointed nose' stands for a person who has a pointed nose;

(ii) English manual alphabet. e.g. the name sign for 'Felix' consists of the manual alphabet 'F' plus

other languages, proper names in HKSL are inherently definite, and therefore do not take determiners, numerals or adjectives.

Similar to other sign languages, pronominals are realized as a pointing gesture in HKSL. A first person pronominal sign is made by an index finger directed at the signer's own chest. The second person pronominal sign is directed at the addressee's chest whereas the third person pronominal sign points at the appropriate person (Illustration 1- 10). In other words, the direction of a pronominal sign is determined by the actual or imagined location of the referent. In addition, as a pronominal sign points at roughly the chest level of the referent, the angle of pointing may vary depending on the height of the referent relative to the signer. The pronominal sign would point slightly upward if the referent is taller than the signer, but slightly downward if the referent is shorter. Pronominals in HKSL mark plurality but not gender. A plural pronominal (Illustration 1- 11) is made by an index finger directed at the referents plus a circular movement. Alternatively an open flat B palm (B-handshape, ) can be used. Pronominal signs are usually accompanied by the signer's

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'L'.

(iii)Equivalent Chinese characters. e.g. the name sign for a person whose surname is '謝 ze' is the sign 'THANK'. (In Cantonese, the word 'thank' can be used as a surname)

(iv)Phonetic substitution. The name sign for a signer whose surname is '朱 zyu' is the sign for 'PIG' because 'pig' (豬) and the surname 'zyu' (朱) share the same pronunciation in Cantonese.

(v) A combination of English alphabet and salient personal features. The name sign for a woman with long, curly hair whose English name begins with an alphabet 'G' is made by a G handshape () with a twisting downward movement beside the cheek to imitate the outlook of long and curly hair.

(vi) Arbitrary.

Names for institutions or places in HKSL seem to be far more complicated than the formation of person name signs. The following methods have been observed.

(i) The signs correspond to each of the morphemic characters of the name in Chinese. For instance, the sign 'Shatin' (a district, 沙田) is 'SAND' plus 'FIELD' because the name in Chinese is made up of the two Chinese characters which mean 'sand' and 'field' respectively when they are used alone.

(ii) The sign depicts a well-known feature of the place. For instance, there is a well-known prison at Standley and therefore signers use the sign 'PRISON' as a name sign for Standley.

(iii) The sign makes use of bus route number for identification. The name sign for 'Mei Foo' district is made of an inward facing 6-handshape touching the forehead and then the chin, the reason being that Mei Foo is the destination of the bus route 6.

(iv) Arbitrary.

eye gaze at the direction of pointing.

Common nouns in HKSL can appear on their own as bare nouns, or can be accompanied by determiners, adjectives or numerals. Determiners share the same phonetic realization with pronominals but their distribution is different. While a pronominal sign appears on its own, a determiner either precedes or follows the noun head it modifies. It may also occur simultaneously with the head of a noun phrase:

(2a) $\text{INDEX}_{(\text{Det})}$ MAN SMART

(2b) MAN $\text{INDEX}_{(\text{Det})}$ SMART

(2c) RH: $\text{INDEX}_{(\text{Det})}$ SMART
LH: MAN

The majority of determiners come before the noun heads and are used in a definite, specific context. With respect to the use of adjectives and numerals, both adjectives and numerals can precede or follow the noun head. Three different orders have been observed: (i) Noun – Numeral – Adjective (ii) Numeral – Noun – Adjective (iii) Numeral – Adjective – Noun. The preference of word order seems to be sociolinguistically determined, with the older generation of deaf signers preferring the first pattern and the youngest generation the third pattern. What these patterns share in common is that an adjective never precedes a numeral. It is also suspected that adjectives denoting temporal states (e.g. 'ANGRY', 'BORED') are less acceptable in prenominal positions, while adjectives of inherent qualities (e.g. 'TALL', 'GOOD-LOOKING') can be found in both pre-and-postnominal positions.

No mass-count distinction on nouns has been discovered in HKSL. Except for the plurality marking on pronouns, no gender, case or number inflections are observed on nouns.

Studies in ASL suggest that there exists a systematic phonological distinction between a noun and verb sharing semantic relatedness and morphological similarity

(Newport & Supalla 1978). It is claimed that nouns in such pairs typically require repeated, restrained movements. In contrast, verbs display a wider range of movement possibilities but not restrained movements. Two patterns are observed in HKSL. For some noun-verb pairs, the noun and the citation form (a form produced when in isolation) of the verb are phonologically identical, yet the verb can undergo adverbial modification such as intensification or phonological reduction as a result of morphological processes. For instance, both the noun 'CAR' and the verb 'DRIVE' require 2 cycles of movement. When the verb is followed by an aspectual marker 'FINISH', however, only one cycle of movement will be used. For some other pairs, however, the noun requires 2 cycles of movement whereas one cycle is needed for the verb counterpart, e.g. 'FOOD' and 'EAT' (Illustration 1- 12).

(1.1.4) Research focus: interaction of space and nominals

Cross-linguistically, noun phrases realize a number of grammatical functions including subject and object. Noun phrases can be loaded with referential properties such as (in)definiteness and specificity. Spoken languages employ a variety of means to express these syntactic and semantic features. English and Chinese generally use word order as a cue to distinguish subject and object. In a simple sentence involving a transitive verb, the preverbal noun phrase is considered the subject and hence the agent of the action whereas the postverbal NP is the object bearing the patient role. Some languages such as Russian use inflectional ending to indicate the object and word order can be relatively free (Fromkin & Rodman 1993). With respect to the referential properties, English has a determiner system that distinguishes definiteness and indefiniteness. In general, an indefinite specific referent would be marked by an indefinite article 'a(n)'. Definite referents would be marked by a definite article 'the'.

Other determiners relevant to these semantic notions include demonstratives and indefinite articles such as 'some' and 'any'. In contrast, Cantonese does not have an overt determiner system equivalent to English and it employs several strategies including demonstratives, certain lexical items, classifiers as well as syntactic positions to differentiate (in)definiteness and specificity. For instance, a specific indefinite referent can be preceded by the existential marker 'jau', which is restricted to preverbal position in a clause structure. Definite referent can be denoted by a CL-N structure (classifier plus noun head) in both preverbal and postverbal positions.

The question we would like to ask about HKSL is, 'How are grammatical relations and referential properties such as (in)definiteness realized in HKSL?' Given that nominals can be associated with a spatial locus, to what extent does space play a role in the representation of these two aspects? A further issue we would like to address is the ways referents are represented spatially in a discourse. Does the network of spatial loci change over the discourse? What is the exact nature of a locus?

(1.2) Thesis outline:

It will be shown in this thesis that space is an important factor determining the realization of grammatical functions, referential properties and the representation of referents in a discourse. This thesis will be organized in the following way:

In the remaining part of this chapter, a brief introduction to the transcription conventions will be given. We will also briefly discuss the sociolinguisitc background of HKSL and review the previous literature about HKSL.

Chapter two will be devoted to discussing the realization of grammatical relations in simple, isolated sentences in HKSL. It will be argued that whether or not the signer adopts a spatial representation decisively affects the coding of the concept 'subject'

and 'object' as well as the corresponding word order of the sentence. In general, if a transitive sentence is presented in a linear sequence, the word order would be SVO. If the nominals are given loci in the space, or if the verbs can also include spatial information of the subject or object, a verb – final sign sequence will be used. Word order will be less significant.

In Chapter 3, we will discuss how various referential properties of nominals are expressed in HKSL. It will be shown that indefiniteness can be expressed by the numeral 'ONE' or 'THERE-BE-num', which is a loan sign from Cantonese . Realized as an index sign, determiners serve to mark definiteness of referents which are associated with spatial loci. Non-manual features such as eye contact with the addressee or eye gaze at a referential locus may also differentiate (in)definiteness. Non-specific indefinite referents can be marked by 'THERE-BE' in preverbal position and '$ONE_{(pathlength)}$' in postverbal position. While specific referents can be associated with a particular point in the signing space, non-specific referents are associated with an area whose size depends on the degree of uncertainty of the referents.

In Chapter 4, the discussion on the use of space will be extended to a discourse level. We will discuss the nature of the spatial frame of reference over a stretch of discourse in HKSL. It will be shown that HKSL signers establish tokens and surrogates to stand for referents in a discourse. Furthermore, the frame of reference is extremely dynamic in nature. Throughout a signing discourse, the signing space may expand and contract and the loci framework may also shift from time to time to mark contrast or the signer's focalization.

(1.3) A brief note on the transcription convention:

In this thesis, signs are transcribed into English glosses in small capital letters with a full English translation in single quotation marks. Usually, signed sentences

will be transcribed in a linear sequence as follows:

(3) FATHER SMART
'Father is smart.'

Subscripts are used to indicate the location where a sign is produced. If the sign is made at a particular location, the subscript will be written after the lexical sign:

(4) FATHER CL: PERSON $_{R}$
'Father is at the location 'right'.'

'CL' stands for 'classifier predicate'. If the sign involves a change of location, the initial and subsequent location will be indicated by the subscript in front of and after the sign respectively:

(5) FATHER $_{R}$CL: GO-TO $_{L}$
'Father goes from one location (right) to another (left).'

Locations will be indicated by the following subscripts: L (left), R (right), C (centre), N (near signer), F (away from signer) and U (up). These subscripts may be combined to yield a specific location, e.g. RN (right-near).

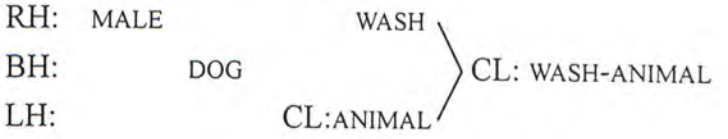
On the other hand, the orientation or direction of a sign is marked by a superscript following the sign:

(6) INDEX $_{(Det)}^{L}$ MAN SMART
'The man (on the left) is smart.'

In example (6), the determiner is directed to a locus on the left of the signer. The superscripts for orientation include: L (towards left), R (towards right), U (upwards), D (downwards), F (forwards), C (straight towards the front) , I (toward signer), RH (towards one's right hand) and LH (towards one's left hand). Sometimes, a sign

sequence will be represented by three separate rows if it is necessary to show how the two hands interact with each other:

(7) 'A boy washes a dog':



In example (7), 'MALE' is made by the right hand (i.e. RH). 'DOG' is a two-handed sign (i.e. BH- both hands). The final sign 'CL: WASH-ANIMAL is a complex sign. It is made up of 'WASH' by the right hand and the animal classifier by the left hand. The connecting lines show how two separate signs compound together to form a complex predicate. For the details of the transcription conventions, please refer to Appendix 1.

(1.4) Sociolinguistic background of Hong Kong Sign Language

Hong Kong Sign Language (HKSL) refers to the visual-manual language used by the hearing-impaired in Hong Kong. Unofficial statistics in 1999 suggest that the number of hard-of-hearing people in the territory is approximately 40,000 and the deaf population is roughly 6000, altogether amounting to 0.006 % of the total population. A majority of these hearing-impaired suffer from moderate deafness and only a small portion of them are profoundly deaf. There are no statistics on the use of sign language inside the deaf community. According to our deaf informants, most of the deaf people use sign language as the major means of communication. The likelihood of using sign language correlates with factors such as the degree of hearing loss, family background, schooling as well as personal preference. Generally speaking, deaf people born to deaf parent(s) will become native signers. Most of the deaf children are born to hearing families and do not get in touch with sign language until they enter deaf schools. Hearing-impaired children who study in mainstream schools

are unlikely to acquire sign language unless other sources of sign input are available. Whether the deaf person wants to use sign language to identify him/herself with the deaf society is also important. In short, the deaf population in Hong Kong spreads along a continuum between spoken language and sign language with respect to the mode of communication.

Variations in terms of signs and syntactic structures exist, which are primarily attributable to the oralist education policy and the anti-sign attitude within and outside of the deaf community in HK. All teaching activities are conducted in spoken Cantonese to force deaf children to learn lip-reading and deaf children are discouraged from using sign language in peer communication. This anti-sign language policy in deaf schools poses a tremendously adverse effect on the transmission of sign language from one deaf generation to another. Due to a lack of formal sign language curriculum, deaf children can only pick up signs from their native peers or invent their own idiosyncratic signs. This results in variations across different deaf schools, or even different class levels within the same school. This phenomenon continues after deaf people leave their schools and develop their own social groups. For instance, the two major deaf associations have their own sign language documentation and there are constant disputes over the correctness of synonymous signs. The deaf group of the Hong Kong Catholic Church invents its own religious signs, some of which cannot be understood by deaf people outside the church. There are ongoing efforts by individual groups to standardize signs, yet none of them has met with significant success due to a lack of consensus and cooperation among different signing groups. The adverse effect of the anti-sign education policy is evident in the grammar of HKSL, too. Deaf people trained in the oralist tradition show a stronger tendency to follow Chinese word orders in their signing. Their sign production is signed Chinese rather than genuine sign language. As the younger generation has a better chance for education, it looks as if

this variation is caused by age difference.

(1.5) Documentation of Hong Kong Sign Language and Chinese Sign Language

Only a few records concerning HKSL have been published so far. With regard to the origin of HKSL, it is suspected that sign languages in Beijing, Shanghai, Guangdong, Tai Wan and Hong Kong are dialects of the same sign system (Hong Kong Society for the Deaf 1987). In 1940s, a group of Nanjing and Shanghai deaf signers came to Hong Kong to run private tuition for deaf children and in due course brought their sign languages to the local deaf community. Their sign varieties are believed to have influenced the later development of HKSL in a significant way. On the other hand, the Civil War in China in the 1950s resulted in massive migration of people from the Guangdong province to Hong Kong. Some of these people were deaf and their sign language also played some role in shaping today's HKSL.

To verify the folk belief that Hong Kong Sign Language developed partially from Shanghai Sign Language, Woodward (1993a) conducts an experiment to ask HK signers to judge the similarity between HK signs and Shanghai signs. He videotapes the signs in Shanghai Sign Language for a vocabulary list of 100 items and asks HKSL consultants to judge whether the Shanghai signs are similar to the HK signs enough to be understood by HKSL signers. It is found that 66% to 68% of the Shanghai signs of the listed items are similar to the HK signs. Woodward argues that while HKSL has a strong relation with Shanghai Sign Language, the high percentage of dissimilarity (32% to 34%) between the two languages suggests that HKSL has also mixed with other sign varieties. Using a slightly shorter list of vocabulary, Woodward (1993b) compares HKSL and Shanghai Sign Language with six South-Asian sign languages including New Delhi, Bangalore, Bombay, Calcutta and Karachi.

The result of the study suggests that HKSL and Shanghai Sign Language probably belong to the same language family, whereas the South-Asian sign languages form another distinct language family.

Klima & Bellugi (1979) conduct a study to compare the formational components of individual signs of HKSL and American Sign Language. Although they use 'Chinese Sign Language' in their study, their CSL informants are in fact Hong Kong signers, according to a reliable source of information. It is found that some CSL (HKSL) signs overlap with actual ASL signs, though the meanings are different. For instance, the CSL (HKSL) 'FATHER' is formationally identical with the ASL 'SECRET'. Some CSL (HKSL) signs are possible but not actual ASL signs according to the intuition of ASL native signers, e.g. CSL (HKSL) signs for 'DISCOURAGED' and 'OFTEN'. For these CSL (HKSL) signs, the hand configurations and movements are judged to be acceptable in ASL, even though no exact equivalents are found in ASL. There are, however, some CSL signs (e.g. INTRODUCE, SUSPECT) which are unacceptable, or outside of the ASL system. These signs may use formational values that do not occur in ASL, or the values can also be found in ASL but they are never combined in the way CSL does. The researchers compare this phenomenon to the fact that each spoken language only selects a subset of all the possible human sounds and has idiosyncratic constraints on the combination of sound segments. They come to the conclusion that sign languages are in fact very similar to spoken languages.

A study on the number of possible handshapes in HKSL is conducted by Hong Kong Society for the Deaf (1989). In the study, three fluent signers, two hearing and one deaf, are instructed to produce 598 signs taught in a sign language training course. The researcher lists the different handshapes used and courts their tokens of occurrence. Altogether 116 different handshapes are recorded, and they are compiled according to their rate of frequency. It is found that the most frequently used

handshape is B (), followed by d (), 5 (), S (), C () and 1 (). Despite its limited scope and a lack of linguistic analysis, the study represents a milestone in the research of HKSL.

All of the above studies concern individual lexical items in HKSL and nothing related to syntax has been done so far. Apart from these academic studies, there are several publications on the vocabulary of HKSL. They usually use simple pictures to illustrate how a sign is produced and provide the corresponding Chinese gloss. However, all of them fail to provide signed sentences as examples and no attempts have been make to analyze HKSL from a linguistic point of view. *Speaking with Signs* (Goodstadt 1972) lists some 2000 signs commonly used in the deaf community as well as some newly created signs for the purpose of teaching. *The Handbook of Sign Language for the Hong Kong Deaf* (Education Department et al 1990) is another dictionary-like documentation containing some 1000 signs commonly used by deaf people. *Sign Language Training Course* (1988) published by the Hong Kong Society for the Deaf covers some 500 signs and points out that signs can be iconic, semantically based or arbitrary. Concerning the linguistic status of sign language, however, the authors proclaim that HKSL has no grammar rules and is less expressive than oral languages. The monthly periodicals published by The Deaf Shepherding Group of the Hong Kong Catholic Church include a subsection on introducing individual signs and sign sentences. However, all the sign sequences are signed Chinese because the lexical combination and syntactic structures are completely identical to spoken Cantonese.

There are also a number of studies concerning Chinese Sign Language. *Deaf People and Sign Language* by Mei and Fu (1986) points out that both fingerspelling and sign language are used in China, with the former mainly in the context of education. The book includes a report on how western fingerspelling system was

introduced to China and adapted to phonetic romanization of Mandarin (Hanyu shouzhi zimu xitung 漢語手指字母系統). The authors also propose a classification of signs on the basis of their formation principles[3] and discuss certain grammatical phenomena in CSL.[4] They find CSL inadequate due to the excessive existence of homophones and a lack of systematic noun-verb distinction and nominal classifiers. They think that the grammar of sign language should be developed to comply with spoken languages in order to be perfect and sophisticated, otherwise it will fail to express complicated or refined content.

Yau has published a number of articles on Chinese Sign Language on various aspects. With regard to the lexicon of CSL, Yau compiles a list of standard Chinese signs published in both Chinese (1977) and French (1978). In a study involving various sign varieties in the region of China, he observes that word order in Chinese Sign Language is basically verb final (a more detailed discussion can be found in Chapter 2). His main interest, however, lies in the home signs created by isolated, illiterate deaf signers in China or other regions and how these signs relate to issues such as language origin (Yau 1989), creation of new lexical items (1985, 1986, 1990), role of cognition and perception in grammar (1977, 1986).

As the foregoing literature review indicates, there have been no serious attempts to analyze the grammar of HKSL.

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[3] The seven categories of signs are (1) iconic signs e.g. moon - shape of moon; (2) metaphorical extension e.g. youth – lack of beard; (3) phonetic substitution e.g. the sign for 華 僑 is equal to 花 and 橋 due to the similar pronunciation in Mandarin; (4) graphical imitation: e.g. using the fingers of both hands to imitate simple Chinese characters e.g. 江 工 公 田; (5) compounds: consist of signs formulated by the above four principles; (6) indexical signs: by pointing to the body parts; (7) fingerspelled loan words: the initial phonetic symbol of a word in spoken Mandarin is fingerspelled in sign to stand for the whole word e.g. er qie 而且 'e' + 'q'.

[4] According to the author, the grammar of CSL is different from Chinese in the following aspects: (1) Locative goals and patients are signed before the verb. e.g. TABLE MEND (2) Cause is followed by effect e.g. SOUR HATE; FIRE PUT-OUT (3) post-modification: noun head followed by adjectives e.g. MOVIE NEW, FLOWER BEAUTIFUL; PIPE IRON (4) Negator after head: e.g. RICE EAT NEG, REST NEG. (5) wh-words at sentence final position, e.g. NOISY WHY, MEETING WHAT (6) functional words are omitted, e.g. auxiliary words, adverbs, connectives, preposition; (7) nominal classifiers are omitted (8) some verbs are omitted.

Chapter 2: Space and Grammatical Relations

(2.0) Introduction

This chapter aims at finding out the ways by which grammatical relations are realized in simple sentences in HKSL, and the extent to which space is important in this regard. A brief discussion on the definition of grammatical relations and their realization in spoken languages will be given in (2.1). In (2.2), we will review the discussion of grammatical relations in sign language literature. The design of our experiment for testing grammatical relations in HKSL will be given in (2.3). Section (2.4) will focus on the findings of HKSL. It will be argued that word order is important in distinguishing grammatical relations if space is not involved. If a signer chooses to use a spatial representation, the correct interpretation of grammatical relations will be dependent upon verb inflection as well as classifier incorporation in the predicates. An attempt is also made to extend the analysis to dative constructions at the end of this chapter.

(2.1) On the grammatical relations 'subject' and 'object':

In most of the contemporary linguistic theories, grammatical relations such as subject and object are assumed to be universal (Bhat 1991). However, there is no satisfactory definition of subject or object which is general enough to be applicable to all languages. A traditional view is to divide a sentence into two parts: 'subject' and 'predicate'. For example, in the sentence '*John bought 3 books*', 'John' is the subject and 'bought 3 books' is the predicate. Subject is the entity being talked about whereas the predicate is what is said about the subject. This view is implicitly assumed in modern theoretical linguistics (Palmer 1994). Using a descriptive approach, Palmer suggests that a sentence is made up of a predicator and one or more

arguments:

Argument (NP) – Predicator (V) – Argument (NP)

The above structure represents a typical transitive sentence. The two arguments differ in the meaning relation with the verb and they may be distinguished from each other by grammatical markings. The first and second argument are known as 'subject' and 'object' respectively.

From a functional perspective, Givon (1997) proposes that subjecthood and objecthood do not define discrete memberships. He claims that each of them is associated with a cluster of features, and the typical 'subject' or 'object' would be those displaying the greatest number of these features. These features include overt grammatical markings such as case, verb agreement and word order, possibility of engaging in grammatical processes such as raising, passivization, reflexivization, causativization, etc. or functional properties such as referentiality, definiteness or topicality. This approach assumes that no absolute boundary can be drawn to define how a 'subject' or an 'object' must look like or behave. Rather, categories are ranked as being 'least typical', 'more typical' or 'most typical' of a particular grammatical relation.

The formalists, on the other hand, propose that subjects originate internally within VP and rise to the specifier position of TP for checking purposes. On the assumption that propositions comprise a predicate and a set of arguments, they call verbs that require one argument one-place predicate (e.g. sleep: *He slept*), whereas those selecting two arguments two-place predicates (e.g. *He ate an apple)*. The arguments of a verb correspond to its subject and object in general grammatical terminology. As the complements of verbs are positioned inside V-bar whereas their subjects are positioned outside V-bar, complements are said to be internal arguments

and subjects external arguments (Radford 1997).

In a nutshell, there is no consensus among linguists as to what constitutes a 'subject' or an 'object'. This difficulty does not just rest with the differences among theoretical approaches. Whatever theoretical position one assumes, it is not an easy task to pin down the exact nature of each grammatical relation, as reflected in Keenan's comment (1976):

> 'in many languages subject NPs are characterized by properties which are not only not universally valid, they are peculiar to the particular L (language) in question.'(p.306)

In fact, there are even disputes concerning whether or not one should consider grammatical relations necessary and universal constructs in cross-linguistic analysis (Bhat 1991).[1]

The present study does not aim at solving this terminology confusion, nor do we intend to commit ourselves into any of the theoretical positions listed above. In this study, we would like to give a general description of the realization of grammatical relations in simple sentences in HKSL. We would assume that a sentence consists of a predicate as well as one, two or three arguments. Furthermore, we would like to adopt the working definition of 'subject' and 'object' used by Gambino, Giuranna & Pizzuto (1990) in their analysis of Italian Sign Language. They define 'subject' as 'the semantic agent or experiencer of a typically transitive verb' such as 'eat' and

[1] According to Bhat (1991), 'grammatical relations are generally postulated as intermediary "abstract" entities whose primary function is to relate semantic roles like agent, patient, experiencer, etc. with their formal representations like case markers (nominative, accusative, dative, etc.) or distinct positions in the sentence.' In English, grammatical relations are necessary linguistic units for describing certain morphosyntatic processes. In languages like Kannada, however, case suffixes and postpositions are used for encoding semantic relations, whereas word order is used for encoding pragmatic relations. Hence, Bhat argues that at least for Kannada there is no need to establish any intermediary entities for describing these relations (p.3).

'see', and 'object' as 'the semantic patient, beneficiary or recipient of any verb used transitively'. Although there is not always a one-to-one mapping between grammatical relations and semantic roles (Givon 1997), in simple ('basic' in Keenan's sense) sentences there is a strong tendency for agents to be realized as subjects on the basis of Fillmore's Subject Selection Principle (1977), which states that 'if there is an agent which is brought into perspective, the nominal which represents it must be its (deep) Subject' and Williams's (1981) comment that 'if there is an Actor(=agent), it must be external for V' ' (Radford 1988). Although Fillmore and Williams are taking a formalist approach, their comments boil to the general observation that agents tend to be encoded by subjects. Note that this working definition by no means implies that subjects in HKSL must be agents/experiencers and all objects patient/recipient, nor do we preclude the possibility of raisings structures such as passives or unaccusatives, where patients may occupy the subject position.

Cross-linguistically, grammatical relations can be overtly marked by three formal elements (Keenan 1975): word order, verb agreement and nominal case morphology.[2] Languages differ in the applicability of these three overt coding properties in distinguishing grammatical relations. Modern Hebrew, for instance, has rigid SVO order, morphological marking for objects and verb agreement for subject. In this language, however, only word order is most relevant to the distinction of all grammatical relations because morphological marking is restricted to object and verb agreement can only distinguish subject. Similarly, English has all of these coding

[2] Givon (1997) suggests two more types of features of grammatical relations: functional properties as well as behavioral and control properties. Functional properties include a list of semantic and pragmatic characteristics, whereas behavioral and control properties are related to the importance of grammatical relations in grammatical operations such as passivization or raising. As the study of HKSL is still in its infancy, descriptions concerning the manifestation of functional properties and the various grammatical operations are scarce. We therefore limit ourselves to the three overt properties

properties, but word order is the most important distinguishing feature among the three. In a simple transitive sentence in English, for instance, a subject precedes a verb, which is in turn followed by an object:

(1) Mary pushed Tom.
Subj. V Obj.

Reversing the position of 'Mary' and 'Tom' would result in a completely different meaning:

(1') Tom pushed Mary.
Subj. V Obj.

English has an impoverished system of nominative and accusative case markings, as reflected in the pronouns such as the contrast between 'he' or 'him':

(2) Mary pushed him (him-accusative case)
Subj. V Obj.

(2') He was pushed by Mary (he-nominative case).
Subj. V

The subject rather than the object shows agreement with verb, as shown in the third person agreement ending –s:

(3) He/she/it *eat-s* a lot.
Subj. V Obj.

(3') I/we/they/you *eat* a lot.
Subj. V Obj.

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for expressing grammatical relations in this study.

Verb agreement and case markings in English do not consistently provide sufficient cues about subject and object. Nominative and accusative case markings can only be seen on pronouns, and there is no overt marking for subject-verb agreement in several circumstances, such as the use of simple past tense (e.g. 'ate' is used for all sorts of subjects). Hence, grammatical relations are primarily distinguished by word order. Cantonese has neither case morphology nor verb agreement. Grammatical relations are therefore solely distinguished on the basis of word order. Like English, the basic word order is SVO in Cantonese:

(4) baa-baa zung-ji maa-maa
爸爸 鍾意 媽媽
father like mother
Subj. V Obj.
'Father likes mother.'

(4') maa-maa zung-ji baa-baa
媽媽 鍾意 爸爸
mother like father
Subj. V Obj.
'Mother likes father.'

In contrast, there are some languages whose word order is highly flexible, and morphological inflections are solely responsible for marking grammatical relations. The free order phenomenon is sometimes called 'scrambling' in the literature. Examples are Papago, Ute, Walbiri, Nez Perce (Givon 1997). For instance, the following two sentences in Kannada share basically the same meaning, and the difference in word order mainly serves a pragmatic contrast (Bhat 1991):

(5) hari ra:juv-annu hogalida
Hari-nom Raju-acc praised
'Hari praised Raju.' (Bhat 1991)

(5') ra:juv-annu hari hogalida
Raju-acc Hari-nom praised
'Raju was praised by Hari.' (Bhat 1991)

In (5) the focus is on 'Hari' whereas in (5') 'Raju' is the topic. The nominative (unmarked) and the accusative case markings (-annu) provide an obvious signal for the two grammatical relations. Note that according to the literature at least one language does not make use of any of the three overt markings to distinguish grammatical relations. In Lisu (Hope 1974, Li & Thompson 1976), grammatical relations are mainly determined by contextual cues, semantic as well as pragmatic factors, and lexical selectional restrictions. The following sentence is, in principle, ambiguous between two readings:

(6) lathyu nya ana khu-a
people TOP dog bite-DECL
??'People bite dogs'/'Dogs bite people'

The second reading, i.e. 'dogs bite people', is normally assumed to be the proper interpretation because it is a common sense that in normal circumstances dogs but not people bite other creatures.

Cross-linguistic comparisons reveal that among the three overt markings, case marking is found to be least universal, verb agreement more universal, and word order most universal (Keenan 1975, Givon 1997). Universality is defined in the sense that the more universal a grammatical feature is, the more likely it correlates with the identification of grammatical relations, and the more likely for it to be found in both simple and complex sentences cross-linguistically.[3] Note that none of these three

[3] Givon (1997) speculates that the reason why word order is more universal than the other two features lies in the fact that word order correlates more closely with the pragmatic function of topicality. Given the general observation that the subject tends to be the main clausal topic and the direct object the secondary topic, and the fact that the main topic usually precedes the secondary topic in a sentence, it

overt markings adopted for spoken languages are related to space. As space is a fundamental defining characteristic of sign language, it is likely that space may exert its effect on the realization of grammatical relations to some extent. The purpose of our study here is to see whether HKSL adopts any of the three overt marking methods to distinguish grammatical relations and the role of space in such identification.

(2.2) Literature Review

Since there has been no previous documentation specifically on the grammar of HKSL, we will review here the literature on American Sign Language and Chinese Sign Language with respect to the issue of grammatical relations. Despite the differences in vocabulary, previous studies generally suggest that the basic grammatical mechanisms may be quite similar across different sign languages. Reviewing literature of other sign languages may therefore serve as a desirable starting point, providing general ideas about the realization of grammatical relations and how one may go about to find out such properties in HKSL.

(2.2.1) Grammatical relations in American Sign Language (ASL)

There is little research in ASL that deals specifically with the distinction of grammatical relations.[4] Relevant discussions, however, can be found in studies

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is no wonder that word order outweighs the other two features in signaling grammatical relations. Morphology, being 'the most grammaticalized, ritualized or automated feature in grammar', has a higher potential not to associate with the topicality of subjects and objects. Therefore it is the least universal in identifying grammatical relations.

[4] To the best of my knowledge (given my limited access to the bulk of ASL literature), very few works have done to evaluate the relative importance of word order, verb agreement and non-manual agreements in the determination of grammatical relations. These works may contain discussion on one or two of these three aspects, but they seldom look at the issue from the perspective of grammatical relations.

primarily concerned with basic word order, verb agreement and non-manual agreement. Despite this, findings from these works may shed light on the factors that determine grammatical relations in sign languages.

Fisher (1974, 1975) is one of the earliest researchers who touch on the issue of basic word order and grammatical relations in ASL. According to her, whether or not the transitive sentence involves reversible subject and object may have an effect on word order in ASL. In a reversible sentence that involves animate or human entities, both the subject and object can be the potential agent of the action. For example, the sentence 'A boy is pushing a girl' remains semantically plausible if the two arguments reverse their positions, as in the sentence 'A girl is pushing a boy'. In a non-reversible sentence, however, only one argument can be the plausible agent, as in 'A boy is pushing a table'. Reversing the positions of the two arguments in the sentence will result in semantic anomaly.

Fischer suggests that the basic word order for reversible sentences in ASL is SVO, which is suspected to have been influenced by spoken English. The surface order may change as a result of topicalization, which is usually marked by intonation breaks, raised eyebrows or head tilts. Her analysis implies that there can be three possible surface orders for reversible sentences, namely, SVO, O-VS, VO-S, the last two being the result of topicalization. In contrast, word order is relatively freer in non-reversible sentences due to a lack of semantic ambiguity. Apart from SVO and others, SOV and even OVS are possible:

> '...in general there is a great deal more freedom of word order if subject and object are not reversible. It thus becomes possible to have SOV word order –indeed even OVS becomes possible – when there is only one plausible way to interpret the grammatical relations in the sentence.' (Fischer 1975, p.9).

Fischer points out that her analysis holds true if space is not involved to indicate grammatical information. In a signed discourse, however, referents are usually assigned referential loci in the signing space. Certain verbs, which she calls directional verbs, can move between these referential loci to indicate grammatical relations. In such a case, the verbs would appear at a sentence-final position. In a nutshell, Fischer suggests that when space is not involved, word order determines grammatical relations for reversible sentences. Word order is more flexible if the semantics of the sentence clearly indicates the grammatical relations. Space can be an important factor, too.

Liddell (1980) agrees with Fischer that the basic word order in ASL is SVO, but argues that his informants do not always accept SOV in non-reversible sentences. He does not formalize the conditions under which SOV is acceptable and only conjectures, in an 'admittedly vague' (Liddell 1980, p.90) manner, that SOV sequences will be unacceptable 'unless the sequence includes information about the relationship between the activity and the object involved in some spatial, pictorial sense'. Liddell uses 'WOMAN PIE PUT-IN-OVEN' as an ASL illustration (pp.89). 'PIE' in ASL is a two-handed sign: the signer's upturned left palm (B-handshape: ) represents the pie while the pinky finger edge of the right palm (B-handshape: ) performs the slicing action on the left palm (Illustration 2 - 1). For SOV to be acceptable, Liddell suggests that it must also be the left hand that performs the action 'PUT-IN-OVEN':

> '...For this sequence (SOV) to be acceptable, the hand which is used as the base hand for PIE is used as the active hand for the sign PUT-IN-OVEN...the hand which could be imagined as holding a pie can now be imagined as putting that pie in the oven...' (p.89)

Liddell only attributes the SOV pattern to the iconicity effect without having recourse to any grammatical reason:

> 'The SOV order itself does not give any information about the grammatical relationships...unless the sequence does include information about the relationship between the activity and the object involved in some pictorial sense, the sequence will be unacceptable.' (p.91)

In short, Liddell holds that grammatical relations can be primarily distinguished by the SVO order. SOV would be acceptable in a non-reversible context if the signer chooses to represent the sentence pictorially or iconically. Whether the sentence is semantically ambiguous is irrelevant to word order and grammatical relations.

Friedman (1976) has a completely different view on the word order of ASL. She criticizes that Fischer's elicitation methodology yields unreliable data and therefore cannot truly reflect natural ASL sentence patterns. In Fischer's study, the deaf informants are given sign sequences such as Noun-Verb-Noun or Noun-Noun-Verb and are asked to give their interpretation of subject and object. Since the informants also have some knowledge of English, Friedman argues that it is likely for them to have recourse to English syntax for interpretation. The best way to study ASL sentence patterns, Friedman argues, is eliciting natural ASL discourse. To Friedman, the word order of ASL is highly flexible, except the fact that there is a rather strong tendency for the verb to appear at the final position of a clause. She also assumes that in ASL there are neither case markings nor inflections on verb in agreement with subject or object. In the absence of fixed word order, case markings and verb agreement, Friedman argues that signers use pragmatic avoidance strategies in identifying grammatical relations. Friedman's observation is summarized by Wilbur (1987) as follows:

(i) With intransitive verbs, only one argument as the subject may appear;

(ii) With transitive verbs that have two or more semantically nonreversible arguments, the semantics of the sentences determine the grammatical relations.

(iii) For reversible sentences, the following strategies are adopted:

(a) the signing space is used to mark the locations of the referents and the verb moves among these locations.

(b) The body and body space are used to distinguish referents.

(c) Some ambiguous transitive constructions are avoided; the signer may break down a single transitive proposition into two, each of which is represented by a one-place predicate.

(d) Heavy reliance on context.

In short, what Friedman suggests is that in ASL grammatical relations are determined by semantic and pragmatic factors other than word order, case marking and verb agreement. However, Friedman does not further elaborate on the role of space in the analysis. She only briefly mentions that body space and verb movements may be used.

In the proposals by Fischer, Liddell and Friedman, verb inflection is either assumed to be absent or given little attention. In a later study, Kegl (1976, 1977) points out that verb inflection in ASL plays a determining role in word order. She acknowledges the fact that space can be used to mark the location of referents and an inflecting verb may move among these loci as agreement.[5] In her study, she presents

[5] According to Padden (1988), verbs in ASL can be classified into three types, namely, plain verbs, inflecting verbs and spatial verbs. Inflecting verbs, also known as directional verbs by some sign linguists, change their direction of movement or orientation in order to carry information about subject or object, or both of them. 'GIVE', for instance, is a typical inflecting verb in HKSL. Its initial position indicates the giver, and it moves into the direction of the recipient. If the signer wants to express that a boy on his left gives something to a girl on his right, the verb 'GIVE' will move from the signer's left hand side to the right. Instead of carrying information about grammatical relations, spatial verbs

sentences in Noun-Verb-Noun order with both inflecting verb and non-inflecting verbs to the deaf informants and asks them to give judgement. With an uninflected inflecting verb (i.e. an inflecting verb in its citation form), the informants interpret the sentence as subject-verb-object but consider the verb form unnatural. They suggest that deaf signers always inflect an inflecting verb and only hearing signers would use uninflected forms. Another finding is that when a verb is inflected, all word orders are acceptable to most signers, though some of them may still prefer an SVO sequence. Basing on these two findings, Kegl postulates the Flexibility Condition, which states that 'the more inflected the verb is, the freer the word order may be'. Wilbur (1987) also claims that Liddell's SOV sentences can be subsumed under Kegl's Flexibility Condition:

> '...Liddell's comments on variability, "judgement as to the grammaticality of these sentences would vary depending on where the sentences fall on the continuum (i.e. how well the relationship between the verb and the object is depicted)" is exactly what is predicated by the Flexibility Condition.' (Wilbur 1987, p.148)

Kegl's Flexibility Condition implies that grammatical relations can be distinguished by two factors: word order and verb agreement. When present, verb agreement outweighs word order in determining grammatical relations.

A more recent proposal (Bahan 1996) suggests that apart from verb inflection, subject and object agreement in ASL may also be realized as non-manual features. Given that the referents for subject and object are assigned to particular loci in the signing space, the signer would optionally tilt his head towards the subject locus and direct his eye-gaze to the object locus when signing a predicate. In the following

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modify its movement to show a change in location. Plain verbs never change the direction of movement to indicate grammatical relations or spatial information of the referents.

ASL example quoted from Bahan (1996), the signer tilts his head towards the locus of 'JOHN' and gazes at the locus of 'MARY'.

(7)

Head tilt i

Gaze j

$JOHN_i$ [ ] $AGR\text{-}S_i$ [ ] $AGR\text{-}O_j$ $_{neu}GIVE_i$ $MARY_j$ BOOK, IX_i

'John gave Mary the book, him' (example by Bahan 1996, pp.118)

Note that Bahan's study aims at arguing that eye-gaze and head tilt can show agreement with subject and object. He does not attempt to evaluate the extent to which grammatical relations are distinguished by these non-manual features.

The various hypotheses on the marking of grammatical relations in ASL are summarized in the following table:

Table (2.1): Hypotheses on the marking of grammatical relations in ASL

	Word Order	Semantic/ Pragmatic cues	Space/ Verb agreement	Iconicity	Non-manual agreement
Fischer (1974, 1975)	*	*	*		
Liddell (1980)	*			*	
Friedman (1976)		*	*		
Kegl (1976, 77)	*		*		
Bahan (1996)					*

As the above table shows, case markings are assumed to be absent in ASL. Word order and spatial verb agreement seem to be most frequently mentioned in the ASL literature for determining grammatical relations. Other possible factors include semantic/pragmatic factors, iconicity and non-manual features.

(2.2.2) Grammatical Relations in Chinese Sign Language (CSL)

No works concerning the realization of grammatical relations have been done in HKSL and Chinese Sign Language. Two articles, however, discuss the basic word order in Chinese Sign Language. Mei and Fu (1986) point out that patients and goals generally precede verbs in CSL without stating explicitly what word orders can be found in CSL. Since they only focus on areas of CSL which are different from Chinese, and since goals and patients come after verbs in Chinese, we conjecture that the word order of Chinese Sign Language Mei and Fu have in mind is SOV.

Yau (1994) conducts a study to investigate the basic word order in various signed varieties in China, including those found in Shanghai, Guangzhou, Hong Kong, Nanjing, Beijing, Tai Wan, etc. In his study, signers are asked to describe picture stimuli which aim at eliciting simple transitive or locative sentences. Similar to Mei & Fu, Yau observes that the basic word order in a statement is Noun-Noun-Verb (i.e. SOV).[6] In particular, Yau emphasizes the verb-final characteristic of the CSL data. He asks signers of American Sign Language, French Sign Language and Japanese Sign Language to describe the same pictures, and then makes the claim that verb-final is universal across different sign languages. Although he never states it clearly, his description of 'A cat bites a dog' (p.22) seems to imply that space and verb agreement are involved. Nonetheless, he deliberately resists explaining the verb final phenomenon by using linguistic analysis. He suggests that the word order rule is regulated by non-linguistic factors, such as the psychological necessity to conceptualize the existence of the participants before the occurrence of events. In general, Yau's observation is quite similar to Friedman's analysis of ASL. Unlike

[6] Yau uses NNR to stand for the basic word order, in which R represents the lexical item marking the relation between the two nominals. To conform to our use of terminology in this study, we change NNR to NNV.

ASL researchers, however, Yau never attempts to explicate the data by linguistic concepts such as space or verb agreement.

(2.3) Experiment 1: Picture description and selection task

On the basis of the issues discussed so far in the literature, an experiment is designed to find out the ways by which grammatical relations are realized in HKSL. Following several similar studies of other sign languages with a few minor modifications (Coerts [1994], who in turn follows Volterra et al. [1984] and Boyes-Braem et al. [1990]), a picture-description-and-selection-task was designed to elicit reversible and non-reversible sentences in HKSL.

For each of these two categories, 7 sentences with corresponding drawings were designed. These drawings were then paired with another drawing which had a minimal difference (e.g. one picture showed a boy opening a door whereas the other one showed a boy closing a door), making a total of 28 sentences. Each time two signers took part in the experiment: signer A was shown one picture of a pair and was instructed to memorize it. When ready, the picture was taken away and s/he described the picture to signer B, who had two pictures in hand. We did not allow signer A to see both pictures because it was afraid that s/he might be tempted to point out the minimal contrast without describing the whole picture. Signer B needed to select the correct picture from the two. Signer B could freely ask questions about the picture if s/he found the description by signer A unclear.

In avoidance of any influence from Chinese, only pictures were given to the signers and the instruction was also given in signs rather than written Chinese. The purpose of not asking the signers to describe the pictures directly to the hearing researcher was two-folded. It is a well-known fact that deaf signers tend to modify

their signing pattern to approximate Chinese grammar when communicating with hearing people. If the subjects describe a picture to another fluent signer, their signing is believed to be more natural. This experimental design could also ensure a clear deliverance of meaning through signs. In order to complete the selection task, Signer B would ask questions whenever clarifications were necessary. In fact, their interactions gave us useful cues as to what the crucial grammatical elements for proper interpretation are on the part of the addressee.

Data from five deaf informants was collected in this experiment. The backgrounds of these informants are listed as follows:

Table (2.2): Backgrounds of the five informants in Experiment 1

	Gender	Age	Degree of Deafness	Education Level
Subject 1	Male	Middle-aged	Profound	Primary
Subject 2	Female	24	Profound	F5
Subject 3	Female	Middle-aged	Moderate	Primary
Subject 4	Male	Middle-aged	Moderate	University
Subject 5	Female	22	Moderate	F5

All of them are fluent adult signers of HKSL and they use HKSL as the major means of communication in everyday life. Signer 4 had exposure to ASL while receiving university education in USA. Only Subject 5 is a native signer who has been brought up by deaf parents.

The whole process of description and selection was videotaped and transcribed by the author with the assistance of a native deaf signer. In order to reach a more reliable conclusion, the generalization observed from the data are further verified by 2 signers – one young native and one adult near-native.

The tested items of the experiment are:

Non-reversible sentences :

1. A boy closes a door.	A boy opens a door.
2. A girl eats an apple pie.	A boy eats an apple pie.
3. A man locks a car.	A man drives a car.
4. A girl watches television.	A girl looks at a painting.
5. A woman cuts a loaf of bread.	A man cuts a loaf of bread.
6. A man washes a dog.	A man washes a car.
7. A boy builds a wall.	A boy paints a wall.

Reversible sentences.

1. A cat chases a rabbit.	A rabbit chases a cat.
2. A boy hugs an old lady.	An old lady hugs a boy.
3. A boy pushes a girl.	A girl pushes a boy.
4. A woman combs a boy's hair.	A boy combs a woman's hair.
5. A cowboy killed an Indian.	An Indian killed a cowboy.
6. A girl caresses a boy's face.	A boy caresses a girl's face.
7. A car tows a truck.	A truck tows a car.

Samples of the picture stimuli can be found in Appendix 2.

(2.4) Results:

(2.4.1) Non-reversible sentences

Thirty-five non-reversible sentences are obtained from Experiment 1. The sentence patterns can be classified into three major categories:

(a) Subject – Verb – Object (**S-V-O**)

(b) Subject – Object – Verb (**S-O-V(+OCL)** - the verb incorporates the classifier of the object)

(c) Subject – Verb (**S-V(+OCL)** – the verb incorporates the classifier of the object without an overt antecedent)

* Key: S – subject O – object V – verb CL – classifier

The number of occurrence and the overall percentage of each sentence pattern are shown in Table (2.3):

Table (2.3): Result of non-reversible data in HKSL

	Pattern	**No. of Occurrence**	**Percentage (%)**
1	**S-V-O**	7	20
2	**S-O-V(+OCL)**	14	40
3	**S-V(+OCL)**	14	40
		Total: 35	Total: 100%

According to our data and the intuition of the deaf informants, SVO is an acceptable order for non-reversible sentences:

(8) FEMALE EAT APPLE PIE
Subj. V Obj.
'A girl eats an apple pie.'

(9) FEMALE STAND WATCH TV
Subj. V V Obj.
'The girl stands and watches TV'

(10) MALE CUT BREAD (Illustration 2 - 2)
Subj. V Obj.
'A man cuts some bread.'

(11) MALE WASH DOG (Illustration 2 - 3)
Subj. V Obj.
'A man washes a dog.'

In these SVO non-reversible sentences, all signs are produced in their citation forms – the form used when a sign is produced independently. If the verbs and objects of these four sentences are reversed while the verb's citation form is used, the resulting SOV sentences are less acceptable/unacceptable though the meaning is still understandable. An SVO order is preferable:

(8') ??/* FEMALE APPLE PIE EAT
Subj. Obj. V
'A girl eats an apple pie.'

(9') ??/* FEMALE STAND TV WATCH
Subj. V Obj. V
'A girl stands and watches TV'

(10') ??/* MALE BREAD CUT
Subj. Obj. V
'A man cuts some bread.'

(11') ??/* MALE DOG WASH
Subj. Obj. V
'A man washes a dog.'

We do find, however, quite a lot of non-reversible sentences (40%) in SOV pattern in our data. What these SOV differ from the SVO counterparts is that the classifier of the object is incorporated into the verb to form a classifier predicate.

In spoken languages, classifiers 'occur as morphemes in surface structures under specifiable conditions' and they 'denote some saliently perceived or imputed characteristic of the entity to which an associated noun refers' (Allan 1977).[7] In sign languages, classifiers surface as handshapes that function as pro-forms in combination with predicates. One classification of classifiers in ASL is proposed by Schick (1990).[8] Schick argues that native American signers classify nouns by using the following three types of classifiers:

I. SASS (Size-and-shape-specifiers): the handshape or parts of the hand serve as morphemes which represent the size and shape of the entity.

II. CLASSes: the hand articulator represents the semantic category of a referent entity without specifying its size and shape (also known as semantic classifiers in the literature).

III. HANDLE: the handshape replicates how a hand handles or holds an entity.

According to Wilbur (1987), classifiers in ASL do not occur in a noun phrase, but rather as part of the predicate construction.[9] Classifiers are handshapes that need

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[7] There are ongoing disputes over whether it is appropriate to compare classifiers in sign languages with those in spoken languages. For a detailed review of the relevant debates, please refer to Schembri (1999).

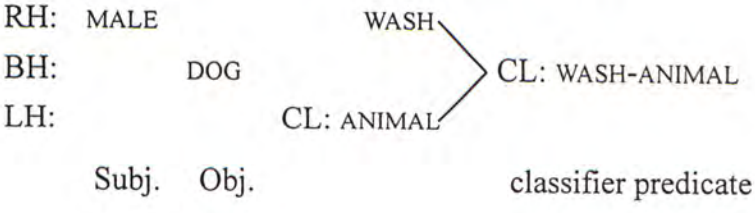
[8] Wilbur (1987) reports that at least three of the seven classifiers identified for spoken languages are represented in ASL and probably the rest also exist in other sign languages. Some of these classifier types include (1) material, (2) shape and (3)size. In the Dictionary of British Sign Language, classifiers are categorized into six types: (1) size and shape (2) tracing size and shape (3) handling (4) instrument (5) touch (6) semantic. Other types of categories have also been proposed, and a detailed summary can be found in Schembri (1999). For a brief introduction of classifiers in sign languages, readers may refer to Valli & Lucas (1995).

[9] Not all sign linguists agree that classifiers only combine with predicates. Brien (1992) holds that classifiers are handshapes which tell people the class a referent belongs to and that classifiers can be found both in noun phrase and verb phrase. The BSL sign 'DUCK', for example, is made with a 𝖧 handshape (☟-The index and middle fingers are extended from the fist and bent at the palm knuckles; the extended thumb is held parallel to the extended fingers) . The sign 'MOUSE' in HKSL, for instance, is an angled palm (𝖡- handshape, ☜)moving on another palm, which imitates the size, shape and the

to be combined with other morphemes which provide additional phonological specifications of movement. A classifier predicate[10], be it dynamic or static, is a combination of a classifier handshape and a movement morpheme which counts as a verb root.[11]

In our non-reversible data, SOV occurs when the object classifier is incorporated into the verb. 'Incorporation' is used here to denote the grammatical process by which a classifier is combined with a verb in sign languages, as in example (12):[12]

(12) A man washes a dog. (Illustration 2 - 4)



The citation form of 'WASH' consists of two fists rubbing together. The left fist remains static while the right fist actively performs the washing action.[13] However,

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movement of a real mouse. In this chapter, we would only focus our attention on classifiers which occur inside a predicate.

[10] Up to date, how classifiers should be named and categorized remains an unsettled issue (Wilbur 1987, Schembri 1999). With respect to the terminology, a variety of names have been used by different sign linguists to refer to predicates which contain handshape units as classifiers. These names include: classifier signs, classifier verbs, verbs of motion and location, classifier predicates, spatial-locative predicates, polysynthetic signs, productive signs, polymorphemic verbs as well as polymorphemic predicates (Schembri 1999).

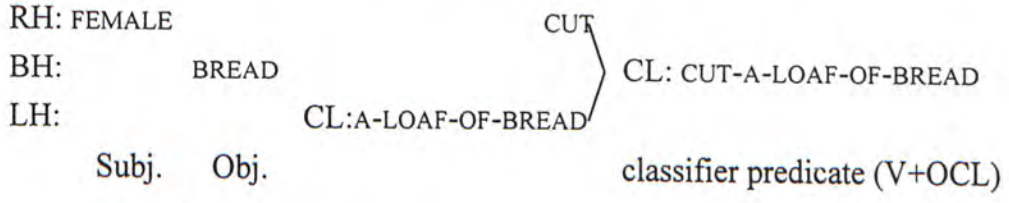
[11] What counts as the root of a classifier predicate is a controversial issue. Some linguists argue that the movement of the classifier predicate is the root (e.g. Supalla 1986) and classifier handshapes are morphemes which affixed to the verb root. Engberg-Pedersen (1993), however, argues that the handshape unit should be analyzed as the verb stem and the movement unit is a bound morpheme that is attached to the verb stem. We adopt here Tang's (2000) analysis of HKSL that the movement serves as the root of a classifier predicate.

[12] In Kegl's representation of the structure of a verb complex in ASL (according to Wilbur 1987, figure 6.1, pp.157), the classifier which combines with a verb stem is given the status of 'incorporated noun phrase'. Similarly, Schick (1990) also calls the process by which a classifier morpheme being combined with a verb root 'incorporation' (p.20)

[13] Some of the examples in this thesis are transcribed in three parallel rows to indicate the interaction of the right and left hands. Some sign researchers use 'dominant hand' and 'non-dominant/weak' hand to mean the same thing, yet this dichotomy is not adopted here. 'Dominance' can be defined at two levels. At a general production level, the dominant hand is the preferred hand/arm used to articulate

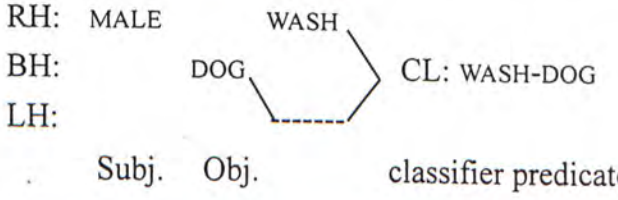
in the classifier predicate construction in (12), the left fist is replaced with an animal classifier. Since 'DOG' is mentioned before the verb, the addressee can interpret it to be the antecedent of the animal classifier. The animal classifier is an example of semantic classifiers. The next sentence exemplifies the incorporation of a size-and-shape specifier into the verb:

(13) A woman cuts a loaf of bread. (Illustration 2 - 5)



It is sometimes possible for the handshape of a classifier to show direct correspondence to the lexical sign of the object. In example (14), the sign 'DOG' is a two-handed sign in which two spreading palms with slightly bent fingers (5̄-handshape,) are placed in front of the signer's chest as an imitation of the dog's front paws. The signer retains the left part of the sign 'DOG', uses it as a legged classifier (i.e. a classifier that represents the leg(s) of the animated referent, subsumed under 'semantic classifiers') and incorporates it into the final classifier predicate:

(14) A man washes a dog. (Illustration 2 - 6)



fingerspelled forms and one-handed signs. This preference depends on the handedness of the signer. At the lexical level, the hand that performs the motion part of a two-handed sign is 'dominant' whereas the hand forming the motionless base is 'weak'. These two definitions sometimes coincide, but there are also cases where a right-handed signer uses his left hand to actively participate in signing when the right hand remains inert in a two-handed sign. In avoidance of possible confusion, 'right-hand' (RH) and 'left-hand' (LH) and 'both hands' (BH) are used. It must be pointed out, however, that all informants in our study are right-handed.

A SOV sequence with classifier incorporation is the most frequent pattern observed in the non-reversible data. The fact that a certain classifier occurs as a static component of the verb predicate in a non-reversible sentence indicates that the entity involved has the status of an affected patient, thus providing cues for the address to identify the classifier as the object.

Another frequent pattern is S V(+OCL), where the classifier of the object is part of the predicate construction but the object does not appear as a separate unit before the predicate. This type of sentence structures amounts to 40% of the nonreversible data. One example is a sentence signed for the picture 'A girl eats an apple pie':

(15) 'A girl eats a pie' (Illustration 2 - 7)

RH: FEMALE HOLD-A-SPOON
BH: CL: EAT-A-PIE-WITH-A-SPOON
LH: HOLD-A-PIE

Subject classifier predicate (V+OCL)

In the predicate 'EAT-A-PIE-WITH-A-SPOON', the signer holds up his left flat palm as if he is holding a pie (B̂-handshape: ;). It is a size-and-shape-specifier for the pie. The right hand (Â-handshape:) replicates an actual hand holding a spoon, thus being a handle classifier. Apparently in this example the signer fails to specify that the pie is an apple pie and no separate sign for the object 'pie' was used. Note that it is possible to insert the object 'APPLE PIE' in front of the classifier predicate yielding a [S O V+OCL] sequence. However, there are some cases in which the objects are obligatorily absent. One example is the picture 'A boy opens a door':

(16) 'A boy opens a door.' (Illustration 2 - 8)

RH: MALE
BH: CL:OPEN-DOOR
LH:

Subj. classifier predicate (V+OCL)

'OPEN-DOOR' is a two-handed classifier predicate. Both the left and right palms (B-handshape, ) representing two sides of the door are placed together with an outward palm orientation and the edges of the two index fingers touching each other at some distance in front of the signer's chest. The right palm is then swung back towards the signer's body so that the palm faces left. Note that there is no independent sign for the object 'door'. The reason why it is not necessary to add 'DOOR' before the classifier predicate is that phonologically the nominal sign 'DOOR' is almost identical with the classifier predicate 'OPEN-DOOR'. The only difference is that the movement of the two palms is restrained and repeated twice for 'DOOR'. Due to the phonological similarity of this noun-verb pair, the deaf informants reflect that adding 'DOOR' before 'OPEN-DOOR' looks redundant, and therefore unnatural. Another similar example is 'A man drives a car':

(17) MALE CL:DRIVE
Subj. classifier predicate (V+OCL)
'A man drives a car.' (Illustration 2 - 9)

In sentence (17), the signer only uses one verb 'DRIVE', which replicates the action of two hands manipulating the steering wheel. Previous analyses in ASL treat this type of motion verbs a transitive predicate construction with an object argument. According to Schick (1990), verbs like 'DRIVE' in ASL (note that 'DRIVE' in ASL is similar to 'DRIVE' in HKSL) is a HANDLE classifier whose handshape of handling may vary according to the size and shape of the referent object. The object of the verb 'DRIVE' (i.e. steering wheel of a car) is identified through the handshape of the sign. Similar to 'DOOR' and 'OPEN-OPEN', 'CAR' and 'DRIVE' are phonologically similar. In fact, the citation form of 'DRIVE' is identical with the noun 'CAR'. Hence, the signers consistently reject signing 'MALE CAR DRIVE'.

In short, non-reversible sentences assume three major word order patterns. When there is no object classifier incorporation, the word order must be SVO. Word order with incorporation is usually SOV. Overt objects may sometimes be absent. Incorporation can be seen as a grammatical process which enables a signer to represent the verb and object classifier simultaneously. It must be emphasized that not all verbs allow object classifier incorporation. The verbs in the following sentences do not allow incorporation and therefore only permit an SVO order:

(18) FATHER LIKE COMPUTER. (Illustration 2 - 10)
Subj. V Obj.
'Father likes computer.'

(18')??/* FATHER COMPUTER LIKE
Subj. Obj. V
'Father likes computer.'

(19) FATHER UNDERSTAND SIGN-LANGUAGE (Illustration 2 - 11)
Subj. V Obj.
'Father understands sign language.'

(19') ??/* FATHER SIGN-LANGUAGE UNDERSTAND
Subj. Obj. V
'Father understands sign language.'

Verbs such as 'LIKE' and 'UNDERSTAND' are bodily-anchored signs – their articulations make contact with the body and are therefore morphologically unlikely to incorporate any object classifier. They also are 'plain verb' in Padden's (1988) verb typology and are supposed not to encode agreement or spatial information of the referents. It is also suspected that lexical semantics also play some role here. For instance, transitive psych-verbs such as 'HATE' or 'BE-ANGRY-WITH' do not assign an

affected patient role and therefore never take a classifier in the predicate construction. Some causative verbs, verbs of motion and location, however, allow classifier incorporation.

Note further that classifier incorporation is an optional expression strategy for those verbs which permit so. If the signer chooses not to use incorporation, a non-reversible sentence will be presented sequentially in the SVO order.

(20) MALE CUT BREAD
Subj. Verb Obj.
'A man cuts some bread.'

(21) MALE WASH DOG
Subj. Verb Obj.
'A man washes a dog.'

Recall that Liddell (1980) only gives a vague conjecture about the acceptability of SOV in ASL. We would like to discuss two of his ASL examples to see if our classifier incorporation analysis is consistent with the SOV phenomenon in ASL. One ASL example given by Liddell is 'WOMAN PIE PUT-IN-OVEN' (readers may refer to Illustration 2-1). As mentioned in our literature review, Liddell suggests that the hand that performs the 'PIE' must also performs the action 'PUT-IN-OVEN'. Obviously, this ASL example involves classifier incorporation: the classifier of the 'PIE' is incorporated into the predicate 'PUT-IN-OVEN'. Another ASL example of SOV is 'MAN BOOK READ' (Illustration 2 - 12). The description given by Liddell is shown as follows:

> '... the thing which apparently makes this sequence acceptable is the fact that after the sign 'BOOK' is made, one of the hands which was used to make the sign is left behind and can be imagined as holding a book (or representing the book itself). Next, the sign READ is directed at the same

hand, thus indicating through the use of the directional verb 'READ' the relationship between the verb and its object...' (Liddell, 1980, p.90)

In this ASL example, part of the sign 'book', which is a two-handed sign, is retained and is incorporated into the predicate 'READ' as a classifier. These two ASL examples bear a strong resemblance to the SOV constructions in HKSL.

Padden (1988) imposes a different syntactic analysis on Liddell's SOV examples. She proposes that the object and its classifier form a Noun-classifier clause which is subordinate to the main subject. Example (22) is taken from her work directly (p.228):

(22) The man with the book open, began to read.

L-hand: $_{i}$ CL:B]0
R-hand: 0 [MAN 1[BOOK $_{i}$ CL:BB-OPEN] 1 READ]0

According to her analysis, the main clause is 'MAN READ', bracketed by the clause label '0'. The noun-classifier sequence 'BOOK CL:BB-OPEN' is a subordinate clause (bracketed by the label '1') modifying the main clause subject 'MAN'. Padden postulates this embedded clause analysis because she claims that the basic word order of ASL is SVO or SV. Since the SOV examples given by Liddell would go against her basic word order rule, she re-analyzes the sentence as such so that they would not be counter-examples. We find this analysis unmotivated. If [BOOK CL:BB-OPEN] is indeed a subordinate clause to the subject NP 'WOMAN', there should be no selectional restriction between this clause and the main verb predicate 'READ'.[14] In Liddell's examples as well as other HKSL examples we have discussed,

[14] We suspect that the classifier 'CL:BB-OPEN' following the noun 'BOOK' serve as a postnominal modifier and a more appropriate gloss would be 'The man read a book which is open'. Yet further research is needed to verify whether this view is theoretically and empirically grounded.

however, there is always coreferentiality between the object NP (i.e. 'BOOK' in Padden's example) and the classifier inside the verb predicate (i.e. 'CL:B + READ'). It is impossible to substitute another noun-classifier sequence which is not coreferential with the classifier inside the final predicate, as the following example shows:

(22') The man, who has a loaf of bread, began to read.

*RH: MAN [BREAD READ
*BH: CL: A-LOAF-OF-BREAD]
*LH: CL: BOOK
Subject Subordinate clause Verb

The ungrammaticality of (22') indicates that object and its classifier in fact bear a close relationship with the verb. Padden's subordinate clause analysis also fails to account for cases where the classifier is found directly inside the final verb complex instead of appearing separately before the verb. Example (11), recast as (23) here, shows that a noun rather than a Noun-classifier sequence appears before the final predicate:

(23) A man washes a dog.

RH: MALE WASH
BH: DOG CL: WASH-AMINAL
LH: CL: ANIMAL
Subj. Obj. classifier predicate (V+OCL)

In (23), no separate classifier appears after 'DOG'. In such case, Padden's analysis that [Noun + Classifier] is a subordinate clause to the subject cannot hold. Owing to these reasons, we would like to argue that the SOV analysis is more tenable than Padden's subordinate clause analysis.

One may question what the nature of classifier incorporation is. Liddell explains

the phenomenon by resorting to vague ideas such as 'iconicity' or 'spatial, pictorial relationship', and this comment in fact underscores the role of space in such kind of predicate representation. With classifier incorporation, the signer expresses the predicate in a three-dimensional space. The way the classifier and the verb are placed with respect to each other reflects how the real world situation looks like. Most importantly, it is the availability of space that allows the action, such as the washing or cutting action, to be recast pictorially. Without space, such three-dimensional, pictorial presentation would be impossible.

Recall Fischer's claim that word order for non-reversible sentences in ASL is a lot freer than reversible sentences due to a lack of semantic ambiguity. Although the reversible data in HKSL has not yet been analyzed, the non-reversible data at least suggests that the non-reversibility of the subject/object does not have an effect on word order. Unlike what Fischer claims for ASL, SOV pattern is only acceptable in cases where the object classifier is incorporated into the verb predicate in HKSL. Without incorporation, non-reversible sentences conform to the SVO order and the OVS order is considered awkward by HKSL signers. Although we do not exclude the possibility that signers may make use of the meaning of the two referents in interpreting the grammatical relations, the evidence in our data at least suggests that the non-reversibility of the referents does not result in freer word order.

We do not find analyzable and systematic evidence showing non-manual subject-object agreements in the non-reversible data. The signers usually assume a neutral body position throughout their production. They may maintain eye gaze with the addressee or look at their hands when performing the verbs or the classifier predicates. This lack of non-manual features is probably attributable to the design of elicitation experiment. We use only isolated sentences for our current analysis. Non-manual features such as eye gaze and body shift, however are more likely to occur in

a discourse situation where referents are assigned spatial loci. Although our experiment fails to elicit relevant non-manual features for analysis, our data at least suggests that non-manual features may not be the a fundamental tool signers use to distinguish grammatical relations.

We would like to sum up our observations of non-reversible sentences in HKSL in the following table:

Table (2.4): A descriptive summary of non-reversible data in HKSL

Pattern	Description	Example
1. S V O	Simple linear sequence with one sign following another.	FEMALE WATCH T-V
2. S O V+OCL	The object classifier appears inside the verb to form a classifier predicate	MALE DOG WASH-THE-DOG
3. S V+OCL	No separate sign for the object. The object classifier is incorporated into the verb directly.	MALE OPEN-DOOR

* Key: S – subject O – object V – verb CL – classifier

A number of observations have been made concerning the non-reversible data in HKSL. First, strict SVO patterns are used when there is no object classifier incorporation. It is extremely likely that signers use word order to distinguish grammatical relations. SOV is used if the object classifier is incorporated into the verb. The fact that a certain classifier occurs as a static component of the verb predicate in a three-dimensional space in a non-reversible sentence clearly indicates that the entity involved has the status of an affected patient, thus providing cues for the address to identify the participant as an object. Evidence of non-manual agreement is not found. Neither is there evidence suggesting that signers rely on semantic and pragmatic cues to interpret the grammatical relations. Hence, we would

like to hypothesize that word order as well as classifier incorporation are the two main factors for the interpretation of grammatical relations in non-reversible sentences.[15]

(2.4.2) Reversible sentences :

Two major sentence patterns are observed for the reversible sentences in our data. The sentences can be signed either sequentially (SVO) or spatially with loci, inflecting verbs and classifiers. The following table shows the number of occurrence and percentage for each sentence pattern. Note that three sentences were excluded as they failed to describe the event depicted in the pictures.

Table (2.5): Result of reversible data in HKSL

	Pattern	**No. of occurrence**	**Percentage (%)**
1.	**Linear (SVO):**	19	59.4
2.	**Spatial (multi-clausal structures) :**	13	40.6
	Total	32	100%

(2.4.2.1) Linear representation: S V O

More than half of the reversible sentences are signed linearly in the SVO order.

(24) CAT CHASE RABBIT (Illustration 2 - 13)

Subj. V Obj.

'A cat chases a rabbit.'

(25) CAR TOW GOODS CAR (Illustration 2 - 14)

Subj. V Obj.

'A car tows a truck.'

[15] Some linguists proposed that in BSL the theta role of the object determines its relative order with the verb. The object precedes the verb if it is affective but follows the verb if it is effective. (Deuchar 1984) For example, the signer would sign 'I CAKE CUT' for 'I cut a cake' but 'I MAKE CAKE' for 'I make a cake'. It is proposed that this word order pattern is due to the 'old before new' (information) principle. This principle can explain part of our data, as objects being incorporated as part of a verb are usually affective rather than effective. However, it does not explain why an object, being affective, can still follow a verb in the absence of classifier incorporation.

(26) MALE PUSH FEMALE (Illustration 2 - 15)

Subj. V Obj.

'A boy pushes a girl'[16]

The verbs in the above three examples are given in their citation forms. When the citation form of a verb is used, the SOV order is ungrammatical:

(24') * CAT RABBIT CHASE

Subj. Obj. V

'A cat chases a rabbit.'

(25') *CAR GOODS CAR TOW

Subj. Obj. V

'A car tows a truck.'

(26') *MALE FEMALE PUSH

Subj. Obj. V

'A boy pushes a girl'

The deaf informants comment that it is difficult to determine the agent and patient in the above SOV reversible sentences.

No OSV patterns are observed in our data. In fact, OSV reversible sentences, when produced out of context, are usually rejected or considered strange:[17]

(27) */?? FEMALE MALE PHONE

Obj. Subj. V

'A man gives a phone call to a woman'

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[16] Without further specification, 'MALE' and 'FEMALE' in HKSL stand for male and female referents regardless of their age. Signers may add 'PERSON' for an adult referent (i.e. equivalent to the Chinese character 人) or 'KID' after 'MALE' or 'FEMALE' if it is necessary to distinguish referents of different ages or if age is crucial for understanding the content of the discourse.

[17] Although OSV sequences are not found in our data, we do not exclude the possibility of topicalization in HKSL. On the contrary, in our observation, topic structures are common in discourse situations. We have done a brief analysis of topicalization in HKSL, and the results can be seen in Appendix 3.

(28) */?? STUDENT TEACHER TEACH
Obj. Subj. V
'A teacher teaches a student'

(29) */?? FEMALE MALE PUSH
Obj. Subj. V
'A boy pushes a girl'

The acceptability is improved somewhat if OSV occurs in a conversation:

(30) A: YOU LOVE KIDS?
B: KIDS I LOVE

This example may be analyzed as an instance of topicalization. For a brief discussion of topicalization in HKSL, readers can refer to Appendix 3.

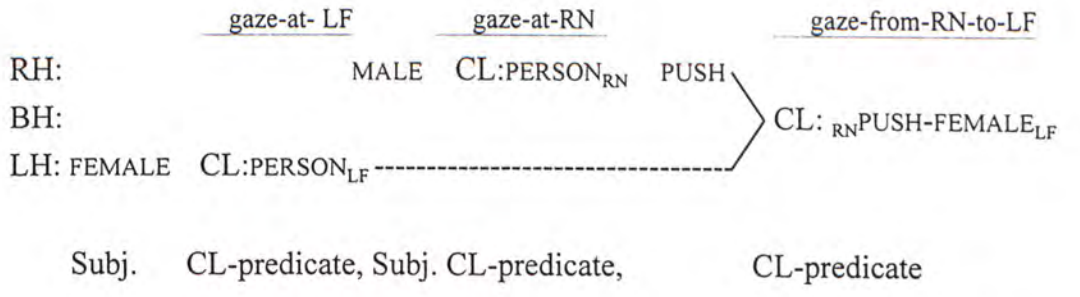
In short, SVO is used for isolated reversible sentences when the verb is in its citation form. Such linear representation, however, constitutes only part of our data for reversible sentences. What the signers do instead in other instances is to represent the whole event through space by using loci, inflecting verbs and classifiers. In these cases, the ordering of the overt referents seems to be less important in determining grammatical relations.

(2.4.2.2) Spatial representation: the use of loci, inflecting verbs and classifiers

The sentence signed for the picture 'A boy pushes a girl' can illustrate how spatial loci, inflecting verbs and classifiers come into play:[18]

[18] Inflecting verbs have been given various different names in the literature: 'directional verbs' (Fischer & Gough 1978), 'multi-directional verbs' (Friedman 1976), 'inflecting verbs' (Padden 1988), 'agreement verb' (Johnson & Liddell 1987, Liddell 1990) as well as 'indicating verb' (Liddell 1994, 1995). The choice of the names reflects the theoretical position the researchers assume with respect to the modification of the verb's direction. For instance, researchers using the term 'directional' generally assume that the movement of the verb marks semantic roles such as source and goal. 'Inflecting' and 'agreement' imply a grammatical status of the movement modification in relation to grammatical relations. Researchers using 'indicating verbs' hold the view that verbs move between referents or their loci and therefore bear a deictic function. In practical terms, we consider 'inflecting

(31) 'A boy and a girl are next to each other. The boy pushes the girl.' (Illustration 2-16)



After introducing 'FEMALE' with the left land, a person classifier representing the referent 'girl' is placed at point 'left forward' on the signer's horizontal signing plane. The literal meaning of this static classifier predicate is 'A female is located at "LF" '.[19] Likewise, 'MALE' is situated at point 'RN'.[20] After the two referents are established in the signing space by separate hands, the right hand of the signer pushes the 'female' classifier. This classifier predicate consists of an incorporated object classifier and an inflecting verb 'PUSH'. An inflecting verb is a verb whose movement direction or orientation can be modified so as to encode the information of grammatical relations. In example (31), 'PUSH' begins with the locus of 'MALE' and ends with that of 'FEMALE':

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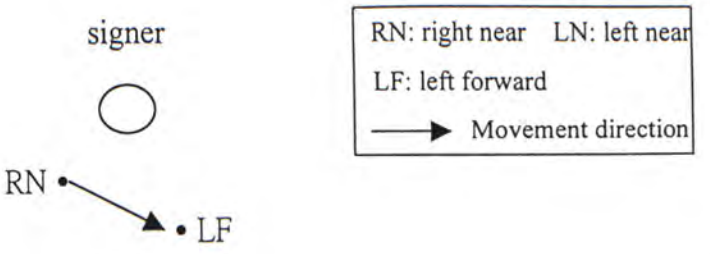
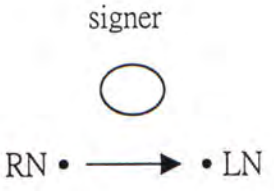
verb' and 'agreement verb' more appropriate in this thesis because we would like to compare the directional modification of verbs in sign languages with the verb inflectional morphology which marks grammatical relations in spoken languages.

[19] The classifier predicate 'CL:PERSON' is ambiguous between a locative and an existential reading. Supalla (1986) distinguishes locative verb root from existential verb root. To him, signs with a locative verb root end with a stamping force, whereas those with an existential root end with a static hold. Schick (1990) argues that it is theoretically unnecessary to distinguish these two roots. She claims that the so-called semantic difference posited by Supalla is due to a varying degree of emphasis a signer gives to a sign. Signs receiving more emphasis would look like what Supalla calls a locative root. As emphasis is a matter of discourse focus, Schick argues that the locative root and existential root in Supalla's proposal should be collapsed into a single category DOT .

[20] In this example, the assignment of loci for the two referents is done through the person/animal classifier. In ASL, however, such loci can be assigned through locative pointing sign: a nominal is followed by an index finger directed at a particular point in the signing space. Such mechanism is not observed so far in our HKSL data. Our deaf research assistant also reflects that using classifiers to



If the two referents are placed along the same horizontal line, the direction of 'PUSH' will be different:



As for the non-manual features, the signer's eyes may gaze at a locus when making reference to it. For instance, signer's eyes would gaze at location RN when placing a classifier there. Body shifts are not observed. Since the whole event is visualized in front of the audience in a three-dimensional space and the verb direction provides all cues for the correct interpretation of the final predicate, it does not matter whether the signer introduces 'MALE' or 'FEMALE' first (example 32- Illustration 2 - 17):

(32) 'A boy and a girl are next to each other. The boy pushes the girl.'

	gaze-at-RN	gaze-at-LF	gaze-from-RN-to-LF
RH: MALE	CL: $PERSON_{RN}$ ----------PUSH		
BH:			CL: $_{RN}PUSH\text{-}FEMALE_{LF}$
LH:		FEMALE CL:$PERSON_{LF}$ -------	
	Subj. CL-predicate,	Subj. CL-predicate,	CL-predicate

Here the signer introduces 'the boy' and then 'the girl', which is the reverse of example (31). Note that the person classifier does not necessarily appear in the final

assign loci for persons and animals is more natural and preferable than indexical pointing.

predicate. Let's look at a slightly different version for the same sentence 'A boy pushes a girl':

(33) 'A boy and a girl are next to each another. The boy pushes the girl.'

RH: MALE CL:PERSON $_{RN}$----------

BH: $_{RN}$PUSH $_{LF}$

LH: FEMALE CL:PERSON $_{LF}$

Subj. CL-predicate Subj. CL-predicate Verb

Unlike example (31) and (32), the final predicate in example (33) is just an inflectional verb 'PUSH'. The advancing movement of the verb shows unambiguously that the agent of the action is 'the boy' at the back. Since both (32) and (33) are acceptable version, it is reasonable to hypothesize that spatial loci and verb inflection provide sufficient cues distinguishing the subject and object of the action, though the incorporated classifier, if present, may also provide hints about its grammatical relations.

What grammatical status should be given to the movement modification of an inflecting verb? Padden (1988) suggests that the movement and the orientation of these verbs are inflectional morphemes that agree with person and number of the argument(s). Hence, inflecting verbs are called agreement verbs by some sign linguists. The movement modification is very similar to the agreement inflectional endings attached to verb stems in spoken languages such as Italian or German. In terms of the phonetic realization of the inflectional morphology, it has been suggested that the locations in the space can be seen as proforms that represent referents and that these proforms are incorporated into the stems of inflecting verbs, as Edge & Herrman (1977) put it:

'...proforms...include locations in space that are established as the hypothetical locations of referents... Because proforms consist of only one formational parameter they can be incorporated into other signs; the proform becomes one of the parameter of the sign while maintaining its function of representing a referent. It is through the incorporation of proforms into signs that proforms are employed rather than simply referred to in signing...' (Edge & Herrmann, 1977, p.143)

This analysis assumes that the location parameter of an inflecting verb incorporates the locative proform of the referent, resulting in a corresponding change in movement direction. Lillo-Martin (1991) expresses a more or less similar view, despite the differences in wordings and theoretical framework:

'...when (verb) agreement is present in ASL the effect is in several ways the same as if an overt pronoun were present... the inflectional marker acts like what McCloskey and Hale term an INFLECTIONAL ARGUMENT... the inflectional argument acts like an overt pronoun.' (p.52)

The view that the inflectional/agreement morphology is comparable to a locative pro-form being incorporated into the verb sheds light on the similarity between verb inflection and the object classifier incorporation in the non-reversible data in HKSL. With object classifier incorporation, the verb incorporates the handshape and the location of the object classifier. With inflecting verbs, the locus of a referent, which is also a pro-form, can be seen as being incorporated into the location parameter of the verb. Reversible and non-reversible sentences therefore resemble each other in that incorporation results in word orders other than SVO.

Not all verbs allow the encoding of grammatical relations through verb inflection. For those non-inflecting verbs, such as 'LIKE', signers may adopt two different strategies depending on whether the referents have been assigned spatial

loci. In the absence of spatial loci, signers adopt a linear SVO representation:

(34) FATHER LIKE MOTHER
Subj. V Obj.
'Father likes mother.'

If the two referents have been previously located in space, e.g. one referent at point 'R' and the other one 'L', signers would still use the SVO order with or without appropriate body shift:

(35) gaze-at- R gaze-at-L
$INDEX_{(Pron)}{}^{R}$ LIKE $INDEX_{(Pron)}{}^{L}$
Subj. V Obj.
'He likes her.'

(36) gaze-at- R gaze-at-L
body-shift-right
$INDEX_{(Pron)}{}^{R}$ LIKE $INDEX_{(Pron)}{}^{L}$
Subj. Verb Obj.
'He likes her.'

In example (35), index signs are used as proniminals to refer to the subject and object. Note that eye-gaze is always directed at the appropriate locus when a pronominal sign is used. The signer's body assumes a neutral position throughout the sentence. Example (36) is similar to (35) except that the signer shifts his body slightly to the right so that his body faces left starting from the predicate. Both (35) and (36) are equally acceptable to signers, and body shift is optional. Omitting either one of the pronominal signs is not preferred and is acceptable only in a discourse situation where sufficient contextual cues for the interpretation of the sentence are available:

(37)?? gaze-at-L
body shift right
LIKE
(Subj.) V (Obj)
??'(He) likes (her).'

(38)?? gaze-at-L
body shift right
LIKE $INDEX_{(Pron)}{}^{L}$
(Subj.) V Obj.
?? 'He likes her.'

Reverse the position subject and object is disallowed in all circumstances:

(39)* gaze-at- L gaze-at-L
body shift right
$INDEX_{(Pron)}{}^{L}$ LIKE
Obj. V (Subj.)
'* He likes her.'

Hence, it is obvious that without verb inflection, signers rely primarily on the SVO order to distinguish grammatical relations.

Similar to the optionality of object classifier incorporation in the non-reversible sentences, signers can choose not to use a spatial representation in reversible sentences. In the absence of referential loci, signers would only use the citation form of an inflecting verb and SVO is the only permissible order. Yet, if the spatial loci are present, inflecting verbs must be inflected. A failure to inflect an inflecting verb according to the referential loci would result in an unacceptable sequence:

(40) *'A boy and a girl are next to each other. The boy pushes the girl.'

*RH: MALE $CL{:}PERSON_{R}$
*BH: PUSH
*LH: FEMALE $CL{:}PERSON_{L}$ ----------
Subj. CL-predicate, Subj. CL-predicate, V

Example (40) is unacceptable because the signer uses the uninflected form of 'PUSH'.

As an inflecting verb, 'PUSH' has the morphological capacity to agree with both the subject and object. Verbs that agree with subject and object are known as double agreement verbs (Engberg-Pedersen 1993). Some more examples of double agreement verbs in HKSL are 'SAY', 'HELP', 'GIVE', etc. Some inflecting verbs, however, agree with one argument only. Verbs such as 'TEACH' and 'CARE-ABOUT' only agree with objects providing that the object is not the signer. Since the subject cannot be identified through verb inflection, an overt NP is used to identify the subject (example (41) - Illustration 2 - 18):

(41) 'Two students are next to each other. One student teaches another student.'

RH:	TWO	CL: PERSON $_R$	INDEX$_{(Pron)}$ ^{R}	
BH:	STUDENT			TEACH ^{L}
LH:		CL: PERSON $_L$		
	Subj.	CL-predicate,	Subj.	V

(42) ??'Two students are next to each other. One student teaches another student.'

??RH:	TWO	CL: PERSON $_R$	
??BH:	STUDENT		TEACH ^{L}
??LH:		CL: PERSON $_L$	
	Subj.	CL-predicate,	V

In (42), the second predicate consists of 'TEACH', which inflects for the object only. Signers find this sign sequence less acceptable because the subject of the verb 'TEACH' is not clearly identified.[21] A pronominal sign indicating the subject is

[21] Sentence (42) may be interpretable only if the context provides sufficient cues as to who the subject is.

needed if signers want to avoid ambiguity, as in (41). In contrast, when a double agreement verb is used, grammatical relations can be identified through the verb inflection. Overt mentioning of subject and object becomes unnecessary:

(43) 'Two students are next to each other. One student gives money to another student.'

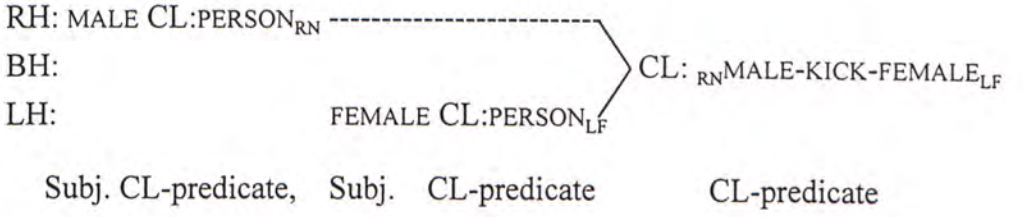
RH: TWO CL: PERSON$_R$
BH: STUDENT $_R$GIVE-MONEY-TO$_L$
LH: CL: PERSON$_L$
Subj. CL-predicate, V

Hitherto, the two major methods to represent a reversible sentence have been discussed. When the sentence is presented sequentially without using spatial loci and verb inflection, a strict SVO pattern must be adhered to. This indicates that word order is important in identifying grammatical relations. When space and verb inflection are utilized, a multi-clausal structure would be used and the final verb predicate can indicate the grammatical relations through inflection.

Now we would like to turn our attention to the role of classifier incorporation in identifying grammatical relations in the reversible sentences. In our previous discussion on the examples of 'A boy pushes a girl', we point out that there are two ways to realize the predicate: it contains either an inflecting verb alone or an inflecting verb with an incorporated object classifier. It is highlighted that an inflecting verb alone can provide sufficient information about the grammatical relations if it agrees with both the subject and object. Yet we by no means imply that the classifiers offer no hints about grammatical relations. On the contrary, the way a classifier is incorporated into a predicate reflects the grammatical relation it bears in the sentence. Our examples so far in this chapter have only shown object classifier incorporation, yet in fact subject classifiers can also be incorporated, as the

following example shows (exampe (44) - Illustration 2-19):

(44) 'A boy and a girl are next to each other. The boy kicks the girl.'



In this example, two person classifiers are first set up in the signing space and then the 'MALE' classifier 'kicks' the 'FEMALE' classifier. Although both the subject and the object classifiers are incorporated in this classifier predicate, only the subject classifier handshape is combined with the verb root 'KICK'.[22] The object classifier is held static in the predicate. In fact, all of the incorporated object classifiers discussed in the non-reversible data are held static by the base hand when the verb is performed by the active hand. Unlike object classifiers, subject classifiers and the verb root are realized in the active hand, indicating that the referent represented by the classifier bears the subject function.[23]

[22] Noun incorporation is a well-documented phenomenon in spoken languages. For example, in semantically identical sentences such as 'He may *protest*' and 'He may make a *protest*', it has been suggested that the verb 'protest' in the first sentence is an implicitly transitive verb, formed by merging the noun 'protest' with an abstract verb Ø, which is 'make' in this case (Baker 1988; Radford 1997). Baker points out that noun-incorporation has a number of characteristics cross-linguistically. First, the resulting form of noun incorporation is always a verb. Second, there is always an unincorporated counterpart corresponding to the incorporated form, like the parallel between 'protest' (verb) and 'make a protest'. As for the referential value, an incorporated noun refers to a generic or unspecific class in most cases. In some languages such as Mohawk and Nahuatl, however, an incorporated noun can also refer to a specific or definite object. With respect to the distribution, only the direct object but not the subject of a transitive sentence can be incorporated. These direct objects are patients in a majority of cases, yet some languages allows semantic locatives to be incorporated, e.g. Mohawk. Subjects of intransitive sentences involving unaccusative verbs, however, can also be incorporated (Baker 1988). The examples of classifier incorporation in HKSL discussed so far are consistent with the observations made for noun incorporation in spoken languages. The classifiers are found in a predicate. There is always an unincorporated version, which is a linear representation of the sentence. In a non-reversible transitive sentence, only the object but not the subject is incorporated. The only difference is that, in sign languages, what gets incorporated is the classifier rather than the noun.

[23] Our preliminary observation is that this generalization (i.e. subject classifier handshape can be combined directly with the verb root in the active hand) at least holds true with all semantic classifiers,

Verb inflection and classifier incorporation are two separate linguistic phenomena which may help identify the grammatical relations and they may sometimes co-occur. In a predicate which has a reciprocal reading, such as 'X and Y fight each other', the two classifiers each representing a referent would be combined with its own verb root and both of them would move simultaneously because both classifiers are subject (example (45) -Illustration 2 - 20):

(45) 'Two men are next to each other. They fight each other.'

RH: TWO MALE CL: PERSON-STAND$_R$
BH: CL:2-PERSONS-FIGHT-EACH-OTHER
LH: CL: PERSON-STAND$_L$
Subj. CL-predicate, CL-predicate

To sum up, grammatical relations in HKSL can be reflected by word order, verb inflection and/or classifier incorporation.

(2.4.2.3) Reversible and non-reversible data: A further discussion

In the previous sections, we have discussed the results of non-reversible and reversible data respectively. In this section, we would like to address two issues: (a) Does (non)reversiblity play a role in word order and the determination of grammatical relations? (b) Do our data lend support to Kegl's Flexibility Condition?

In section (2.4.2.1), we point out that nonreversibiliy of a sentence does not

certain SASSes (e.g. SCREW CL:A-LONG-THIN-OBJECT-FALL-DOWN → A screw fell down to the ground) and certain SASS (e.g. WINDOW CL: 2-FLAT-OBJECTS-SWING-FROM-SIDE-TO-SIDE → The windows swing in the wind.) A tracing-size-and-shape-specifier is a static adjectival predicate by nature and its movement root serves to depict the shape or extent of the referent rather than being verbal in nature. Handling classifiers are Verb-object compounds, so the generalization is not applicable. In her paper on classifiers, Schick (1990) points out that only a semantic classifier serves as a subject when combined with a verb root whereas other types of classifiers such as SASS and handling classifiers perform the role of objects. Schick's generalization, however, fails to recognize the fact that certain SASS may be combined with an ergative verb root such as 'FALL-DOWN'. Due to the limitation of this paper, I would like to leave the relationship between classifiers, verb root and

lead to freer word order. Furthermore, whether the sentence is reversible or not does not have a determining effect on the choice of representation. Both reversible and non-reversible sentences can be signed linearly in the SVO order. Object classifier incorporation is found in both non- reversible and reversible sentences (e.g. example (44)). Subject incorporation, spatial loci and inflection can also be found in a non-reversible context, as the following example shows:

(46) 'A man kicks a rock.' (Illustration 2 - 21)

RH: MALE CL:PERSON$_R$

BH:ROCK CL: $_R$PERSON-KICK-ROUND-OBJECT$_L$

LH: CL: ROUND-OBJECT$_L$

Subj. CL-predicate, Subj. CL-predicate, CL-predicate

In example (46), the signer begins by introducing 'ROCK' and places its classifier on locus 'L'. Then the 'MALE' is signed, followed by its classifier at 'R'. In the final predicate, the subject classifier is combined with the verb root 'KICK' in the signer's active hand (right hand in this case) and the object classifier is held static. The direction of 'KICK' agrees with the loci for 'MALE' and 'ROCK' respectively.

However, (non)reversibilty does make a distinction in one aspect. While non-reversible sentences such as 'A boy washes a dog' can be represented in an SOV order, similar reversible sentences such as 'A woman washes a girl' can never be signed in an SOV order. A multi-clausal structure is necessary:

(47) *'A woman washes a girl.'

*RH: FEMALE FEMALE-KID

*BH: CL:WASH-FEMALE-KID

*LH:

Subj. Obj. CL-predicate (V+OCL)

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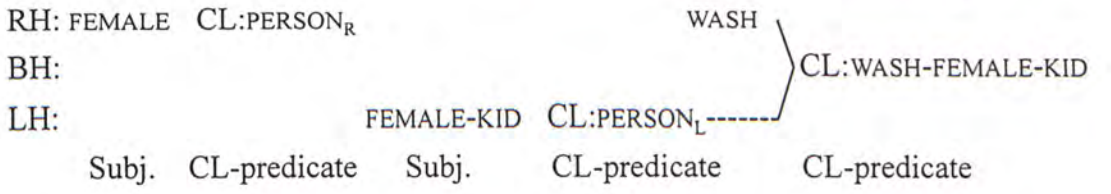
grammatical functions for future research.

(47') 'A woman and a girl are next to each other. The woman washes the girl.'



Seen in this light, it is reasonable to hypothesize that the non-reversibility of sentence makes SOV order with object classifier incorporation permissible.

Up to this point, our reversible and non-reversible data seem to lend support to Kegl's Flexibility Condition, which states that 'the more inflected the verb is, the freer the word order may be'. In her experiment, Kegl finds that most ASL signers accept sentences with non-SVO order when the verb is fully inflected, though some signers still prefer SVO. On closer inspection of the HKSL data, however, it is not difficult to realize that word order with spatial representation in both non-reversible and reversible data is not completely 'flexible'. Undeniably, when classifier incorporation or verb inflection is employed, word orders other than SVO may become possible, yet not all non-SVO orders are acceptable to HKSL signers. As a matter of fact, only a few attested word orders are found in our data.

All of our sentences with classifier incorporation are verb-final. In the case of object classifier incorporation for the non-reversible sentences, we do not find VSO, VOS, OVS, OSV, or even SVO. There seems to be a grammatical requirement for the discrete object to appear first before its classifier can be incorporated into the verb complex. (Note that we are not dealing with cases where independent objects do not appear at all, as in MALE CL:OPEN-DOOR.). This unique SOV pattern, we believe, is attributable to the more general principle governing the use of nominals and classifiers in the grammar of sign languages. Similar to the occurrence sequence of pronouns and their antecedents in spoken languages, classifiers occur after the

nominals they refer to. As Baker & Cokely (1980) points out, a classifier is generally not used in a sentence until the nominal referent it stands for is mentioned.

Seen in this light, the patterns observed in the non-reversible sentences become more explicable. The space allows a signer to represent a non-reversible sentence in a spatial, semantically transparent manner and in such a case the object classifier would be incorporated into the verb complex. Due to the general noun-classifier sequencing principle, a SOV pattern is adopted. If a spatial representation is not used, signers would use a SVO pattern.

As in non-reversible sentences, word order is not completely free in the reversible sentence even when the verb is inflected for both subject and object. There is a strong tendency for the signers to set up the spatial loci for the referents before the main predicate appears. Although it is possible to have a SVO pattern, as example (48) shows, all other word orders are not allowed:

(48) I $_{C}$GIVE-MONEY-TO $_{RF}$ INDEX $_{(Det)}^{RF}$ MALE
Subj. Verb Indirect Obj.

'I give money to that man (at locus right-forward).'

In example (48), the locus (RF) of the object 'MALE' is indicated by the ending point of the verb 'GIVE-MONEY-TO'. Hence, the verb assigns a locus to the object and agrees with the locus simultaneously. The object is then identified through indexing (i.e. a determiner). Other word orders are disallowed:

(49) *DET^{RF} MALE $_{C}$GIVE-MONEY-TO $_{RF}$ I
Indirect Obj. V Subj.
*'I give money to the man who is standing over there.'

(50) *$_{C}$GIVE-MONEY-TO$_{RF}$ DET^{RF} MALE I
V Indirect Obj. Subj.
*'I give money to the man who is standing over there.'

Why is there a strong tendency for the fully inflected verb to appear last? If grammatical relations are clearly encoded morphologically on the verb, why can't HKSL have free word order as in some scrambling languages? We believe that the reason rests with the spatial nature of the inflectional morphology. Unlike grammatical markings in spoken languages, a point in the signing space is meaningless in and of itself. In order to be utilized as a cue for grammatical relation, a locus must first be associated with a nominal so that it can be loaded with the corresponding referential property of the nominal. This explains why loci-assigning predicates usually appear before inflecting verbs in our data.

Hitherto, we have demonstrated that in HKSL, subject and object are differentiated on the basis of word order, verb inflection as well as classifier incorporation.[24] Reversibility of the arguments explains why SOV is possible only in non-reversible sentences with object classifier incorporation. Yet, reversibility does not seem to lead to freer word order in HKSL as what Fischer claims about ASL. HKSL signers do not seem to make use of semantic/pragmatic cues or adopt

[24] A linguistic continuum with respect to the choice of syntactic representations is observed in our data. At one end of the continuum are signers who show a strong preference to use classifier incorporation and a spatial representation. They seldom use the SVO linear representation. At the other end of the continuum are signers who display consistent preference of a linear, non-spatial pattern. Some signers fall in between these two extremes. It is suspected that the location where a signer falls on this linguistic continuum reflects the degree of Chinese interference in his signing, which is in turn a function of the degree of hearing loss, education and age. Signers who use a spatial representation most of the time are generally profoundly deaf, have low education standard and their knowledge of written Chinese is minimal. Their sign language is purer and the spatial dimension of the language is exploited to the fullest extent. Signers whose deafness is less profound and who have a better command of written Chinese tend to use more SVO order, which resembles Chinese word order. Although the signing preference is subject to the degree of Chinese exposure, such influence seems to affect the choice of expression rather than the syntactic generalizations we make so far for the markings of grammatical relations. When a signer whose signing contain more Chinese features uses verb inflection and classifier incorporation, the signing patterns would still be the same as those we discussed in this chapter.

avoidance strategy in their signing to distinguish grammatical relations as Friedman suggests for ASL. Kegl's Flexibility Condition is applicable to HKSL only to a limited extent, because word order in HKSL is not completely free even when the verb is fully inflected. Our data matches well with Liddell's description on reversible and non-reversible sentences in ASL. One may wonder, 'Among the three overt marking strategies – word order, verb inflection and classifier incorporation, which one is more basic?'. We consider all three overt markings indispensable. In HKSL, not all verbs allow classifier incorporation or verb inflection. For those verbs intrinsically lacking such capacity, signers rely sorely on word order to differentiate grammatical relations. For those verbs which can incorporate or inflect, word order is less important in determining grammatical relations, though it is not completely free. So word order, verb inflection and classifier incorporation share the function of marking grammatical relations.[25]

We have pointed out that no consistent non-manual subject and object agreements are observed in the nonreversible and reversible data due to the limitation of our experimental design. Bahan claims that in a transitive construction, signers may tilt their head towards the subject locus and gaze at the object locus for agreement. We do observe non-manual markings in HKSL discourse. In the following example, given that the subject character is located on the right and object character on the left, the signer may turn his body slightly to the right and look at the

[25] In both reversible and non-reversible data, when the classifiers and verb inflection are used, there is a strong tendency for signers to use the dominant hand (i.e. the right hand for a right-handed signer) to perform the agent role, which surfaces as the subject of the sentence. The object classifier is usually performed by the non-dominant hand (i.e. the left hand). This consistent pattern is unlikely to be induced by the picture stimuli as the right hand prevails even in cases where the agent referent in the picture uses the left hand for the action. Although this hand-dominance asymmetry does not affect word order, verb inflection or classifer incorporation, it is likely that it provides some clues for the addressee to identify the agentive subject. This may also reflect the signer's unconscious conceptualization of grammatical relations. In a discourse, however, this asymmetry disappears because it is possible that the patient of one predicate becomes the agent of the next predicate. In such a case, the signer would continue using the same hand to stand for the referent.

locus on the left when performing a transitive verb such as 'SEE':

(51) eye-gazes-left
body-lean-towards-right
SEE^{L}
'(someone on the right) sees (someone on the left)'

Unlike ASL, HKSL uses body shifting or head turning instead of head tilt as an agreement with the subject. Since our current experiment fails to elicit sufficient evidence of non-manual agreements for evaluation, we would like to leave this area open for future research. Yet, our preliminary observation suggests that subject/object non-manual markers may not be very important in distinguishing grammatical relations because they tend to be present only with transitive sentences where referents have been localized. Signers seldom shift their body or fixate their gaze at a particular locus in intransitive constructions or transitive constructions with non-localized referents. Furthermore, these non-manual markers are not obligatory. The meaning of a transitive sentence involving two localized referents would not change in the absence of these non-manual markings. In addition, body shift and eye-gaze are only found when the loci are placed spatially apart in a left-right contrast. If the two referents are placed closely next to each other in front of the signer's torso, we would not expect any body/head turning in agreement with the subject, though there may still be corresponding eye-gaze. Finally, eye gaze does not just associate with objects. In a sentence involving localized subject and object, the signer may look at the locus for the subject first, followed by a gaze at the verb's movement path and finally reaches the object locus, as the following sentence shows:

(52) gaze-right -----to-left-------left

$INDEX^{R}$ $_{R}GIVE_{L}$ $INDEX^{L}$

Owing to these reasons, we would like to suggest that non-manual subject and object agreement does not play a very important role in determining grammatical relations so far as HKSL is concerned, although they do provide some cues for interpretation.

(2.4.3) An extension to dative constructions

At this point, readers may wonder whether our conclusion about the importance of word order, verb inflection and classifier incorporation in determining grammatical relations can be extended to dative constructions, which contain three grammatical relations: subject, direct object and indirect object. Our experiment does not include test items for dative constructions, but our observation and the reflection by the deaf informants concerning dative constructions seem to be compatible with our results for non-reversible and reversible sentences. It must be stressed that the following analysis is just preliminary. Future research is necessary for a more comprehensive discussion on dative constructions.

A dative verb is a verb that requires 2 objects. In the English dative sentence 'I give a book to John', 'a book' is known as the direct object and 'John' the indirect object. Alternatively, the indirect object may precede the direct object, as in the sentence 'I give John a book'. Such alternation is known as Dative Shift. A typical dative construction usually involves some form of transferal. According to our preliminary observation, dative verbs in HKSL such as 'GIVE', 'TEACH', 'BORROW', etc, are generally inflecting. They either involve a path movement or allow different hand orientations to indicate grammatical relations in the presence of referential loci. Some of them allow classifier incorporation in the verb predicate. Since both verb

inflection and classifier incorporation are optional for those verbs which carry the capacity to do so, there will be four possible combinations for dative constructions:

(i) [- classifier incorporation, - loci/inflection]
(ii) [- classifier incorporation, + loci/inflection]
(iii) [+ classifier incorporation, - loci/inflection]
(iv) [+ classifier incorporation, + loci/inflection]

To test these four possibilities, we have chosen two dative verbs, 'BORROW' and 'GIVE' as examples. 'BORROW' is a one-handed sign which assumes a K-handshape (). It does not allow classifier incorporation but shows subject/object by the orientation of the hand. The tip of the index finger points towards the indirect object, which is the source of the entity being borrowed whereas the back of the hand faces the subject. 'BORROW' will be used to test the first two possibilities. 'GIVE' is a one-handed sign with a B̂-handshape () in its citation form. It incorporates the object classifier by changing its handshape according to the size and shape of the object. For instance, if the object is a thick book, a B̄ () handshape will be adopted to replicate an actual hand holding a thick book. The movement path of 'GIVE' starts with the subject locus and ends with the object's as an agreement. 'GIVE' will be used to test the third and fourth possibilities.

We would first look at the behaviour of 'BORROW' in the sentence 'Father borrows a book from Mother'. On the basis of our earlier observation that an object would appear in a postverbal position if its classifier is not incorporated into the verb, we expect that the direct object MONEY' and indirect object 'MOTHER 'appear after the verb 'BORROW', which does not allow classifier incorporation. Moreover, if the two animate referents are not assigned any spatial loci, a linear representation must be used. Hence, we also expect that the subject (Father) precedes the verb and two

objects follow the verb. Our expectation is borne out by the intuition of our deaf informants. The following pattern is normally used when the non-spatial linear representation is adopted:

(53) FATHER BORROW MOTHER MONEY (Illustration 2 - 22)
Subj. V Indirect-Obj. Direct-Obj.
'Father borrows some money from mother.'

In example (53), the verb 'BORROW' is in its citation form and the two animate referents are not localized. Note that the subject precedes the verb, which is in turn followed by the indirect object and the direct object. Our deaf informants also claim that it is not preferable for the direct object to precede the indirect object in a linear representation, so the preliminary observation that Dative Shift may be absent in a sequential dative construction in HKSL:

(54) *FATHER BORROW MONEY MOTHER
Subj. V Direct-Obj. Indirect-Obj.
'Father borrows some money from mother.'

Other word orders are disallowed:

(55) *FATHER MONEY BORROW MOTHER
Subj. Direct-Obj. V Indirect-Obj.
'Father borrows some money from mother.'

(56) *FATHER MOTHER MONEY BORROW
Subj. Indirect-Obj. Direct-Obj. V
'Father borrows some money from mother.'

(57) * BORROW FATHER MOTHER MONEY
V Subj. Indirect-Obj. Direct-Obj.
'Father borrows some money from mother.'

Our next test sentence is 'One student borrows some money from another student'. In a spatial representation, it is expected that the signer would use a multi-clausal strategy: he would first set up the loci for the two referents (i.e. the two students) by classifier predicates and use the verb inflection to indicate subject and indirect object. As this dative verb does not allow an incorporation of the classifiers, the direct object 'MONEY' is expected to appear after the verb 'BORROW'. This prediction is again borne out by our informants' intuition:

(58) 'Two students are next to each other. One student borrows some money from another student' (Illustration 2 - 23):

RH: TWO CL:PERSON$_R$ ^{R}BORROW^L
BH: STUDENT MONEY
LH: CL:PERSON$_L$----------
Subj. CL-predicate V Direct-Obj.

In example (58), the orientation of the verb 'BORROW' indicates that the student on the left is the indirect object whereas the one on the right is the subject. The direct object 'MONEY' appears after the verb. The deaf consultants reflect that signing 'MONEY' in front of 'BORROW' is awkward. Other word orders are also not preferred.

We have seen how the syntactic behaviour of 'BORROW' conforms to our earlier analysis on the interaction of word order, verb inflection and classifier incorporation. Let us now turn to 'GIVE', which allows classifier incorporation. Our test sentence is 'Father gives a gift to Mother'. With object classifier incorporation, the direct object (i.e. GIFT) is expected to precede the verb (GIVE). If the two referents are *not* localized in space, we expect that the subject (FATHER) comes before the verb, which is followed by the indirect object (MOTHER). Our expectation turns out to be true:

(59) 'Father gives a gift to Mother.'

RH: FATHER CL: $_{CN}$GIVE-A-THICK-OBJECT-TO$_{CF}$ MOTHER

BH: GIFT

LH:

Subj. Direct-Obj. classifier predicate (V+OCL) Indirect-Obj.

It must be noted that the handshape of 'GIVE' is a HANDLE classifier predicate of which the handshape can vary to indicate the thickness of the gift. Other word orders are not allowed.

When the two referents are localized, a multi-clausal structure is used and the inflection of 'GIVE' clearly indicates the subject and the indirect object. The direct object 'GIFT' precedes the verb because its classifier is incorporated, as example (60) indicates (Illustration 2 - 24):

(60) 'Two students sit next to each other. One student gives a gift to another student.'

RH: TWO CL:PERSON-SIT $_R$

BH: STUDENT GIFT CL: $_R$ GIVE-A-THICK-OBJECT-TO$_L$

LH: CL:PERSON-SIT $_L$

Subj. CL-predicate , Direct-obj. CL-predicate

In the absence of classifier incorporation and verb inflection, a linear representation in the Subj – Verb – Direct-object - Indirect-object order is used (Illustration 2 - 25):

(61) FATHER GIVE MOTHER GIFT

Subj. V Indirect-obj. Direct-obj.

'Father gives a gift to Mother.'

Similar to 'BORROW', the direct object 'GIFT' cannot precede the indirect object 'MOTHER' in a linear representation. This provides further evidence to our suspicion about the absence of Dative Shift in HKSL. If verb inflection but not classifier

incorporation is adopted, the direct object comes after the verb:

(62) 'Two students sit next to each other. One student gives a gift to another student.'

RH: TWO CL:PERSON-SIT$_R$ $_R$GIVE$_L$

BH: STUDENT GIFT

LH: CL:PERSON-SIT$_L$

Subj. CL-predicate , V Direct-obj.

From the dative verbs 'BORROW' and 'GIVE', it can be seen that word order, verb inflection and classifier incorporation interact with each other to mark grammatical relations. The suspicion that there is no Dative Shift in HKSL in a linear representation is further supported by the dative verb 'TEACH', which shows the same restriction. In a linear representation, Subject – Verb – Indirect Object – Direct Object is the only permissible order:

(63) FATHER TEACH MOTHER CHINESE

Subj. V Indirect Obj. Direct Obj.

'Father teaches mother Chinese.'

(64) * FATHER TEACH CHINESE MOTHER

Subj. V Direct Obj. Indirect Obj.

'Father teaches mother Chinese.'

Although the observation about the absence of Dative Shift in a linear representation in HKSL is still preliminary and needs to be verified by further research, the evidence from the dative verbs discussed so far is quite convincing.

(2.5) Chapter Summary

In this chapter, we have pointed out that grammatical relations can be determined by word order, verb inflection and classifier incorporation in HKSL. If the sentence is presented linearly without involving space, a strict SVO order is used to differentiate subject and object. In a spatial representation, SOV order is possible for a non-reversible sentence if the object classifier is incorporated into the verb. Signers may also set up spatial loci for the referents in the space first and indicate the grammatical relation through the movement direction or the orientation of an inflecting verb. In a classifier predicate, the object classifier is usually held static by the base hand while the subject classifier combined with the verb root is realized by the active hand. Our experimental design fails to elicit sufficient non-manual features for analysis, but the preliminary observation is that non-manual features such as eye-gaze and head-turn may not be an important cue signers rely on to distinguish grammatical relations. Our generalization about the markings for grammatical relations can also be extended to dative constructions.

(3.0) Introduction

In chapter 2, we have discussed how grammatical relations are determined by word order, verb inflection and classifier incorporation. In this chapter, our focus will turn to the representation of various referential properties and the role of space in these representations. We would argue that HKSL has two optional manual markers – 'ONE' and 'THERE-BE-num' – for specific indefinite referents. Signers may also use eye contact with the addressee to signal the indefiniteness of a referent. Furthermore, HKSL has a determiner which optionally marks definite referents. This determiner is realized as a pointing sign co-occurring with a noun and is usually found in a specific definite context where the referent has been localized in the signing space. How different verb types may interact with the (in)definiteness of objects in a narrative discourse will also be discussed. In addition, a non-specific indefinite referent can be coded by 'THERE-BE + noun' in a preverbal position or by 'ONE $_{(Pathlength)}$' in a postverbal position. Generic NPs are represented by bare nouns.

(3.1) On the various referential properties

NPs describe entities or concepts in the world of discourse. They can be specific or non-specific, definite or indefinite, generic or non-generic. An NP is said to be specific if the speaker has in mind a particular referent to be referred to (Pan, Jiang & Zou 1997). On this view, specificity corresponds to referentiality. A specific NP can be definite or indefinite depending on whether the referent is identifiable to the addressee. As Givon (1993a) puts it, the difference between a definite and an indefinite referential nominal lies in the speaker's assumption of the addressee's ability to identify the referent. Similarly, Lambrecht (1994) states that 'the grammatical category of definiteness is a formal feature associated with nominal

expressions which signals whether or not the referent of a phrase is assumed by the speaker to be identifiable to the addressee'. Hence, a definite NP is used to code a referent if it is identifiable to the addressee, by virtue of the fact that the referent is present either in the physical discourse environment or the discourse context. An indefinite NP, on the other hand, is a device to introduce a novel entity to the discourse on the speaker's assumption that the addressee cannot identify it. Subsequent reference to this entity will generally be definite, as the addressee is thought to be able to identify who/which is being talked about (MacLaughlin 1997). This amounts to saying that a specific NP can be either definite or indefinite, whereas a non-specific NP can only be indefinite. Generic noun phrases, on the other hand, refer to the 'type, species or genus, rather than to a particular individual' (Givon 1993a). As a generic NP denotes a natural property, it is not reducible to single entities and is therefore non-referring (Givon 1993a; Pan, Jiang & Zou 1997).

(3.2) Realization of the referential properties in spoken and sign languages

Languages employ different means to express the various referential properties. In English, the indefinite article 'a(n)' and the definite article 'the' are the two major devices differentiating indefiniteness and definiteness.

(1) *A man* went into the house. (indefinite NP)
(2) *The man* went into the house (definite NP)

After the referent is introduced into the discourse, a pronominal or a definite article 'the' can be used as a subsequent reference:

(3) *A man* went into the house. *He* opened the door of the bedroom and saw a boy lying on the bed. *The man* said...

Apart from the article 'a(n)', English has other indefinite devices such as 'any' and

'some'. Definiteness can also be conveyed by demonstratives (e.g. that, those), deictic pronouns (e.g. I, you, we) or adverbials (e.g. now, here, later, there) if the definite referents exist in the discourse situation. Generic NPs in English may appear in one of the following four distinct grammatical forms (Givon 1993a):

(4a) *The lion* is a dangerous feline.
(4b) *Lions* are dangerous.
(4c) *All/many/some lions* are dangerous.
(4d) *A lion* is a dangerous feline.

Having no articles equivalent to 'a' and 'the' in English (Matthew & Yip 1994), Cantonese employs both lexical and syntactic means to distinguish (in)defininteness and specificity. For example, the numeral 'one' (jat) is generally assumed to be functioning like an indefinite article:

(5) 有 (一) 個 男人 入 □左 間 屋 入面
jau jat go naam-jan jap zo gaan uk jap-min
there-be (*one*) CL man go-into ASP CL house inside
'A man went into the house.'

The existential marker '有' (there-be) together with the numeral 'jat' (one) yield a specific indefinite interpretation. The numeral '*one*' is optional, and can be deleted without affecting the indefinite meaning of the NP provided that the referent is singular. In a preverbal position, a classifier-noun combination ([Cl + N]) can only yield a definite interpretation (Cheng & Sybesma 1999):

(6) 個 男人 入 □左 間 屋 入面
go naam-jan jap zo gaan uk jap-min
CL man go-into ASP CL house inside
'The man went into the house.'

In postverbal positions, however, a CL+N (e.g. 間屋) is ambiguous between a

definite and an indefinite reading. Bare nouns in preverbal position yield a generic reading, but they can be generic or nonspecific indefinite in the postverbal position (Cheng & Sybesma 1999):

(7) *電腦* 係 好 重要 □架
din-nou hai hou zung-jiu gaa
computer be very important particle
'*Computers* are very important'. (generic)

(8) 佢 想 買 *電 腦*
keoi seong maai din-nou
s/he want buy computer
'S/he wants to buy *a computer*' (nonspecific indefinite)

(9) 佢 好 怕 *電腦*
keoi hou paa din-nou
s/he very fear computer
'S/he is afraid of *computers.*' (generic)

Hence, both the syntactic configuration of the NPs as well as their positions in a sentence are important in determining the interpretation. As the above examples in English and Cantonese indicate, spoken languages differ in the methods of expressing referential properties of noun phrases.

In sign language literature, there have been conflicting views on the syntactic realization of referential properties like (in)definiteness and specificity. Some researchers claim that sign languages do not exhibit syntactic markings for any referential properties. De Vriendt and Rasquinet (1989), for instance, argue that sign languages lack an article system to differentiate (in)definiteness, specificity, mass/count or genericity. In particular, they argue that 'generic expressions are characterized by the absence of manual or nonmanual features that might specify the information'. They suggest that in the absence of overt syntactic clues, the correct

interpretation of the speaker's intention in an expression would entirely depend on semantic and pragmatic factors (p.253), though they do not explain what these semantic and pragmatic factors would be like.

Some ASL researchers, however, conjecture that pointing signs (also known as an index sign in the literature) in sign languages may be associated with certain semantic notions, yet there have been disputes over whether the pointing signs express specificity or definiteness. Wilbur (1987) suggests that a pointing sign which may occur before, after, or simultaneously with a noun perhaps function as a determiner distinguishing definite and indefinite referents:

> '...the possibility exists that definite/indefinite distinctions which are reflected in English by the determiners 'the' and 'a(n)' are distinguished by whether a noun phrase has an index (definite) or not (indefinite). (Wilbur 1987, p.154)

Later work in ASL suggests that these pointing signs signal specificity rather than definiteness. In line with Wilbur's observation, Patschke & Zimmer (1990) report that a pointing sign can precede, co-occur or follow a noun in ASL. Contrary to Wilbur's conjecture, however, Patschke & Zimmer find 'many instances in which a noun being mentioned for the first time *does* occur with a determiner' in their ASL data. Although they do not provide the exact figures, they claim that the occurrence of determiners with indefinite referents is frequent:

> 'We found several instances in which a newly mentioned noun occurs without a determiner, but by far *the most usual case* was that in which a determiner is present.' (Patschke & Zimmer, 1990, p.206)[1]

However, they do not mention how frequent pointing signs are used in a definite

[1] The italics are added by the author as an emphasis.

context. The ASL informants in their study reflect that they 'specify' the nouns by using these pointing signs. Hence, Patschke & Zimmer argue that determiners are used to mark specificity rather than definiteness. In addition, these determiners mostly point upwards, and the pointing direction is insignificant because the determiners in their data always point to the same location regardless of the referential loci previously established in space. When a determiner is used, the signer's eye gaze either remains on the addressee or follows the direction of pointing. They also observe that determiners can never be used with generic nouns as well as abstract nouns, although they do not discuss how such semantic notions can be represented in ASL. Nor do they mention how an indefinite referent can be expressed if no determiner is used.

In a more recent analysis, MacLaughlin (1997) argues that the pointing sign functions as a determiner for definiteness.[2] He proposes that only pointing signs occurring prenominally are definite determiners, while postnominal pointing signs function as adverbial modifiers. Pointing signs occurring simultaneously with nouns are rare, if they occur at all:

(10) JOHN LOVE [IX_i WOMAN] $_{DP}$ (from MacLaughlin 1997, p.121)
'John loves the/that woman.'[3]

According to him, a prenominal pointing sign is prohibited if the context requires an indefinite reading of the noun. Postnominal pointings can occur in both definite and indefinite context, and they can be slightly modified to code the locative information of the referents:

[2] MacLaughlin's analysis adopts a minimalist framework. As our current study aims at a description of the various NP properties in HKSL, we would only review the descriptive parts of his analysis without going into details of the DP structure proposed by him.
[3] Note that IX stands for an index sign in MacLaughlin's transcription.

(11) [IX WOMAN IX "around there"] $_{DP}$ BORROW VIDEOTAPE
'The/that woman around there borrowed the videotape' (MacLaughlin, p.124)

Although a prenominal index can function as a definite determiner, MacLaughlin points out that it is not always required for a noun phrase to be interpreted definitely. Given an appropriate context, a bare noun can be interpreted as definite. Furthermore, when the definite referent is associated with a point in space, the determiner necessarily points to that location (p.141). If the referent does not yet have a specific location in space, signers may use either a neutral form of the index sign pointing at about a 45-degree angle (p.182, note 34) or use a normal determiner to establish a point in space for the referent. This is contradictory to Patschke & Zimmer's comment that the direction of determiners is insignificant. Although MacLaughlin does not explain why he translates the index sign as 'the/that', this English gloss and his description about the pointing direction suggest that the determiners in ASL also bear a demonstrative function apart from marking definiteness.

MacLaughlin also looks into the use of non-manual features such as eye gaze and head tilt. He points out that when a determiner is produced, the signer would either gaze at the direction of the locus or tilt his head towards the locus. It is also possible for eye-gaze and head tilt to co-occur. When the determiner is present, non-manual features are almost obligatory and they may or may not spread over the entire noun phrase (DP in MacLaughlin's terminology). When the determiner is absent, however, non-manual features, if they are present, must obligatorily spread over the entire noun phrase. Determiners may also function pronominally in ASL. Hence, specific definiteness can be expressed lexically by a determiner or a pronominal.

Apart from the definite determiner, MacLaughlin proposes that a specific indefinite NP can be preceded by the determiner 'ONE'. A slightly different form 'SOMETHING/ONE' marks referents which are either specific indefinite or non-specific

indefinite. According to his analysis, the sign 'ONE' is an unstressed form that is articulated with the index finger pointing up and the palm facing the signer. In prenominal position, it is potentially ambiguous between an article reading and a quantificational reading. In postnominal position, only a quantificational reading is allowed. When 'ONE' is used as a determiner, it refers to a specific referent and the sign can never be stressed. With a quantificational reading, the sign 'ONE' tends to receive slightly more stress and it can be either specific or non-specific. Unlike the definite determiner, 'ONE' is not accompanied by non-manual features.

(12a) CALVIN WANT BUY [ONE BOOK]$_{DP}$ (from MacLaughlin 1997, p.129)
Calvin wants to buy [a (specific) /one (specific/non-specific)] book.'

(12b) CALVIN WANT BUY BOOK ONE (from MacLaughlin 1997, p.129)
Calvin wants to buy one book.'

With respect to the non-specific indefinite determiner 'SOMETHING/ONE', MacLaughlin suggests that the sign is articulated with a tremoring upward-pointing finger with a particular facial expression involving a wrinkled nose and a lowering of the eye brows. The scale of the tremoring motion varies according to the degree of identifiability of the referent. The amount of hand and forearm movement as well as the intensity of the facial expressions would be minimized if the referent is highly identifiable. He suggests that the sign 'ONE' can be considered an extremely minimized form of 'SOMETHING/ONE' for a highly identifiable referent. A greater degree of tremoring would be articulated if the referent is largely unknown.

(13) IX$_{pro\ 1p}$ WANT BUY [SOMETHING/ONE$_{det}$ BOOK]$_{DP}$
'I want to buy a (specific/non-specific) book.' (from MacLaughlin 1997, p.130)

When 'SOMETHING/ONE' is produced, the signer's eye would gaze at an area in space

either by wandering the gaze over several points in the space or engaging the gaze in an unfocused stare towards the area (MacLaughlin 1997, following Bahan 1996).

According to MacLaughlin, both the definite determiner and indefinite determiner are optional, although he does not elaborate on when these determiners are optional. One major contribution of MacLaughlin's work is his recognition of the role of non-manual features and space in expressing the referential properties of noun phrases. He argues that a specific referent can be linked with a point in the signing space, whereas a non-specific referent is associated with an area, the size of which being determined by the degree of the identifiability of the referents. This varying use of space in turns determines the types of non-manual features: head tilt/eye gaze at a point for specific definite referent and eye gaze at an area for the indefinite determiner 'SOMETHING/ONE'.

Let us now turn to the studies of other sign languages. Pointing signs have been identified as pronouns and determiners in Danish Sign Language (DSL)(Engberg-Pedersen 1993).[4] Regarding the semantics of these pointing signs, Engberg-Pedersen claims that DSL pronouns and determiners can only be used in nominals with specific referents. Determiners, in particular, are neutral with respect to definiteness as they can precede a new referent. There is no significant form distinction between pronouns and determiners in DSL. Accordingly, a pronoun or a determiner, if not emphatic, is made with 'a short movement in the direction of a locus or with a short side-to-side movement with the index finger pointing in the direction of the locus.' Furthermore, both pronouns and determiners have 'directed'

[4] A poiniting sign performs several roles in sign languages, two of which are determiners and pronouns. In ASL, a pointing can be a locative device which establishes referents in particular locations. It can also be one of the many possible markers for ASL topics (Patschke & Zimmer 1990). Pointing signs are considered pronominal if they occur alone, as pronouns are 'noun phrases of the simplest possible structure, which as a rule, allow neither premodification nor postmodification (Patchske & Zimmer 1990, quoting Aarts and Aarts (1982)).

and 'undirected' forms. When an undirected form is used, the direction in which the index finger points is not modified for the locus of the referent and the determiner just informs the addressee that some specific entity is being referred to without giving locative information about it (p.119).

Concerning reference in narratives, Ahlgren and Bergman (1994) studied 12 videotaped narratives in Swedish Sign Language and conclude that the main character and other non-participating characters are introduced by a nominal phrase and eye-contact with the addressee. They do not explain what constitutes an indefinite NP, but all their examples are bare nouns, e.g. PILOT, AIRHOSTESS, HOUSE-PARENTS. Reintroduction of the referents is done by full noun phrases such as PILOT, AIRHOSTESS, ELIZA, plus eye-contact with the addressee as well. No anaphoric pointing as pronominals are found in the narratives. A first-person pronominal (pointing against one's chest) is found only when the narrator is also a participant in the narrative. Change of referents and perspectives can be indicated with eye gaze and verb modification directed towards the loci. Occasionally, a change of referent is not marked by manual or non-manual signals and the content decides who is referred to. With respect to the semantic content of NPs, the result of the study by Ahlgren and Bergman seems to suggest that, at least in the narrative data in Swedish Sign Language, there is no overt syntactic marking for definiteness as referents can be introduced and re-introduced by the same bare noun. Pronominal pointings are also rare.

As the foregoing review indicates, researchers are divided with respect to the realization of referential properties in sign languages. A summary of the aforementioned arguments is given in the following table:

Table (3.1): A summary of the proposals concerning the realization of referential properties in sign languages

	Specific definites	Specific indefinites	Non-specific-indefinitess	Generic
De Vriendt & Rasquinet (1989)				Bare noun
Wilbur (1978)	INDEX (Determiner)			
Patschke & Zimmer (1990)	INDEX (Determiner)	INDEX (Determiner)		
MacLaughlin (1997)	(i) prenominal INDEX (Determiner) + eye gaze and/or head tilt (ii) INDEX (Pronominal)	(i) ONE; (ii)SOMETHING/ONE (+ gaze to an area)	SOMETHING/ONE (+ gaze to an area)	
Engberg-Pedersen (1991)	(i) INDEX (Determiner) (ii) INDEX (Pronominal)	INDEX (Determiner)		
Ahlgren and Bergman (1994)	Bare noun	Bare noun		

Although several researchers propose that determiners are realized as pointing signs in sign languages, whether they denote definiteness or specificity remains a controversial issue. There are also disputes over whether these pointing signs are spatially modified or not. A common observation, however, is that sign languages do not seem to make systematic distinctions of all the referential properties, and that even if there are such distinctions, the markings are optional rather than obligatory. A few issues remained untouched in these studies. As Chapter Two points out, subjects and objects can be realized in a number of ways in sign languages. Apart from an overt NP, both subjects and objects can be indicated through inflection and classifiers. The discussion of the syntactic realizations of referential properties seems incomplete if we only focus on overt lexical NPs. On the other hand, previous studies of semantic properties seldom pay attention to how the syntactic position of a nominal in a sentence may affect its semantic interpretation. Would the same semantic notion be expressed in the same way in both subject or object positions? In addition to that, what role does space play in expressing these referential properties?

In what follows, we would like to discuss how HKSL distinguishes the various referential properties. Our discussion will be divided into two parts. In (3.3), we would use our narrative data to elucidate how specific indefinites and definites are represented in HKSL narratives in subject and object position. In (3.4), the discussion will be focused on non-specific indefinites and generics.[5]

(3.3) Specific NPs: indefinites and definites

(3.3.1) Experiment 2: picture story description and picture reordering

This section will investigate the representation of specific indefinites and specific definites in the HKSL narratives. The narrative discourse data is obtained by a picture-story-description-and-picture-reordering task. Three HKSL signers took part in this experiment. One of them is a young female native signer born to a deaf family while the other two are deaf male adults who use sign language as the major mode of communication. Each time a signer was given a set of pictures which made up a coherent story. The picture stories were taken out from a guided composition book for English learners (Heaton 1966). The signer was asked to memorize the story, put the pictures aside when ready and sign the story to another signer who needed to arrange the pictures in the correct order. The process was videotaped and transcribed by the author with the assistance of a native deaf informant. Altogether fourteen signed narratives were collected, the details of which are shown in Table (3.2). The pictures for these stories can be found in Appendix 4.

[5] Some of the results in this chapter have been presented in the annual linguistic conference of Texas Linguistic Society, 2000.

Table (3.2): Subjects and narratives in Experiment 2

Subject 1	Subject 2	Subject 3
(1) A cyclist and a driver (2) A boy and a blind man (3) A dog and 2 kids (4) A thief and a shopkeeper (5) Hide and seek in a garden	(1) A cyclist and a driver (2) A dog and 2 kids (3) A thief and a shopkeeper (4) Hide and seek in a garden	(1) A boy and a blind man (2)A dog and 2 kids (3)A thief and a shopkeeper (4) Ball game in a playground (5) A boy and a fisherman

(3.3.2) NPs in subject positions

Ninety tokens of overt subjects are collected in the 14 signed narratives. One thing we would like to mention before discussing the data is that most of the overt noun phrases under discussion here bear the function of reference shift, by which we mean a shift of description focus from one referent to another in the subject position. In a signed narrative, an overt subject is very often followed by a chain of predicates with null subjects if the referent referred to is the same. The longest chain in our narrative data consists of ten predicates.[6] An overt noun phrase typically appears to indicate a reference shift. Occasionally a signer may re-mention a referent by an overt NP in the absence of a reference shift but this is rare. Among the ninety overt subject NPs collected in the fourteen narratives, only 2 (2.2% of all overt noun phrases) are used without a reference shift. This fact about HKSL is different from Ahlgren and Bergman's report (1994) that re-mentioning of referents is 'surprisingly often done even when there is no shift of reference' in Swedish Sign Language (p.33) and Friedman's (1976) comment that 'the appearance and nonappearance of a noun sign after its initial establishment in the discourse seems to be in free variation, with its appearance functioning possibly as an indicator of emphasis, contrast, or

[6] This suggests that HKSL is a pro-drop language like ASL and other reported sign languages. Lillo-Martin (1991) proposes a syntactic account on the appearance of null arguments in ASL by using a parametric model. Her idea is that null arguments are licensed by the agreement features if inflecting verbs are involved just like Italian. When plain verbs are used, however, null arguments are licensed by discourse topics as in the case in Chinese. Readers may refer to her work directly for a detailed discussion.

clarification.'

Hence, when a null subject appears in a narrative, it is usually interpreted as being specific definite and referential with the nearest overt subject in the preceding context.

(3.3.2.1) Specific indefinites:

Thirty-eight instances of specific indefinite overt noun phrases in subject positions are collected from the fourteen HKSL narratives. They are all noun phrases that introduce novel referents into the discourse. These noun phrases are classified into three types, as shown in Table (3.3):

Table (3.3): Types of noun phrases for indefinite referents in subject positions in HKSL

	NP types	*No. of occurrence*	%
(i)	Num + N / N + Num	7	18.4
(ii)	N	22	57.9
(iii)	THERE-BE + Num + N	9	23.7
	Total	***38***	***100***

Key: N: Noun Num: Numeral

The first type of an indefinite nominal expression is a noun plus a numeral:

(i) N + Num/ Num + N:

(14) [*MALE ONE*] LOOK-FOR-SOMETHING (Illustration 3 - 1)

'A man looked for something.'

(15) [*ONE FEMALE*] [*ONE MALE*] CL: TWO-PERSONS-SIT-TOGETHER

'A girl and a boy sat next together.'

It is also possible for an indefinite NP to be denoted by a numeral, a modifier as well as a head:

(16) [*MALE* *1* *TALL*] CL: GO-INTO-SHOP
noun num. adj.
'A tall man went into the shop.'

As illustrated in the above three examples, the numeral can either precede or follow the noun head. There is no articulatory difference of the numeral sign 'ONE' in the two positions.

(ii) Noun :

The numeral 'ONE' is optional if the referent is singular. Hence, a specific indefinite referent can be introduced by a noun alone:

(17) *MALE* RIDE-A-BICYCLE (Illustration 3 - 2)
'A man rode a bicycle.'

(18) *MALE* CL: PERSON-STAND-ON-ROCK
'A man stood on rock.'

In a narrative context, a bare noun is normally interpreted as singular. Bare nouns are by far the most common strategy to mark indefinite referents (18 bare nouns, up to approximately 47% of the data). A bare noun is typical in situations where the semantic content of the noun is sufficient for identifying the referent. In one account of the story 'A dog and two kids', the character 'mother' is introduced by a bare noun 'MOTHER', which is also employed as a subsequent reference to the referent. Since only one character is eligible for the nominal expression 'MOTHER' in the story, the noun phrase can single out the referent unambiguously. A modifier may be added in front of or after a noun if the signer wants to provide more information to distinguish the referent from the others. Examples of a noun head plus a modifier are given in example (19) and (20):

(19) [*BLIND BEGGAR*] CL: PERSON$_L$
adj. - noun
'A blind beggar was at location 'L'.'

(20) [*MALE PERSON-IN-CHARGE*] CL: TURN-BACK-AND-GO-UP
adj. noun
'The person-in-charge, who was a man, turned back and went up.' [7]

(iii) THERE-BE (有-jau) + Num + N:

Apart from using a noun with or without a numeral, another means to introduce a specific indefinite referent is to use the sign 'THERE-BE', which is a Cantonese loan sign equivalent to 'jau'(有) (Illustration 3-3):

(21) [*THERE-BE ONE MALE-KID*] HAVE-MONEY
'There was a boy having money.'

(22) [*THERE-BE FOUR LITTLE FRIEND*] PLAY
'There were four little friends playing together.'

Borrowed from Cantonese, the sign 'THERE-BE – ONE' in example (21) originally consists of two separate signs corresponding to the Cantonese existential maker '有' (there-be) and '一' (one) respectively. The transition from the first to the second sign is conventionally reduced and the two signs blend together as if they form a single sign. Note that in a specific-indefinite context, 'THERE-BE' is always followed by a numeral.

As the foregoing discussion has shown, bare nouns are the most frequent means

[7] In some other circumstances, the sign PERSON-IN-CHARGE functions as a predicate and should be glossed as BE-RESPONSIBLE. We consider it the head of the noun phrase and MALE a prenominal modifier here because we find another signer signing '*1 PERSON-IN-CHARGE*' when referring to the same person in the same story. Hence, we deem it appropriate to claim that the sign *PERSON-IN-CHARGE* is a noun head.

to introduce indefinite referents. We do find combinations of the numeral 'ONE' and a noun head, but their occurrence frequency is fairly low. Only three out of the seven instances of the NP type (i) (i.e. Num+N / N+Num) consist of the sign 'ONE'. This contrasts with the 18 instances of bare nouns and the 4 instances of noun-head-plus-modifier combinations in the NP type (ii). Despite the low occurrence frequency, we still find it justifiable to claim that 'ONE' is a means in HKSL to express specific indefiniteness in subject positions. First of all, it is grammatical to add the sign 'ONE' to the singular, indefinite bare nouns. Second, 'ONE' as an indefinite determiner never appears in a definite context. According to our deaf informants, 'ONE' + noun / noun + 'ONE' in a subject position is normally interpreted as specific-indefinite. Hence, we would like to follow MacLaughlin's analysis of ASL in treating 'ONE' as a marker for indefiniteness.

Our observation of 'ONE' of HKSL differs from MacLaughlin's proposal of ASL in two respects, however. Firstly, the sign 'ONE' in HKSL is made with an upward pointing index hand with the palm orientation facing either the contralateral side or outward. In ASL, however, 'ONE' requires an inward palm orientation. Secondly, our observation seems to suggest that 'ONE' in HKSL can receive a quantificational or referential reading in both prenominal and postnominal position, which is different from what MacLaughlin proposes for ASL. MacLaughlin proposes that in ASL a referential use of 'ONE' only appears prenominally, whereas the quantificational 'ONE' appears in both prenominal and postnominal positions and receives more stress. In HKSL, however, 'ONE' appears in both prenominal and postnominal positions and there is no noticeable difference in the production of the signs. Both prenominal and postnominal 'ONE' can be stressed by adding more force in producing the sign to highlight the quantificational reading. Most importantly, signers do not find prenominal and postnominal 'ONE' different and the position of

'ONE' in a noun phrase is subject to dialectal variations in HKSL. Although both prenominal and postnominal 'ONE' are acceptable to all signers, some signers consistently stick to using post-nominal 'ONE'. If one claims that only the prenominal 'ONE' functions as an indefinite determiner, then there would be no indefinite determiners at all in the internal grammars of signers who only use postnominal 'ONE'. Therefore, we would like to claim that in both prenominal and postnominal position 'ONE' is ambiguous between the referential and quantificational function.

Another indefinite determiner in HKSL is the sign 'THERE-BE'. Despite its origin in spoken Cantonese, this loan sign is now widely used by the majority of local signers to introduce new referents into the discourse and it is the second most frequent means for indefinite referents in the subject positions. As discussed before, 'THERE-BE' is always followed by a numeral and a noun head in a specific-indefinite context, and the word order inside the noun phrase corresponds exactly to an indefinite NP in Cantonese: 'THERE-BE + NUMERAL + MODIFIER + NOUN'. In short, specific indefiniteness in subject positions can be syntactically expressed in an overt manner by either the sign 'ONE' or the Cantonese loan sign 'THERE-BE' (to be referred to as 'THERE-BE + num' hereafter since numeral is necessary for a specific indefinite reading). A bare noun in the subject position may also signify a specific indefinite referent.

(3.3.2.2) Specific definites

Fifty-two overt subjects denoting specific definite referents are collected in the narrative data. The types of NPs are shown in the following table:

Table (3.4): Types of noun phrases for definite referents in subject positions in HKSL

		No. of occurrence	%	
(I) Without INDEX sign				
(i)	N	23	44.2	
(ii)	N + Num	3	5.8	
(iii)	Num	2	3.8	**Sub.total:28 (53.8%)**
(II) With INDEX sign				
(iv)	$INDEX_{(Det)}$ + N	14	27	
(v)	$INDEX_{(Det)}$ + Num	1	1.9	
(vi)	$INDEX_{(Pron)}$	3	5.8	
(vii)	$INDEX_{(Pron)}$ + CL	6	11.5	**Sub.total:24 (46.2%)**
Total no. of overt noun phrases for definite referents in subject positions		**52**	100	

Key: N: Noun Num: Numeral CL: classifier
$INDEX_{(Det)}$: Determiner $INDEX_{(Pron)}$: Pronoun

As the table indicates, a noun without an index sign or numeral is the most frequent means to represent a definite referent. Among the 23 instances of this category, 19 are bare nouns and 4 are nouns with a modifier. As bare nouns are also frequently used in an indefinite context (47%), a question arises as to how a signer distinguishes the (in)definiteness of the referents. What makes definite expressions different from indefinite ones, however, is the prevalent use of index signs, which occur 46.2 % of the time. In what follows, we would first give a general description of all the types of NPs for definite referents. After that, we would explore the possibility of using non-manual features to mark referential properties in the absence of syntactic cues.

(i) Noun

The first major category of definite expressions in subject positions is not accompanied by pointing signs. In this category, which amounts to 53.8% of all the definite data, a nominal expression contains a noun head with/without a modifier or numeral. Among these three types, bare noun is also the most frequent means (19 instances, roughly 36.5% of the data) to stand for definite referents:

(23) *DOG* PLAY CL: $_{C}$ANIMAL-JUMP$_{L}$

'*The dog* played and jumped to the left.'

A noun head can be preceded or followed by a modifier in a definite context. In most cases, however, a modifier appears in a definite NP only when the same modifier has already been introduced by the indefinite counterpart, as the following example shows:

(24) [THERE-BE-ONE *MALE KID*]….. [*MALE KID*] SEE^{L} CARE - ABOUT^{L}
Num Adj. N Adj. N

'There was *a male kid* (boy)…*The male kid* (boy) saw (the beggar on the left) and cared about him.'

Note that when the signer refers to the referent again, the same noun and modifier are used but the numeral 'ONE' and the Cantonese loan word 'THERE-BE' are omitted.

(ii) Noun + Numeral / Numeral + Noun

Numerals other than 'ONE', however, are not prohibited in the definite context:

(25) MOTHER *OFFSPRING-2* DISCUSS FINISH

'The mother and *the two kids* discussed and finished.'

(iii) Numeral

A definite reference can be made simply with a numeral.[8] In a narrative account of 'Ball game in a playground', the signer uses 'FOUR' to refer to the definite referents 'FOUR LITTLE FRIEND':

(26) 'There were *four little friends* in a playground. (They played ball game but the ball accidentally fell into a hole in the ground). They (*FOUR*) looked at the ball and could not take it back.'

RH: ONE *THERE-BE FOUR LITTLE* .....
BH: PLAYGROUND *FRIEND* .....
LH: .....

RH: *FOUR* (POINTING-GESTURE) TAKE IMPOSSIBLE
BH:
LH:

The next major category for definite expressions, however, involves the use of pointing signs as either a determiner (glossed as $\text{INDEX}_{(\text{Det})}$) or a pronoun (glossed as $\text{INDEX}_{(\text{Pron})}$). A determiner can co-occur with a noun or numeral. Two issues need to be addressed with respect to the syntactic behaviour of the determiners: (a) What is the syntactic distribution of these determiners? (b) Are they necessarily directed towards the spatial loci of the referents?

(iv) $\text{INDEX}_{(\text{Det})}$ + N

Fourteen instances of [$\text{INDEX}_{(\text{Det})}$ + N] are found and this combination is the second most frequent means to encode a definite referent. In our data, the majority

[8] It is suspected that when a numeral other than 'ONE' is used as a definite reference, the original noun head is deleted. The grammatical process of noun head deletion and the corresponding constraints are beyond the scope of this study. Hence, we would like to leave this question open to future research.

(13 out of 14 instances) of the determiners are prenominal:

(27) [*INDEX* $_{(Det)}^{CU}$ *CAR*] CL: VEHICLE-MOVE-FORWARD-AND-STOP-ABRUPTLY
'*The car* ahead moved forward and then stopped suddenly.'
(Illustration 3 - 4)

One determiner in our data occurs simultaneously with a noun head:

(28) '*The man* takes something down from the shelf.' (Illustration 3 -5)

RH: ⎛ *INDEX* $_{(Det)}^{CU}$ ⎞
BH: ⎜ ⎟ TAKE-SOMETHING-DOWN-FROM-SHELF
LH: ⎝ *MALE* ⎠

Although no determiners are found after a head noun, our informants suggest that postnominal determiners are also acceptable.

(v) INDEX$_{(Det)}$ + Num

One determiner in our data co-occurs with a numeral:

(29) 'There were a mother, a son and a daughter in a house...*The two (offsprings)* said goodbye to their mother.'

RH: THERE-BE MOTHER *LITTLE-BROTHER LITTLE-SISTER*
BH: HOUSE SECOND
LH: ONE

RH: ... [*INDEX*$_{(Det)}^{CF}$ *2*] SAY GOODBYE
BH: ...
LH: ...

With respect to the direction of the determiners, all of the determiners are directed at the loci of the referents. When a determiner is made, the signer's eye gaze

and head usually turn towards the direction of pointing (13 out of 14 instances). A determiner without corresponding eye gaze and head turn would be regarded as less natural, though still acceptable.

(vi) INDEX$_{(Pron)}$

An index sign may also function as a pronominal besides being a determiner. Pointing signs appearing on their own without noun heads and other modifiers are regarded as pronouns. Like determiners, they are spatially modified in agreement with the referents' loci.

(30) '*He* opened the handbag and put something into the bag.'
RH:
BH: OPEN-BAG
LH: *INDEX$_{(Pron)}$* ^{CF} PUT-SOMETHING-INTO-BAG

The locus in space, as pointed out by Edge & Herrmann (1977), can be analyzed as a pro-form. Hence, a pronominal like the one in example (30) can be seen as a combination of an index handshape and a pro-form in the signing space.

(v) INDEX$_{(Pron)}$ + CL

Besides a referential locus, a pronominal index sign can also point at a classifier which is also a pro-form as a definite reference.[9] In the fourteen narratives, six index signs are used in the presence of classifiers. These index signs occur simultaneously with the classifiers:

[9] The index sign co-occurring with a classifier cannot be analyzed as a determiner. Cross-linguistically, a determiner only appears with a noun head but never a pronoun. Given the established fact that classifier is a pro-form of a referent, the index sign in the combination [INDEX+CL] is better analyzed as a pronominal.

(31) '...the car (right hand) and the vehicle (left hand) moved on the road. *He* (the driver) pressed the horn. *He* (the cyclist) was frightened and then lost control of his bicycle. '

(Illustration 3 - 6)

RH: ...CL: $_{RN}$ VEHICLE-MOVE-FORWARD $_{R}$ $CL{:}VEHICLE_{R}$ PRESS-HORN
BH:
LH: ...CL: $_{L}$ BICYCLE-MOVE-FORWARD $_{LF}$ $INDEX_{(Pron)}{}^{RH}$ $CL{:}\ BICYCLE_{LF}$---

RH: CL:VEHICLE $_{R}$ $INDEX_{(Det)}{}^{LH}$
BH: FRIGHTENED LOSE-CONTROL-OF-BICYCLE
LH: ----------

In the above example, two classifiers (i.e. 'CL: $_{RN}$ VEHICLE-MOVE-FORWARD$_{R}$' and 'CL: $_{L}$ BICYCLE-MOVE-FORWARD $_{LF}$' for the car and bike respectively) are placed in the signing space after the two referents have been introduced previously. To refer to the referents again, the signer retains a classifier in one hand and points to it by another. As shown in the example, the signer points (left hand) at the vehicle-classifier (right hand) before signing the predicate for the driver (PRESS-HORN). Similarly, he points (right hand) at the bicycle-classifier (left hand) before he describes how the cyclist lost control and fell down. As a pro-form, a classifier bears a clear referential function, indicating which referent is being referred to. Another example of an index sign and a classifier is shown is example (32) (Illustration 3 -7):

(32) '*He* (the beggar), who was blind, heard some noise and turned his eyes away.'
RH: $INDEX_{(Prpm)}{}^{LH}$
BH:
LH: $CL{:}PERSON_{L}$ blind hear turn-eyes-away

Note that a prior occurrence of the classifier is a pre-requisite of using it as a definite

reference. This means that the same classifier must have been placed at the same location in the previous context before a [$INDEX_{(Pron)}$ + CL] can be used. In example (31), the signer has established the two classifiers in space by the classifier predicates 'CL: $_{RN}$ VEHICLE-MOVE-FORWARD$_R$ 'and 'CL: $_L$ BICYCLE-MOVE-FORWARD$_{LF}$' before using index signs to refer to the two referents. Similarly, in example (32), the person classifier is previously placed in the signing space.

When a classifier appears in a predicate, it is combined with either a stative or dynamic verb root. Both the car and the bike classifier in example (31) are combined with the verb 'MOVE-FORWARD' whereas the verb root for the person classifier in (32) is stative (i.e. existence/location). When a classifier is used in a definite nominal expression, however, it must be held static even though the verb root previously associated with it is dynamic. For instance, in example (31), when the classifiers for the bike and the car are first introduced, they are combined with a dynamic verb root. When the signer wants to refer to the car which is in fact moving forward according to the story, the classifier is held static rather as being in motion. It seems that the original verb root is deprived and only the classifier handshape is retained.

Hitherto, the various types of noun phrases used for definite referents in HKSL narratives have been briefly discussed. These noun phrases can be broadly classified into two major categories: with or without pointing signs. Both categories are equally important because each of them represents more or less half of our data, with NPs without pointing signs slightly more frequent. With respect to the semantic property of determiners, we would like to argue that they signal definiteness. As the HKSL data indicates, all [$INDEX_{(Det)}$ + N] combinations are used in a definite context. As a determiner can be used whenever the referent is conceptually located in the signing space and its direction is usually modified for the referent's locus, it is ambiguous between a determiner and a demonstrative reading. As the data suggests, however,

determiners are optional. Pronominals are also used in a specific definite context.

Note that more than half of the specific definite NPs are not accompanied by pointing signs. These noun phrases (including bare nouns, noun + modifier, noun + numeral), however, are also allowed in an indefinite context. Recall that bare noun is the most common type of indefinite NPs in the narrative data. Noun heads with modifiers or plural numerals can also denote indefinite referents. Hence, there may be no syntactic difference between an indefinite and a definite NP. If there are no manual cues to make the distinction, how can the addressee interpret the referents correctly?

To solve this question, we attempt to explore the possibility of using non-manual features in distinguishing definiteness and indefiniteness. Ahlgren and Bergman (1994) suggest that an indefinite NP is introduced into the discourse with an eye contact with the addressee in Swedish Sign Language. Although they also say that a definite expression is also accompanied by eye contact with the addressee, we still find eye contact worth investigating. On the other hand, MacLaughlin (1997) suggests that eye gaze and head tilt can be directed towards the referential loci to mark definiteness in the absence of determiners.

We would first look at the use of eye contact in our data. Table (3.5) shows the locations at which the signers' eyes gaze when the subject NPs are signed:

Table (3.5): Gaze direction in definite and indefinite NPs in subject positions

	Indefinite NPs	Definite NPs
Eye contact with addressee	**32 (84.2%)**	**7 (13.5%)**
No eye contact with addressee	**6 (15.8%)**	**45 (86.5%)**
(i) gaze at referential locus	5 (13.2%)	37 (71.1%)
(ii) gaze determined by role play	1 (2.6%)	8 (15.4%)
Total number of overt NPs:	**38 (100%)**	**52 (100%)**

As the table shows, 84.2% of the indefinite referents are accompanied by an eye contact with the addressee. The majority of definite referents (86.3%), however, are referred to without eye contact. This result is different from Ahlgren and Bergman's observation that both indefinite and definite NPs are accompanied by an eye contact with the addressee in Swedish Sign Language. It is highly likely that in HKSL eye contact functions as a non-manual cue to signal the indefiniteness of a referent. By doing this the signer draws the attention of the addressee to the newness of the indefinite referents. Note that although eye contact with the addressee is not an exclusive device for indefiniteness, there is a strong tendency for it to occur with indefinite referents.

MacLaughlin (1997) suggests that definiteness can be expressed through eye gaze and head tilt. When the determiner is absent, non-manual features (if present) would indicate the definiteness of the referents. It is true that over 70 % of the definite expressions in our data are made with signer's eyes gazing at the loci of the referents. Among the 28 instances of definite NPs without pointing signs in HKSL data, 20 involve eye-gaze at the loci, which amounts to 71.4% of the data without pointing signs. Although signers can also gaze at a locus when introducing a new referent, eye gaze at loci is undeniably far more frequent with definite referents than with indefinite ones. Hence, we would like to suggest that the gaze direction highlights the location of the referents and has a strong tendency to associate with definite referents. The asymmetry in the indefinite and definite data is explicable. Most of the indefinite referents have not yet been associated with any referential loci when being introduced by indefinite NPs and therefore do not have particular locations for signer's the eyes to gaze. Most of the definite referents, however, are given loci in the signing space. Hence, it is natural for more definite referents to be associated with directed eye gaze.

Other types of non-manual features do not seem to correlate with any of the semantic notions. No head tilts are observed. In fact, our deaf informants reflect that head tilts are seldom used in HKSL. Signers may shift their body in agreement with referential loci, but appropriate body shifts are comparatively rare in the data.[10] Body shift is found in one indefinite and five definite nominal expressions, thus being insufficient for a conclusive generalization in the current discussion. In short, there is a strong tendency for eye contact to co-occur with indefinite NPs and eye gaze at loci with definite NPs. Neither of them is obligatory and exclusive, but these two non-manual features may provide some hints for a proper interpretation of the noun phrases.

Let us now make a conclusive remark on the representation of specific indefinites and definites in the subject positions in HKSL. HKSL has two optional lexical markers which necessarily offer an indefinite reading of a referent. These two markers are 'ONE' and 'THERE-BE + num'. Whenever either one of them is used in subject position, the interpretation of the NP is normally specific indefinite. An indefinite referent can also be introduced into the discourse by a bare noun. There is a strong tendency for eye contact with the addressee to be associated with indefiniteness. Eye contact serves to draw the addressee's attention to the new referents being introduced to the discourse. Determiners realized as index signs are optional markers for definiteness and eye gaze at referential loci tends to associate with definite referents which have already been localized in space. Pronominals can also signal definite referents. Null subjects coreferential with an overt NP in the previous context may also signal a definite referent. Due to the optionality of eye

[10] In a study on nouns and verbs in Italian Sign Language, Gambino et al (1990) suggests that body shift ('body markers' in their terminology) can function as deictic markers with which they initially co-occur. Yet, they do not elaborate on the nature of these specifiers and what semantic notions are being specified.

contact, eye gaze and determiners, there are cases where neither manual nor non-manual signals differentiate (in)definiteness. In one account of 'A dog and two kids', for example, the referent 'dog' is first introduced by a bare noun 'DOG' and re-mentioned twice by the same bare noun. There is no observable difference between the indefinite use of 'DOG' and the two definite NPs both manually and non-manually. In all of the three instances, the signer maintains eye contact with the addressee. No head turn or body shift are observed:

(33) eye-contact with addressee

HOME LOC-AT MOTHER OFFSPRING-2 *DOG* FINISH

'There were a mother, 2 kids and *a dog* at home.'

(34) eye-contact gaze to left

DOG PLAY CL: $_{C}$ANIMAL-JUMP $_{L}$

'The dog played and jumped to the left.'

(35) eye-contact gaze to left

DOG CL: $_{C}$ANIMAL-JUMP-INTO-BASKET$_{L}$

'The dog jumped into the food basket.'

In such a case, we would like to suggest that the addressee needs to rely on his activated memory (i.e. whether the referent has been established by the signer previously in the common ground) to determine the proper semantic content of the noun phrases.

(3.3.3) NPs in object positions: specific indefinites and definites

In (3.3.2), we point out that overt subject NPs typically appear when there is a reference shift. In case of subject continuity, null arguments are used. In fact, signers have a certain degree of freedom to choose how to represent an indefinite or definite referent. For instance, signers can freely select a bare noun, a noun with 'ONE' or a

noun with 'THERE-BE-num' to introduce a novel entity into the discourse. Similarly, given that the referent has been localized, signers may select a bare noun, a pronoun or a noun with a determiner as a definite reference. Hence, by comparing the frequency of each type of noun phrases, we can know what syntactic markers are mostly adopted to differentiate (in)definiteness.

Interestingly, no determiners or indefinite markers such as 'ONE' are observed in the object data of the HKSL narratives. It is highly likely that (in)definiteness is expressed by some other means for object referents. In our data, objects appear in various syntactic forms, including handle classifiers, SASS (size and shape specifiers), semantic classifiers, null arguments with or without verb inflection as well as overt NPs. Contrary to the subject data, a selection among these object realization patterns is subject to the morphological configuration of the transitive verbs involved in the clause. For instance, if an inflecting verb is used, the object can only be marked by a null argument or an overt NP and it can never appear as a handle classifier. Owing to this reason, it is rather pointless for us to give separate discussions on specific indefinite objects and specific definite objects and compare the occurrence frequencies of each object type. Instead, we would like to base our discussion on the types of verbs in the data and explore how the (in)definiteness of the objects can be encoded in each circumstance.

In our HKSL narratives, transitive verbs take one of the following forms:

(i) a predicate incorporating a handle classifier (53 instances);

(ii) a predicate incorporating an SASS (8 instances);

(iii) a predicate incorporating a semantic classifier (4 instances);

(iv) a plain verb (37 instances);

(v) an inflecting verb (18 instances).

(i) A predicate incorporating a handle classifier

According to Schick (1990), a handle classifier replicates an actual hand handling the referent and a predicate involving a handle classifier is intrinsically a Verb-Object compound. Moreover, some handle classifiers do not need to have their object referents lexically specified by a separate NP (p.31). In other words, these classifiers do not need overt NPs as antecedents. The handle classifier predicate 'DRIVE-A-CAR' discussed in Chapter 2 (example 17) is one such example. What we observe is that when this type of handle classifiers are used, there seems to be no overt manual cues to distinguish (in)definiteness. In the following example showing two instances of 'HOLD-BAG', there is no noticeable difference between the one used for an indefinite referent and the one for a definite referent:

(36)'A man held a bag in his left hand and walked along.... He held the bag in hand and pointed towards (a radio).' (Illustration 3 - 8)

RH:	MALE 1 ...	CL: WALK----------	...(pointing gesture) -----
BH:			
LH:		*CL: HOLD-A-BAG* --	*...CL: HOLD-THE-BAG* -- --
	Subj.	Semantic-CL	(pointing gesture)
		Handle-CL-predicate	Handle-CL-predicate

In example (36), the object 'bag' is expressed as a handle classifier. As the noun 'BAG' is almost phonologically identical with the verb 'HOLD-BAG', there is no need to specify it separately by an overt NP. The first appearance of this object classifier is identical to its several subsequent appearances. Nor are there non-manual signals highlighting the fact that the referent 'bag' is definite or indefinite. In the above two instances, the signer looks forward because he assumes the role of the character (i.e. customer), who maintains an upright posture and looks forward in the narrative. In

fact, there is no referential locus for the signer to gaze at to signal definiteness because the object is assumed to be manipulated by the signer's hand when the verb is produced. Hence, the object does not occupy a location other than where his hands are placed in the space. Another example of handle classifier pairs occurring in both the indefinite and definite context is shown as follows (example 37 - Illustration 3-9):

(37) MALE *CL: RIDE-A-BIKE* .... MALE *CL: RIDE-THE-BIKE*
Subj. Handle-CL-predicate Subj. Handle-CL-predicate
'A man rode a bike....The man rode the bike.'

In this example, the object 'bicycle' is expressed as a handle classifier.[11] No specific markers can be found to signify that its first appearance is indefinite and its subsequent appearances definite. For these types of handle classifiers, we would like to argue that the object is ambiguous between an indefinite and definite interpretation and the addressee needs to rely on the context for a proper interpretation.

For those handle classifiers which require an overt NP to specify the referent, an overt NP is necessarily given prior to the handle classifier within the same clause if the object is indefinite. In our data, all of these NPs are bare nouns:

(38) 1 MALE *ROCK* *CL: THROW-A-LARGE-OBJECT*
Obj. Handle-CL-predicate
'One man threw a large piece of rock.'

In example (38), an overt NP 'ROCK' is given before the object is represented as a handle classifier inside the predicate (5̈-handshape,). In example (39), a handle classifier is used to show that the referent holds a map (B̂-handshape, ). Similarly,

[11] The handshape of 'BICYCLE' corresponds to the hands holding the handles of a bike. The movement of this handle classifier, however, imitates the cyclic motion of the bike's pedals. Seen in this light, the handshape may also be seen as representing the size and shape of the pedals. Hence, to some extent,

an overt NP 'MAP' is used before the classifier because the referent is indefinite:

(39) MOTHER *MAP* *CL: HOLD-A-MAP*
Obj. Handle-CL-predicate
'Mother held a map.'

When the object is definite, however, a handle classifier can be used directly without an overt NP within the same clause:

(40) MALE SAY WANT BUY *INDEX* ^{CFU}... SHOPKEEPER *CL: TAKE-DOWN-A-MEDIUM-SIZED-OBJECT* (Handle-CL-predicate)

'The man (customer) said he wanted to buy *that* (a radio on the shelf, indicated by a pointing gesture). Then the shopkeeper took *that radio* down.'

In example (40), the indefinite referent 'radio' is first introduced by a pointing gesture. As the referent is now definite, the signer uses a handle classifier (CL:TAKE-DOWN-A-MEDIUM-SIZED-OBJECT, handshape: ) without reintroducing the object referent in the second clause.

For these types of handle classifiers, i.e. those requiring their object referents lexically specified by an overt NP, we would like to argue that an overt NP is needed to mark the indefinite referent before the handle classifier is used. This overt NP signals the indefiniteness of the referent, and the handle classifier is correferential with this overt NP. If the handle classifier is used in the absence of an overt object NP, the object is interpreted as definite. No consistent non-manual features such as eye contact, eye gaze at particular loci or body turns are observed for the handle classifier data.

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this classifier is ambiguous between a handle classifier and a size and shape classifier.

(ii) A predicate incorporating an SASS

Similar to handle classifiers, certain SASSes do not require overt NPs to identify the meaning of the object classifiers (Schick 1990, p.27). 'OPEN-DOOR' discussed in Chapter 2 (example 16) is one such example. In line with the analysis concerning handle classifiers, we would like to suggest that the object classifiers for these SASSes are ambiguous with respect to (in)definiteness. A pair of such SASS showing indefinite and definite referents is shown as follows (example 41 - Illustration 3 -10):

(41) ...ARRANGE FOOD, *CL: COVER-A-BASKET*..... *CL: OPEN-THE-BASKET*
SASS-predicate SASS-predicate
'(the children) arranged the food and covered a basket ... (they) opened the basket'

In example (41), the indefinite object 'basket' is denoted through the SASS classifier predicate 'CL: COVER-A-BASKET' in which the size and shape of the basket covers are represented by the two palms (B-handshape,). The same SASS is used in the classifier predicate 'CL: OPEN-THE-BASKET'. This time the referent is definite, yet there are no noticeable manual or non-manual features to signal the definiteness. The handshape of the classifier in the definite expression is identical to the one in the indefinite context, and the signer looks at his hand (i.e. looks at the 'basket' denoted through the SASS) whenever this classifier is used regardless of the associated referential property.

For those SASSes requiring overt NPs to identify the referents, an overt NP is needed before the SASS is used in the same clause if the object is indefinite. A definite reference to the same object does not need an overt NP:

(42)... *BREAD* *CL: CUT-A-LOAF-OF-BREAD*, BUTTER *CL:SPREAD-BUTTER-ON-BREAD*
Obj. SASS-predicate Obj. SASS-predicate
'(Two kids) used a knife to cut *a loaf of bread.* They spread some butter on *the*

bread.'

In example (42), the 'bread' is marked by an overt noun 'BREAD' because it is indefinite. It is then represented as an SASS (ɞ-handshape, ) in the first predicate. The presence of 'BREAD' signifies the indefiniteness of the referent. When the referent 'bread' is referred to again by another SASS (ɞ-handshape , ) in the second clause, the overt NP 'BREAD' is not restated. Hence, it is likely that the absence of an overt NP and the classifier signal the definiteness of the referent.

(iii) A predicate incorporating a semantic classifier

Unlike certain handle classifiers and SASSes, semantic classifiers always require an overt specification of the referent. We would like to propose that in an indefinite context, an overt NP is necessary to signal the indefiniteness of the referent before it is represented by a semantic classifier in the predicate. As it happens that no indefinite semantic classifier is found in the narrative, we would like to use 'A boy washes a dog' from Chapter 2 as an illustration:

(43) MALE *DOG* *CL: WASH-ANIMAL*
Obj. Semantic-CL
'A boy washes a dog.'

When the referent is definite, the semantic classifier can be used directly without an overt NP within the same clause (example 44 - Illustration 3 - 11):

(44) 'A woman walked by (from location 'central-near' to 'right-forward')... The beggar thanked her'

RH: FEMALE ... $INDEX_{(Pron)}$ LH *CL:PERSON*$_{RF}$
BH: $_{CN}$WALK-BY$_{RF}$ ... *CL:THANK-WOMAN*
LH: ... $CL{:}PERSON_{L}$ *THANK* RH

Subj. Semantic-CL-predicate

In the first clause, the indefinite referent 'FEMALE' is introduced and is followed by a spatial verb (i.e. $_{CN}$WALK-BY$_{RF}$) which ends at the location 'right-forward'. In the second clause, the subject 'beggar' is identified by a pronominal pointing and a semantic classifier. The predicate 'THANK' comprises a semantic classifier for the object 'female' at the referential locus 'RF'. As this referent is definite, it is not necessary for the referent to be restated before the semantic classifier is used in the same clause.

(iv) a plain verb

Eleven instances of plain verbs with indefinite objects are observed. These verbs include 'BUY', 'HEAR', 'NEED', 'ARRANGE', 'PLAY', 'KNOW' and 'MAKE'. All of them take an overt NP to denote the indefinite objects:

(45) THERE-BE FOUR LITTLE KIDS *PLAY* *BALL.* (Illustration 3 - 12)
plain verb overt N
'There were four kids *playing a ball.*'

(46) (2 kids and their mother)... *ARRANGE* *FOOD*
plain verb overt N
'(The 2 kids and their mother) ... *arranged some food.*'

The eleven overt indefinite NPs appearing after plain verbs are bare nouns without numerals. A null argument is never found after a plain verb if the object referent is indefinite. However, null arguments are used after plain verbs in a definite context:

(47) ...WANT *BUY* *AIRPLANE*, CL:PERSON-GO-INTO-SHOP, WANT *BUY* ∅.
plain verb overt N plain verb
'(The boy) ... wanted to *buy an airplane*. (He) went into the shop. (He) wanted to *buy (it)*'

(48) (the kids) *MAKE* *BREAD*, ... PREPARE EAT ∅.
plain verb overt N plain verb
'(The kids) *made some bread.* .... (they) prepared to *eat (the bread)*'

In example (47), a bare noun 'AIRPLANE' is used to introduce the indefinite referent 'toy airplane' after the plain verb 'BUY' in the first clause. In the third clause, the same plain verb 'BUY' appears again, this time being followed by a null argument which stands for the definite referent 'toy airplane'. Similarly, a bare noun 'BREAD' is used in example (48) to introduce the indefinite referent 'some bread' after the plain verb 'MAKE'. When 'bread' is referred to again after 'EAT', which is also a plain verb, a null argument is used. Among the 23 definite objects found after plain verbs, 18 (roughly 78%) are represented by null arguments. The remaining five definite referents are represented by overt NPs. These overt NPs are nouns without pointing signs. Although an overt NP can also be used to mark a definite referent after a plain verb, there is a stronger tendency for a null argument to appear.

In short, when a plain verb is used, an overt NP is needed to mark an indefinite object. A definite object tends to be marked by a null argument, though an overt NP is also acceptable. If the object has been assigned a referential locus in space, signers would direct their eye gaze at or turn their body towards that locus. No other manual or non-manual cues are found to correlate with the (in)definiteness of the object referents.

(v) Inflecting verbs:

In our narrative data, 18 inflecting verbs are observed and all of them take definite objects. The lack of indefinite referents following inflecting verbs is understandable. Inflecting verbs modify their orientation or movement direction in agreement with the spatial loci of the referents, which are definite in the majority of

cases. In most cases, an inflecting verb is followed by a null argument if the object referent is definite (13 instances) (Illustration 3 - 13):

(49) (The boy)... *SEE*^{L} ∅ *CARE-ABOUT*^{L} ∅ ... *GIVE*^{L} ∅

inflecting verb inflecting verb inflecting verb

'(The boy) *saw* (the beggar), *cared about* (the beggar) and then *gave* (the money) to (the beggar).'

In some cases (5 instances), an overt NP (i.e. *BLIND MAN*) may still be used to indicate a definite object:

(50) INDEX$_{(Det)}$^{CF} KID *SEE*^{CF} ∅ *CARE-ABOUT*^{CF} ∅ GO^{CF} *GIVE*^{CF} *BLIND MAN*

inflecting V inflecting V inflecting V overt NP

'The kid saw (the beggar) and cared about him. He than gave (his money) to the blind man.'

In example (49), the referent 'beggar' has previously been assigned a locus left to the signer. 'SEE', 'CARE-ABOUT' and 'GIVE' are verbs inflected for the locus of the referent 'beggar'. In example (50), the definite object is restated overtly after 'GIVE^{CF}'. We would like to propose that when an inflecting verb is used with a null argument, the object referent is interpreted as definite. Although no indefinite object is observed in the narrative data, our informant suggests that it is possible for an inflecting verb to take an indefinite object. In this case, an overt NP must be present following the verb. The location/direction indicated by the verb becomes the referential locus of the referent:

(51) TEACHER BOOK CL: $_{C}$GIVE-A-THICK-BOOK-TO^{L} *STUDENT*

'The teacher gives a book to a student.'

An inflecting verb is always accompanied with an eye gaze towards the referential

locus of the object. A signer may also turn his body towards that locus.

Let us now summarize our observation on the representation of (in)definiteness of objects in the following table:

Table (3.6): Representation of (in)definiteness of objects in objects in HKSL narratives

Verb types and the corresponding semantic interpretation of objects		No. of occurrence	
		Specific indefinites	Specific definites
(i)	**Handle classifier**:		
	(a) those do not require referent lexically specified: → ambiguous with respect to (in)definiteness	12	22
	(b) those require referent lexically specified:		
	-an overt NP within the same clause signals indefiniteness	4	0
	-without an overt NP within the same clause → definite	0	15
(ii)	**SASS (size and shape specifier)**		
	(a) those do not require referent lexically specified: → ambiguous with respect to (in)definiteness	1	4
	(b) those require referent lexically specified:		
	- an overt NP within the same clause signals indefiniteness	2	0
	-without an overt NP within the same clause → definite	0	1
(iii)	**Semantic classifiers**		
	- an overt NP within the same clause signals indefiniteness	0	0
	-without an overt NP within the same clause → definite	0	4
(iv)	**Plain verbs**		
	- followed by an overt NP → in most cases indefinite	11	5
	- followed by a null argument → definite	0	18
(v)	**Inflecting verbs**		
	- followed by an overt NP → in most cases indefinite	0	5
	- followed by a null argument → definite	0	13

The general pattern we observe is that whatever verb type is involved an overt NP is

needed if the object is indefinite. This generalization does not hold only with some handle classifiers and SASSes which never require a lexical specification of their referents. On the other hand, overt NPs are unnecessary if the objects are definite. This generalization for definiteness is complied with by our data of handle classifiers, SASS and semantic classifiers. Some exceptions, however, are found for plain verbs and inflecting verbs. Five definite objects in the plain verb as well as five in the inflecting verb data are denoted by overt NPs. It is suspected that these exceptions are due to the fact that it is slightly more difficult to identify the antecedents of null arguments with plain verbs and inflecting verbs when compared with classifier predicates. When a plain verb is followed by a null object, addressee may rely on his own memory, non-manual features such as body shift or eye-gaze or other contextual cues to trace the identity of the definite referent. The movement direction or handshape orientation of an inflecting verb does provide cues about the referent, yet this piece of information is useful only if the addressee is able to remember referents and their associated loci clearly. Probably owing to this reason, signers may sometimes find it necessary to re-state a definite object by an overt NP to ensure a clear conveyance of meaning when using a plain verb or an inflecting verb. Classifiers, however, are more transparent in reflecting the specific features of the definite referents such as their semantic class, size and shape. The identification of the referents is relatively easier. Hence, no exceptions are found for classifier verbs in our data.

With regard to the use of non-manual features, we observe that if the object referents have been assigned loci in the signing space, signers may shift their bodies towards the loci or gaze at them when using an inflecting verb or plain verb. However, normally only animate referents (only 25 objects are animate referents in our data) are assigned referential loci. With inanimate object referents, which are the

majority of objects in our data, non-manual features such as body turn or eye gaze would not be used.

In our narrative data, no definite determiners 'INDEX$_{(Det)}$', pronouns, the indefinite markers 'ONE' and 'THERE-BE-num' are observed in the object positions. Does it mean that they can only signal the (in)definiteness of subjects but not objects? According to our informants, it is possible to have the 'INDEX$_{(Det)}$', pronouns and 'ONE' in the object positions:

(52) FATHER REMEMBER INDEX$_{(Det)}^{R}$ MAN (definite object)
'Father remembers that man.'

(53) FATHER REMEMBER INDEX$_{(Pron)}^{R}$ (definite object)
'Father remembers him.'

(54) FATHER SEE ONE MAN / MAN ONE (indefinite object)
'Father sees a man.'

'THERE-BE-num', however, is generally not used in postverbal positions.[12]

(3.4) Non-specific indefinites and generics

Unlike definiteness and indefiniteness, HKSL has fairly consistent methods to mark non-specific indefinite and generic referents. A non-specific indefinite referent can be introduced into a discourse by using a 'ONE' sign modulated by a wavering path movement (glossed as ONE $_{(PATHLENGTH)}$), as example (55) shows:

(55) FATHER BOOK GIVE ONE $_{(PATHLENGTH)}$ MAN (Illustration 3 - 14)
'Father gives the book to some man'.

[12] In signed Chinese, 'THERE-BE-num' can used after a verb. Yet our informants suggest that this usage is just Chinese rather than real sign language.

When this sign is produced, the signer's eye may or may not follow the movement path of the hand. The signer would maintain eye contact with the address if he chooses not to look at the hand movement. Note that this sign is obligatorily accompanied by an lowering of eye brows and protruded, rounded lips. The sign 'ONE$_{(PATHLENGTH)}$' yields only a non-specific indefinite reading, thus contrasting the 'SOMETHING/ONE' sign in ASL which can be either specific or non-specific. Note that it is highly unlikely for 'ONE $_{(PATHLENGTH)}$' to occur in preverbal position in HKSL. In addition, this sign is typically used when the signer is highly unsure about the identification of the referent as well as the certainty of the event. We once set up a hypothetical situation in which the signer sees someone stealing a dog at night from a distance. The signer is certain that a stealing event has taken place. He also sees the back of the thief but he does not know who the thief is. In that situation, the signer rejects using 'ONE $_{(PATHLENGTH)}$'. Instead, the sign 'THERE-BE MAN' would be used, which is a loan sign from Cantonese non-specific expression 'jau – jan 有人':

(56) THERE-BE MAN STEAL DOG
'Some man stole a/the dog.'

This loan sign is extremely common in HKSL and may be both specific or non-specific. When compared to specific indefinite marker 'THERE-BE-num', however, 'THERE-BE-MAN' is comparatively less specific. It can only be used preverbally.

In the postverbal position, a bare noun may also signify a non-specific indefinite referent:

(57) FATHER BOOK GIVE *MAN*
'Father gave the book to *some man.*'
(58) FATHER WANT BUY *CAR*
'Father wants to buy *some car.*'

Non-specific indefinite referents, due to the low identifiability, can never be assigned a locus. The impossibility of identification is reflected by the fact that the sign 'ONE $_{(PATHLENGTH)}$' moves across an area. This provides a neat contrast with a specific referent which can be associated with a particular point in space. The same contrast has been pointed out by MacLaughlin in ASL. While specificity can be represented by a point, a non-specific referent which cannot be identified is associated with a larger spatial domain. Note further that it is possible for signers to exaggerate the degree of uncertainty of the non-specific referents by increasing the amount of arm movement so that the area covered by the sign increases. This is very similar to what MacLaughlin suggests for the ASL sign 'SOMETHING/ONE'.

Generic noun phrases in HKSL are denoted by bare nouns without determiners in both preverbal and postverbal position. Eye contact with the addressee is necessary:

(59) *HONG KONG STUDENT* LAZY.
'*Hong Kong students* are lazy'
(60) *GIRAFFE* TALL
'*Giraffes* are tall'
(61) MOTHER LIKE *FLOWER*
'Mother likes *flowers*.'

In general, generics are not reducible to individuals and would normally not be assigned referential loci. However, generics may be assigned referential loci if they are in a comparative context. For instance, if the signer would like to compare deaf people and hearing people, he can assign loci to the two generics.

(3.5) Chapter Summary

Let us summarize the realization of the various semantic notions in HKSL.

Table (3.7) A summary of various referential properties in HKSL

	Subject position	Object position
Specific indefinites	Manual signs: (a) bare noun (or + modifiers) (b) 'ONE' (c) 'THERE-BE-num' Non-manual cues: (a) eye-contact with addressee	Manual signs: (a) handle classifier + overt NP in the same clause (b) SASS + overt NP in the same clause (c) Semantic classifier + overt NP in the same clause (d) Plain verb + overt NP (e) Inflecting verb + overt NP (f) Certain handle classifiers and SASSes which do not require an overt NP as an antecedent (g) 'ONE'
Specific definites	Manual signs: (a) bare noun (or + modifier) (b) numeral (c) 'INDEX $_{(Det)}$' (d) 'INDEX $_{(Pron)}$' Non-manual cues: (a) eye gaze at referential loci	Manual signs: (a) handle classifier without overt NP (b) SASS without overt NP (c) Semantic classifiers without overt NP (d) Plain verb + null arguments (e) Plain verb + overt NP (f) Inflecting verb + null argument (g) Inflecting verb + overt NP (h) Certain handle classifiers and SASS which do not require an overt NP as an antecedent (i) 'INDEX $_{(Det)}$' (j) 'INDEX $_{(Pron)}$'
Non-specific indefinites	Manual signs: (a) 'THERE-BE' (+ a noun)	Manual signs: (a) bare noun (b) 'ONE $_{(PATHLENGTH)}$'
Generics	Manual signs: (a) bare noun	Manual signs: (a) bare noun

As indicated by Table (3.7), in a subject position indefiniteness can be optionally

expressed through 'ONE' and 'THERE-BE + num' and definiteness can be indicated optionally by an index sign, which is ambiguous between a determiner and a demonstrative reading. There is also a strong tendency for eye contact with addressee and eye gaze at loci to associate with indefinite and definite referents respectively, so they may provide cues for a proper interpretation of the subject noun phrases. In object positions, an indefinite referent requires an overt NP no matter what predicates are involved. Only certain handle classifiers and SASSes are exceptions to this rule. Non-specific indefinite referents are marked by 'THERE-BE' in subject positions and bare noun or '$\text{ONE}_{(\text{pathlength})}$' in object positions. Generics are expressed through the use of bare nouns.

Regarding the role of space in the representation of referential properties, we observe that specificity associates with a point in space whereas non-specificity associates with an area in space. A specific referent can be associated with a spatial locus. Once this spatial relation is established, a definite referent can be marked by an index sign whose direction is modified for its locus. The loci in space also regulate the signer's eye gaze and body turning. Non-specific referents, on the other hand, cannot be assigned a locus in space. The non-specific marker '$\text{ONE}_{(\text{pathlength})}$' wavers across the space and the degree of uncertainty of the referent is reflected in the size of the area associated with the sign's movement path. Generic NPs are also not assigned loci in the space as they do not denote specific individuals. Our observation of HKSL is therefore similar to what MacLaughlin (1997) proposes for the relation among space, specificity and definiteness in ASL so far as this aspect is concerned.

Chapter 4: Space and Referential Loci

(4.0) Introduction

In chapter 2, we only briefly mention that referents can be associated with points in the signing space without going into details. Chapter 3 further points out that spatial loci are closely related to specificity and definiteness. In this chapter, we would focus on how referents are spatially localized in a narrative discourse. Through discussing the locus assigning devices, we would like to address two important issues: (a) whether signers equate referents with loci or whether signers conceptualize tokens and surrogates to stand for referents; (b) whether the loci change over a discourse and under what conditions they would change. We would argue that in HKSL signers set up conceptualized entities as either tokens or surrogates in the signing space rather than equating a locus with a referent. In addition, we would argue that the existing theories concerning locus shift or shifted reference are insufficient in accounting for all types of locus change we observe in HKSL. We would propose three more conditions under which a locus for the same referent may change over a discourse.

Before discussing the data of HKSL, a review of the relevant literature will be given first. As the literature concerning the use of space is abundant, the following review will be divided into three parts. Section (4.1.1) will be devoted to a discussion on the general mechanism of establishing a frame of reference through spatial loci. Section (4.1.2) concerns the debate on the nature of space and loci. Section (4.1.3) focuses on how a locus or a frame of reference may shift in a discourse.

(4.1) Literature Review:

(4.1.1) Frame of reference in sign Languages

It did not take long for early sign language researchers to discover that the three-dimensional space is utilized in sign languages to represent linguistic information which must otherwise be encoded by overt or covert lexical items sequentially in spoken languages. In particular, much attention has been drawn to the use of locations in the signing space to stand for referents which do not exist in the immediate signing situation. These locations, termed as 'loci' in the literature, play an important role in referentiality.

In sign languages, if an entity is physically present within a reasonably short distance from the signer, the signer can point to them directly for reference instead of signing a full NP. This pointing gesture is considered a pronominal sign. A first person pronominal reference is made by an index finger directed at the signer's own chest. The second person pronominal reference is done by pointing at the addressee's chest and the third person pronominals are directed at the appropriate persons. The referents' presence and their locations relative to the signer create a *deictic frame of reference.* The frame may change if either the signer or the referents involved change their locations (Engberg-Pedersen 1993).

If a referent is not present in the signing situation, it can be assigned a location on the horizontal signing plane in front of the signer's torso for referential purpose. Signers can refer to the referent by making reference to the locus through pronominal pointing or verb agreement. In the following ASL example (quoted from Klima & Bellugi 1990, p.52), 'the dog' and 'the cat' the signer intends to refer to are not physically present. After signing 'DOG', the signer points at locus 'a', which becomes the referential locus for 'the dog'. The locus 'b' for 'the cat ' is set up in the same way:

(1) DOG INDEX$_a$ CAT INDEX$_b$ $_a$BITE$_b$
'A dog is at 'a'; a cat is at 'b'; the dog bites the cat.'

The two pointing signs (INDEX$_a$ & INDEX$_b$) are locus assignors, which are functionally different from pronominal pointing. They are a short downward movement of the index finger directed toward a location within the signing space, followed by a hold at that location. Some ASL researchers (e.g. Liddell 1995) would gloss the same sign as 'LOC-AT$_a$'. This frame of reference with non-present referents is claimed to be *anaphoric* by some researchers, and the locus at which the imagined referent is projected is known as *anaphoric locus.*

Given that the loci are well set, a verb can move between loci to express grammatical relations. This has been briefly discussed in chapter 2. In example (1), the movement of the verb 'BITE' begins at the locus of the dog and terminates at the cat's, suggesting that the former is the subject and the latter the object. Modification of verb agreement co-exists with referential loci, no matter whether the referents are physically present or imagined to be occupying particular locations.

Not all verbs have the potential to code spatial information as the verb 'BITE' in example (1) does. With regard to this, Padden (1988) proposes that ASL verbs can be classified into three types: plain verbs, inflecting verbs and spatial verbs. Inflecting verbs are those verbs whose orientation or movement direction can indicate grammatical relations bore by spatially marked referents. The ASL verb 'BITE', for instance, is inflected for both the subject and object. Spatial verbs are morphologically similar to inflecting verbs, but their initial and ending point of the movement path indicate locative rather than referential information. Verbs such as 'WALK-TO' or 'MOVE-TO' are examples of this type. Plain verbs mark neither referential nor locative information. They are always produced in their citation forms.

Despite some disagreements (e.g. Johnston 1991), Padden's verb classification has been widely adopted in sign language research. According to her analysis, only inflecting verbs and spatial verbs would be affected by the use of spatial loci. It should be pointed out, however, that some plain verbs in Padden's sense could still code referential information. This can be done by articulating the plain verb at the point of the referential locus (Gambino et. al. 1990). In the following Italian Sign Language example, the referent 'CHILD' is situated at point 'a' right to the signer. The verb 'GROW' is morphologically plain, but the signer stretches out his arm a little bit and signs the verb at point 'a':

(2) $_{a}$CHILD $_{a}$GROW
'The child grows up.'

If the verb codes referential or locative information, omission of explicit reference would be possible because the verb inflection provides sufficient cues for the addressee to identify the referents.

Apart from the spatial modification of certain verbs, referential loci also enable signers to use pronominals :

(3) PRONOUN$_{a}$ LIKE PRONOUN$_{b}$
'It (the dog) likes (the cat)'

As opposed to deicitic pointings, the pronominal signs in example (3) are known as *anaphoric pointing*. Locus assignment would eventually make coreferentiality in discourse precise and easy, because coreferential nominals will be represented by the same locus.

Apart from a locus assignment index illustrated in example (1), a referent can also be localized by a number of methods. A signer can sign a nominal in neutral

space and then associate it with the onset position of an inflecting verb, given that the onset location has not been associated with another referent (Lillo-Martin 1986). For example, a signer can first introduce a referent by a nominal and then produce an inflecting verb 'GIVE' that begins at locus 'R' to 'L'. In this way the referent is associated with the locus 'R'. Alternatively, a signer can use a verb of location or a motion verb whose ending point is modified for that locus as Ahlgren & Bergman (1994) discuss in their Swedish Sign Language data. A signer may also direct his eye gaze at the locus while signing the nominal (Lillo-Martin 1991), or sign the nominal noun at that locus (Wilbur 1987). In the following example of Swedish Sign Language taken from Ahlgren & Bergman's work, the motion verb 'COME – from-behind-to-forward-right' indicates that the referent 'stewardess' is located to the right of the signer:

(4) PILOT TALK-IN-MIC SUMMON AIRHOSTESS 'COME – from-behind-to-forward-right'
'The pilot called for the stewardess, who came from the back to the right.'

It is suspected that cross-linguistic variation exists in terms of the possibility, preference and the frequency of these different locus assigning methods. Kegl (1987) points out that in ASL the pointing gesture as in example (1) is the most frequent means to associate a noun with a locus, and 'less frequently this association is established by means of eye gaze, body shift, or changes in facial expression or posture.' In Swedish Sign Language, however, characters in narratives are all assigned loci by a verb of motion or location (Ahlgren & Bergman 1994). No locus-assigning index is observed.

It has also been suggested that, theoretically speaking, the number of referential loci within the same frame of reference is unlimited.[1] Yet the loci must

[1] Not all sign language researchers agree with this. Johnston (1991), for instance, suggests that 'for

be made in the area perceivable by the peripheral vision, and they must be far enough apart in order to be distinctive. The localized referents can be animate entities, inanimate objects, places, events, or even abstract concepts (Wilbur 1987, Engberg-Pedersen 1993). It is not the case that all referents are assigned loci. Engberg-Pedersen (1993) gives a comprehensive list of factors which may affect the likelihood of locus assignment. According to her observation of Danish Sign Language, 'concrete, specific referents with high thematic value or high general relevance to the participants in the discourse' are more likely to be represented locally than 'abstract or concrete referents with low thematic value or low general relevance to the participants'. She further points out that loci are used typically where there is also a need to keep the referents apart.

With respect to the choice of loci, it has been suggested that loci are generally found on the right or left side to the signer (Bahan & Petitto 1980, quoted by Lillo-Martin 1991; Engberg-Pedersen 1993). Engberg-Pedersen (1993) proposes a list of semantic and pragmatic factors that may determine the choice of loci. She suggests that referents with semantic affinity to each other are likely to be represented by the same locus. On the other hand, a signer may point to a location where the referent is typically found as a reference (canonical location). For example, a signer may point to a person's seat in an office as a reference to that person even though the seat is empty. In the event of a comparison, two referents being contrasted will be placed at the two loci 'forward-sideward-left' and 'forward-sideward-right' respectively. The referential loci may match the actual spatial relationship among referents on an appropriate scale. Concerning the use of referential loci in narratives, Ahlgren and Bergman (1994) report that in Swedish Sign Language, the main character is usually

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Auslan (Austrailian Sign Language) at least, the syntactic use of space involves a limited number of points.'

not localized at any point away from the signer, and its viewpoint determines the setting of the whole narrative. Following the terminology of Engberg-Pedersen (1993), the main character in Swedish Sign Language narratives is given the 'sender locus': the locus at which the signer occupies. Other participating characters are assigned spatial loci relative to the main character by either a verb of motion or location (p.30).

This spatially-defined referential system is reported in almost all of the sign languages studied so far, including American Sign Language, British Sign Language, Danish Sign Language, Sign Language of the Netherlands, Australian Sign Language, Swedish Sign Language, Thai Sign Language, to name just a few. This system is also claimed to be unique in sign languages as no obvious equivalent can be found in spoken languages (Liddell 1995).

(4.1.2) Nature of space and loci

Section (4.1.1) presents the general phenomenon on the use of loci in the signing space to represent referents. In this section, we would like to review the controversies over the nature of space and loci. Generally speaking, there are two major opposing views on the nature of space and loci. Each view has different theoretical and empirical consequences on the referential status of the loci.

The first view holds that signers use two types of space (or two functions) to describe non-existing referents: Topographical Space and Syntactic Space (Klima & Bellugi 1979, Poizner, Klima & Bellugi 1987, Bellugi, Corina & Emmorey 1995, Sutton-Spence & Woll 1999). These researchers claim that the Syntactic Space serves to express coreferentiality by associating a referent with a locus. When space is used grammatically, as they claim, the loci do not necessarily correspond to the actual locations of the referents in the real world, and the spatial relation between the

loci bears no topographical significance. In addition, a locus grammatically assumes the identity of the referent. A referential equality is thus established: 'the referent is the location – and the location is the referent' (Sutton-Spence & Woll 1999 p.130). Pronominals as well as directional verbs are directed towards the exact loci, i.e. these signs are directed at a particular 'point' in the space. Furthermore, signers can use space to convey the real spatial locations of the imagined referents by locating them on the signing space in the way that exactly matches the real world situation. In this case the space is used *topographically*. These researchers claim that the two spaces may sometimes overlap, i.e. spatial loci may bear a referential function as well. It is not necessary, however, for a referentially-based locus to convey significant topographical information. These researchers base their arguments mainly on the sign production of deaf signers who have suffered from brain injury to either the left or right cerebral hemisphere. It is found that right-hemisphere-damaged deaf patients fail to describe referents spatially according the exact locations in the pictures, and yet retain the ability to use space for coreference and verb agreement.

Some sign linguists argue against this topographical-syntactic distinction of space. Johnston (1991) points out that 'the topographical and syntactic uses of space in Auslan (Australian Sign Language) do not appear to differ fundamentally from each other'. Using evidence from verb signs which can code both agreement and spatial information, he argues that 'when person and locative meanings are coded in the spatially-based morphology of a sign language they are fused' and that the underlying mechanism of the agreement system in Auslan is locative. Similar to Johnson, Liddell argues that typographic and syntactic space interact with each other in actual sign production and it is therefore unnecessary to make such distinction. Concerning the nature of loci, Liddell (1990) argues that the 'LOC-AT' index only suggests where the referent is, but not what point is referentially equivalent to the

referent. To Liddell, directional verbs do not move towards the loci. Instead, they only move in the direction of the loci at a height level different from which indexes are set. To account for this phenomenon, Liddell (1994, 1995) adopts Fauconnier's mental space model (1985) and proposes three different kinds of space, namely Real Space, Surrogate Space and Token Space. According to Fauconnier, mental spaces are conceptual structures being built up as the discourse proceeds. A mental space can be a person's conceptualization of their current physical environment, an event, an image, a hypothetical world, or many others (Liddell 1995). Liddell argues that the use of space in sign languages can be analyzed as mental space constructs. In his model, Real Space refers to the actual space and environment currently occupied by the signers at the time of utterance. Reference to the entities existing in the signing environment is made deictically. Signers may also talk about non-existing referents by imagining that the referents are present in the signing situation. These 'full-sized invisible entities' are known as 'surrogates'. The height and size of the surrogates would affect the direction of the pronominal signs as well as certain inflecting verbs. The ASL sign 'ASK', for instance, is a directional verb normally produced at the chin level between the signer and the referent. If the surrogate is an invisible child standing on the signer's left, the signer would direct the sign downward to the left. An upward movement of the sign would indicate that the surrogate referent is taller than the signer. As surrogates exist conceptually in the signing situation and there is no perceptual difference between the ways reference is made to surrogates and existing, real referents, Liddell argues that reference to surrogates should be considered deictic rather than anaphoric. The space in which surrogates are established is known as the Surrogate Space. The nature of the Token Space is very similar to the Surrogate Space except that the size of the imagined referents (i.e. tokens) is proportionally reduced so that they can be easily manipulated within the

physical signing space up from the waist to the chin ahead of the signer. Despite the reduced size, a token is still three-dimensional rather than just a point lying flat on the signing plane. Signers make reference to the referent by pointing to the tokens rather than the points at which tokens are situated. As tokens are three-dimensionally invisible entities placed by signers in the signing space, reference to the tokens is also deictic.

The two aforementioned theories discuss both the types of space and the nature of loci. In the theory proposing a typographical and syntactic space, a locus represents the referent. In contrast, in Liddell's model the locus is just where a token or surrogate is placed, and the type of space is determined by the type of conceptual entities used by the signers: tokens invoke a Token Space whereas surrogates invoke a Surrogate Space. As for the nature of locus alone, however, there is one more proposal which deserves our attention. Engberg-Pedersen (1993) argues that 'it is preferable to do away with the idea of locus as points on the body or in the signing space'. She defines locus as 'a category whose members as specific loci in paradigmatic contrast' and 'a locus can be thought of as a meaningful direction from the signer...or a meaningful point or area within the signing space' (p.54). She does not elaborate on what is exactly meant by 'paradigmatic contrast'. Our interpretation of her idea is that instead of being a physical point in the space, a locus belongs to an abstract category whose function is to show locative contrast in space. Furthermore, she claims that a locus can only be observed through its effect on spatially-related signs (i.e. she calls the spatial modification on a sign 'locative marker'), and a locus can be a point, a direction, or even an area (p.54).

In short, there are two types of space classification and three different accounts on the status of loci. In our discussion of HKSL narrative we would attempt to evaluate all of them except the typographical-syntactic distinction of space. One has

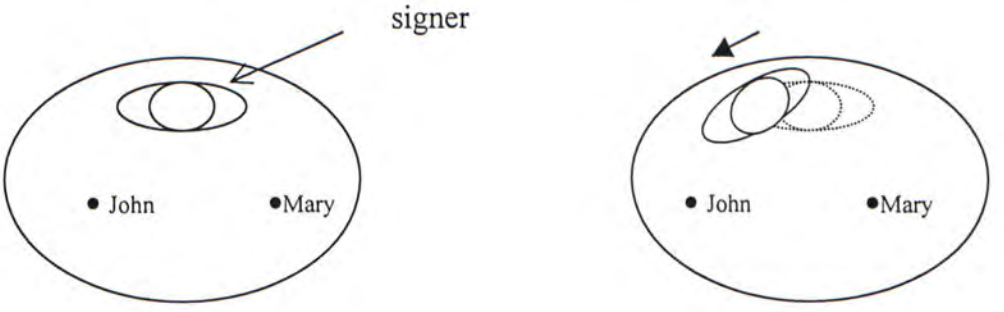
to note the topographical-syntactic distinction does not bear empirical significance in normal signing production. First of all, the main piece of evidence in support of this space distinction comes from signers suffering from brain injuries rather than normal signers. Without these pathological cases the distinct processing areas of these two functions would not have been unveiled to neuroscientists at all. Furthermore, advocates of these two separate uses of space claim that the two spaces can overlap: it is possible for a locus to bear both topographical and referential functions. Owing to these two reasons, we consider it impossible to evaluate the validity of this theory on the basis of normal sign production data. Or, as a matter of fact, it is unnecessary to verify the existence of two distinct spaces by using production of normal signers. After all, the theory does not entail any empirical difference between the two spaces for normal signers and it only suggests that a locus may only bear a referential function without a correspondence to real world situations. Hence we would not deal with the topographical and syntactic uses of space in our discussion of HKSL.

(4.1.3) Shift of loci/ frame of reference

This section focuses on how the frame of reference may shift or change in a discourse. The frame of reference, no matter deictic or anaphoric, extends over a discourse and is a dynamic system subject to constant changes. So far two types of change have been identified in the literature. They are role play/shifted reference and locus shift arising from spatial verbs (Padden 1988).

The first type of change is usually known as role-play or shifted reference. The basic idea is that it is possible for a locus of a third-person referent, such as 'John', to change to the locus normally interpreted as the first person reference. Suppose the locus for 'John' is on the right to the signer and the one for 'Mary' is on the left. If the signer wants to take up the role of 'John' and reports what 'John' has told 'Mary',

he would shift the upper trunk of his body slightly towards the locus of 'John', face the locus of 'Mary', and talk to 'Mary' directly as if he is 'John'.[2]



(For an illustration of body shift, readers may refer to Illustration 4-7)

When this shift takes place, the signer assumes the role of the third party (i.e. John) and a first-person pronominal 'me' would refer to 'John'. This phenomenon is coded as 'role-playing' or 'role-shifting' in the literature (Lillo-Martin & Klima 1990).[3] It is also known as *shifted reference*, as the pronominal reference system changes according to the shift in loci (Lillo-Martin 1995).[4] Shifted reference is often compared to quoting others' utterances in direct reported speech in spoken language. Note that 'role-play', 'role-shifting' or 'shifted reference' are just some of the several theoretical analyses of the same phenomenon that have been proposed by researchers. Other competing analyses include Kegl's proposal of treating head and body shift as a phonological realization of the grammatical morpheme called a Role-Prominence-Marker (Kegl 1985, quoted by Liddell 1998) and Lillo-Martin's (1995) attempt to regard body shift as a physical manifestation of a complement taking a point of view

[2] Engberg-Pedersen (1995) calls this body shifting phenomenon *canonical encounter* and suggests that the change in the direction of the eye gaze and body and head orientation indicate the signer's attempt to turn his body so as to face the referent as if the referent is present.

[3] Arrons, Bahan, Kegl & Neidle (1994) define 'role-shift' as a grammatical device 'which allows a non-first person referent to bind the occurrences of first person within the scope of what we have called Perspective Phrase.' Interested parties can refer to their work directly. Note that some researchers find the term 'role-playing' misleading as it may oversimplify the phenomenon as sort of play-acting and would obscure the grammatical properties associated with the system (Padden 1990).

predicate.

Role-play/shifted reference is usually accompanied by appropriate body posture (left, right, front or back), gaze direction, head orientation, indexing and/or the facial expression of the referent whose role is taken on by the signer. With respect to functions, it has also been claimed that role-play/shifted reference allows a signer to 'describe a scene from one participant's perspective' and 'quotes participants' feelings and thoughts'. The following ASL example illustrates how the signer expresses the internal thoughts of the referent by shifting the body's upper trunk towards its locus and using a first-person pronoun. (example from Padden 1986, quoted by Lillo-Martin 1995):

$<_a$ shift>
(5) $_a$ HUSBAND I WORK.
'The husband was like – "here I am, working."'

Some researchers suggest that signers make use of this shift system to identify themselves with the point of view of the referent to whom the sender locus is given (Poulin & Miller 1995, Lillo-Martin 1995). A signer can express his empathy with a referent by moving his body towards the locus of the referent.

Concerning the group of features associated with role-playing, Engberg-Pedersen proposes a finer classification of the phenomena. Unlike the analysis by Lillo-Martin, Engberg-Pedersen (1991, 1995) proposes a clear distinction among shifted reference, shifted attribution of expressive elements and shifted locus. She suggests that shifted reference is restricted to reported speech, where the participants other than the signer can be referred to by the first person pronoun. Shifted attribution of expressive elements refers to the signer's assuming the facial expression of a participant. This can occur in reported speech, or in reports of the

referents' thoughts, feelings or actions, and does not necessarily co-occur with shifted reference. Shifted locus refers to the signer's shifting his body towards a particular locus (e.g. a locus on his right) and facing an opposite locus (e.g. a locus on his left) to report his own or someone else's interaction with the referent at the opposite locus (i.e. the locus on his left). She names this phenomenon 'canonical encounter', meaning that the signer pretends as if he is indeed having a real interaction with the referent at the opposite locus. Signers may use shifted locus without shift reference.

It is worth noting that the locus of a particular referent does not really change from one location to another in role-play/shifted reference. In fact, the shifting effect is induced by the signer's leaning against a particular locus.

The second type of shift, however, involves a real change of locus. According to Padden (1988), when spatial verbs are involved, the same referent may be associated with several loci over a stretch of discourse. In the following ASL example given by Padden, the spatial verb 'PERSON-WALK' changes the locus of the referent from 'a' to 'b':

(6) $_{a}$INDEX $_{a}$PERSON-WALK-TO $_{b}$, STOP, THINK-ABOUT. $_{b}$INDEX DECIDE WAIT.
'She $_{i}$ walked from position 'a' to 'b', stopped and thought a bit, then she$_{i}$ decided to wait there.'

The second pronominal reference to the referent is directed at point 'b' instead of 'a' after the spatial verb has been used. Padden calls this change of locus involving spatial verbs 'locus shift'. Locus shift is induced by a change in the geographical location the referent in the narrative discourse. Note that in this ASL example, the referent is associated with one locus at each particular point of time, even though several loci are involved over the entire discourse.

Hitherto, we have briefly discussed the previous literature on the use of space for a referential purpose in sign languages. In what follows, we would like to present our observation on the use of space in the fourteen narratives of HKSL. The questions we would like to ask are shown as follows:

(1) Is space used in HKSL to represent referents in narratives, as in other sign languages?

(2) If space is used, by what means are referents localized? What would be the exact nature of loci as reflected by these examples? Is there evidence supporting the existence of tokens and surrogates?

(3) Are there examples of role shifting or shifted reference in the narratives? Do the loci change over a stretch of discourse? If so, under what conditions do they change?

(4.2) Observation of Hong Kong Sign Language:

We use the narrative data obtained from Experiment 2 to analyze the use of loci in HKSL. The details of this experiment can be found in section (3.3.1). As observed, the three signers participating in the experiment constantly utilize space for a referential purpose in HKSL narratives. In section (4.2.1), we would discuss how referents are localized in a narrative discourse and argue that HKSL signers set up conceptualized entities either as tokens or surrogates in the signing space rather than treating a locus as a referent. In section (4.2.2), we would propose three conditions under which a locus for a referent may change over a discourse.

(4.2.1) Localization of referents in narrative discourse:

This section deals with how referents are localized in space in HKSL. First, we would present the various means by which locative information of the referents is revealed to the addressee in narratives. We would like to argue against Engberg-Pedersen's claim that a locus can be a point, direction or an area in the signing space. We would propose that referents do occupy particular loci in the signer's conceptualization when they are localized in the signing space, yet the amount of spatial information conveyed by spatially related signs may differ. We would also present evidence to show that signers do not equate a locus with a referent. Instead, signers conceptualize tokens and surrogates in their signing as Liddell suggests.

What we observe is that signers always have a clear spatial referential map in their minds, but they seldom use an overt and explicit method to 'set up' the locations for the referents at the outset of a story. The signers would not tell the addressee, 'A is here; B is here; C is here; okay the story now begins.' Rather, the loci of the referents are gradually unfolded to the addressee through signs containing locative information in due course as the story proceeds.

As a conceptualized location in the signing space, a locus is invisible to the addressee and it can only be observed through signs loaded with spatial information. The exact location of a locus can be determined, though not in an extremely precise manner[5], by information of three aspects: the locus's height above the horizontal signing plane, direction and distance from the signer. These three aspects are the three-dimensional values of a locus in space. We would like to point out that spatially related signs differ in the amount of information of the locus they can provide. Some signs provide all the three pieces of information, which makes tracing the exact location of a locus easier. Yet some provide just one or two aspects. Hence, in the discussion of how referents are localized in HKSL, the kind of spatial information provided by each locus identifying method will also be mentioned. It is hoped that by linking up locus identifying methods and the amount of spatial information conveyed, we can elucidate why there have been disagreement as to whether a locus is a point, direction or an area.

Most of the referents in the HKSL narratives are spatially marked, in the sense that their loci are reflected by certain signs. Yet, none of the spatially marked referents are given loci by a downward locative pointing (LOC-AT/ INDEX) as in ASL example (1). Instead, spatial information is conveyed by several other different methods: verbs of motion and location (including classifier predicates), inflecting verbs, pronouns, locative pointing, lexical locative markers and non-manual methods such as eye gaze and body orientation. Each of these methods gives the impression that a locus can be a particular location, direction or an area. Example (7) illustrates how two referents are localized by classifier predicates:

[5] Practically it is impossible to determine the exact coordinate of the locus by measuring its distance in terms of centimeters or inches from the signer or at what precisely angle is the locus from the centre of the signer.

(7) 'At the beginning (of the story), a youngster rode a bicycle (from left-near to left). A man drove a private car (from right-near to right). Both of them moved forward, and the bike was in front of the car. ' (Illustration 4 - 1)

RH: YOUNGSTER MALE
BH: AT-THE-BEGINNING BICYCLE
LH: *CL:* $_{LN}$ *BIKE-MOVE-FORWARD* $_{L}$

RH: *CL:* $_{RN}$ *CAR-MOVE-FORWARD* $_{R}$
BH: PRIVATE
LH: CL: $_{L}$ BIKE-MOVE-FORWARD$_{LF}$

The two referents – the cyclist and the driver – are localized at 'centre-forward' and 'centre' by their associated classifier predicates respectively. The placement of the classifiers explicitly indicate the exact location of the referents in the signing space.

Similarly, locus information can be reflected by a verb of motion:

(8) FEMALE $_{CF}$ *WALK-BY* $_{RF}$ (Illustration 4 - 2)
'A woman walked by.'

In example (8), the referent 'woman' walks from 'centre-forward' to 'right-forward', which is now the locus associated with the referent. Like classifier predicates, verbs of motion provide *a clear location* of the referent in the signing space.

Referential locus may also be indicated by the orientation or direction of inflecting verbs. With such verbs, however, it is not easy to tell exactly where the referents are located. These verbs only provide cues on the approximate *direction* of the referents from the signer:

(9) (the boy) SEE^{R} BACK THERE-BE 1 BEGGAR, ...THINK ALL-RIGHT NOT BUY PLANE, GO^{R} GIVE^{R} BEGGAR

'(the boy)...saw a beggar at his back. (He) decided not to buy the toy plane. (He wanted to) go and give (the money) to the beggar. '

Example (9) follows a description of a boy who wants to buy a toy airplane. From the orientations of the verbs 'SEE ^{R}', ' GO ^{R} ' and 'GIVE ^{R}', it is clear that the character 'BEGGAR' is on the right of the signer. These verbs provide no cues as to whether the 'BEGGAR' is at the location 'right-near', 'right' or 'right-forward'. Undoubtedly there is a particular location in the signer's conceptualization of the scene, otherwise the verbs would not have inflected at all. Yet, the location is not explicitly represented to the addressee. Locus, in this sense, can be seen as associating with a direction.

Locative information in HKSL in terms of a direction can also be shown by a pointing gesture, yet the semantic content, morphological form and distribution are slightly different from the locus assigning pointing identified in ASL. The 'LOC-AT' or 'INDEX' in ASL is a downward pointing sign directed at a particular locus. According to Padden (1988), an 'INDEX' sign following a nominal is predicative. Example (1) in this chapter shows how 'DOG' and 'CAT' are localized by predicative index signs in space. Locative pointing signs in HKSL, however, do not function as predicates. Our deaf informants comment that they seldom localize referents by downward predicative pointing signs as those in ASL. Two other types of pointing signs marking locative information have been identified in our narrative data. The first type is a pronominal sign being directed at a particular location:

(10)THERE-BE-ONE LITTLE-KID WITH-MONEY (pause), $INDEX_{(Pron)}{}^{CF}$ WATCH-MONEY-IN-HAND

'There was a little kid who had money. He watched his money held in hand.'

With respect to sign configuration, the pointing sign is directed to the front rather than downward at an exact point on the signing plane. It shows roughly the direction of the referent from the signer. This pronominal establishes a locus for this referent,

though only the direction of the locus from the signer is given. Semantically and syntactically speaking, this pointing sign is a pronoun because it occupies the subject position and is accompanied by the mouth pattern of the third-person pronoun of Cantonese (keoi, 佢). Besides being a nominal subject, this pronominal pointing is also the first sign in the narrative that provides a locative reference of the participant, which is in agreement with other spatially related signs in subsequent discourse.

Another group of pointing signs marking locus is sentential adverbials. Such a sign performs an adverbial function and co-occurs with a nominal and a predicate. We would like to call it a locative pointing adverbial and gloss it as 'INDEX$_{(Loc)}$'. Similar to the pronominal sign discussed in example (10), 'INDEX$_{(Loc)}$' in HKSL narratives marks only a locus direction:

(11) *INDEX$_{(Loc)}$*^{LF} DOG CL:$_{C}$ANIMAL-GET-INTO-BASKET$_{LF}$ (Illustration 4 - 3)
'There, a dog gets into the food basket.'

Note that locative pointing adverbials as well as pronominals previously discussed usually agree with the height of the referents. The 'KID' and 'DOG' in example (10) and (11) are rather short in height, and the pointing signs are slightly downward, with an angle of approximately 10° downward from the horizontal line. If the referents are adults, the index finger is held either horizontally or slightly upwards.

The third way a locus is revealed as an approximate direction from the signer is the use of eye gaze. When signing the nominal expression for the referent, the signer may simultaneously gaze at a particular direction to indicate where the referent stands in the signer's conceptualization. In one account of the story 'A dog and two kids', the signer first introduces the locations of the two kids at the centre of the signing space by classifier predicates. When the mother of the kids is introduced, the

signer gazes forward to the front to show her location (Illustration 4 - 4):

(12) eye-gaze -centre-forward

MOTHER POUR-WATER-INTO-BOTTLE

'(Their) mother poured water into the bottle.'

Hitherto, we have discussed how a referential locus is revealed as either a particular point or just a direction. Sometimes, a sign in the narratives can only suggest that the locus of the referent is within a particular area. One example we observe in the data involves the use of locative marker 'BACK' (Illustration 4 - 5):

(13) 'A man rode a bike on the road. He realized that another man drove a car behind him.'

head-turn-right-&-look-back

RH: $MALE_i$ KNOW $MALE_j$ *BACK* $MALE_j$

BH: RIDE-A-BIKE DRIVE-A-CAR

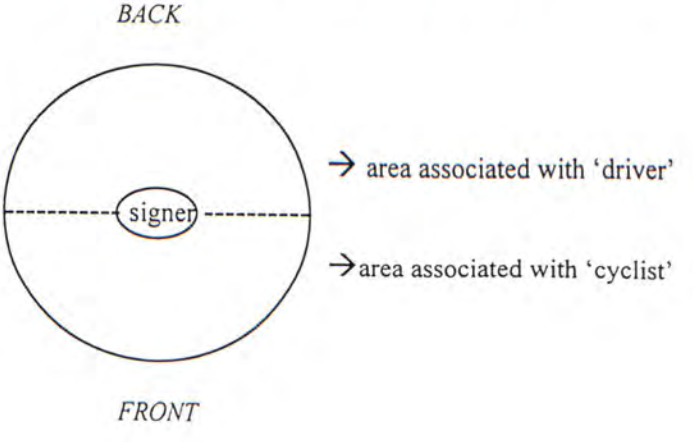
LH:

In example (13), the locative marker 'BACK' defines a front-back relationship between the cyclist ($MALE_i$) and the driver ($MALE_j$). This front-back distinction, however, only gives a vague idea with respect to the relative location of the two referents. There seems to be no exact point, nor a particular direction, which can be precisely identified for the two referents. What appears to the addressee is that the space surrounding the signer is divided in two halves, with the hemisphere in front of the signer representing the locus of 'the cyclist' and the one behind the signer 'the driver'. The evidence comes from the body shifting of the signer in agreement with the two loci respectively:

(14) 'The story begins. A man rode a bicycle and realized that another man drove a car behind him. The driver looked boastful and sounded the horn loudly. The cyclist looked back, but the driver did not care about him and sped up. ' (Illustration 4 - 6)

		body-in-neutral-position				
START	$MALE_i$	RIDE-A-BICYCLE	KNOW			
				body-lean-backward		
$MALE_j$	BACK	$MALE_j$	DRIVE-A-CAR	BE-BOASTFUL	SOUND-THE-HORN	
	head-turn-back + body-lean-forward			head-to front + body-backward		
$MALE_i$	RIDE-BICYCLE-AND-LOOK-BACK			$MALE_j$	DON'T-CARE	SPEED-UP

As illustrated, the signer leans forward when describing the cyclist ($MALE_i$), but backward when the driver ($MALE_j$) is in focus. This is very similar to the concept of 'canonical encounter' proposed by Engberg-Pedersen (1993), in which the signer leans towards a locus in order to assume the role of the corresponding referent. The backward shift of the signer's body suggests that the locus of the 'driver' is behind the signer even though no signs are used to point out the exact location. In other words, body orientation can indicate the approximate locations of the referents:



The discussion on spatial loci in the literature is generally focused on the manipulation of the semi-circular signing space just in front of the signer.[6] Backward

[6] For instance, Kegl (1987) writes, 'Numerous studies have addressed the co-indexing of noun phrases, pronouns and verbs in ASL. Basically, noun phrases are associated with some locations in the signing space (a horizontal space extending *outward from the signer* at about waist level), usually by means of a pointing gesture.'

shifting of signer's body, however, indicates that the space utilized in representing referents can be larger than just the signing area in front of signer. It must be pointed out that such body movement is not miming. It is not the case that the signer leans forward because the cyclist in the story does so. In fact, the signer's body is in neutral position when the referent 'cyclist' is established in the first place. The front-back mechanism begins to operate after the other referent 'driver' together with his location is introduced into the discourse. As the story goes on, the car speedily overtakes the bicycle, which falls down to the roadside. As the front-back relation no longer holds, the signer restores a neutral body position to describe how the cyclist fixes the bicycle and resumes riding:[7]

(15) _____ body-in-neutral-position

MALE–KID PATIENT, TAKE-UP-BICYCLE, REPAIR FINISH, RIDE-BICYCLE

'The boy patiently took up the bicycle and fixed it. After that he rode the bike again.'

These examples show evidently that changing body position is not a matter of imitating actions of the characters. Rather, it is a device to make reference to an established participant by coding relevant spatial information.

The locus of a referent as an area may be assigned by body-orientation alone without any overt locative markers such as 'BACK' or 'INDEX$_{(Loc)}$'. In the following example, when 'shopkeeper' is newly introduced into the narrative discourse, the signer's body shifts slightly to the right (Illustration 4 - 7):

(16) _____ body-shift-right

MALE RESPONSIBLE GOOD CL:PERSON-TURN-BACK-AND-GO-UP

'The man in charge said 'good', turned back and went up (to reach the shelf).'

[7] Note that at this particular point the signer does not conceptualize a reversed front-back contrast for the driver and cyclist. Perhaps the driver is far ahead on the road and is out of the sight of the cyclist.

With the rightward body shift, it becomes obvious to the addressee that the referential locus is to the signer's right. Like example (15), in example (16) the addressee can only have a vague idea that the referent is within the area on the right of the signer. It is unlikely for the addressee to pinpoint the exact locus or its direction from the signer.

So far we have discussed various means to identify referential loci and how a locus is reflected as a point, direction or an area. The result is summarized in the following table:

Table (4.1): Means to identify referential loci in HKSL

	Locus Assigning/Identifying Methods	Information of a locus
1	Verbs of motion/location	Indicate the exact location of a locus
2	Inflecting verbs	Indicate only the direction of a locus
3	INDEX (pronouns or locatives)	Indicate only the direction of a locus
4	Eye-gaze	Indicate only the direction of a locus
5	Body orientation/ 'BACK'	Indicate only the area within which a locus is located

Note that we are not positing three different types of referential locus in HKSL. What we would like to suggest is that a referent, if localized, occupies a particular location in the conceptualized space of the signer. However, the extent to which the exact location is revealed to the audience depends on the types of spatially-related signs used in the narratives. Our analysis is therefore different from Engberg-Pedersen's claim about locus. According to her, 'a locus can be thought of as a meaningful direction from the signer...or a meaningful point or area within the signing space' (p.54). Her main justification is that it is impossible to determine a particular location as a locus due to the varying morphological constructions of the signs and that even tokens of the same verb modified for the same locus may end up

at different positions in space. We agree with her observation about the impossibility of relying on verb morphology to determine the exact location of the referent, as our foregoing discussion suggests. Yet the difficulty in identifying the exact location of a locus does not entail that a locus does not occupy a point in space. With respect to the fact that 'even tokens of the same verb modified for the same locus may end up at different positions in space', we do not know how big the difference is in Engberg-Pedersen's data. We do have some similar examples in our own data, but the difference is always minimal and the addressee is still able to pick up which referent the signer is referring to. It should be noted that spatially related signs, no matter whether they are inflecting verbs or verbs of motion and location, are 'modified' for the locus with respect to starting and ending point of movement or orientation. Given the fact that several loci within the same discourse are usually placed sufficiently apart for the ease of identification, it is not necessary for signs to actually 'stop' at the same locus from time to time so as to ensure a proper interpretation on the part of the audience. Further, we find it awkward to claim that the signer conceptualizes the locus of the referent as a particular location at one point of the narrative discourse, and changes it to a direction or an area at another point of the discourse.

To us, it is more reasonable to adopt Liddell's proposal that the signer conceptualizes either surrogates (i.e. real sized imagined entities) or tokens (reduced sized imagined entities) to stand for the referents and a locus is the location where a token or surrogate is situated. In fact, we are able to find empirical evidence from HKSL in support of Liddell's proposal of tokens and surrogates.[8]

[8] In a more recent article, Liddell & Metzger (1998) propose a blended-space analysis to account for some of the non-manual features in ASL narratives. The heart of their idea is that a signer may represent the behaviour of a character by visually assuming the actions, facial expressions and gestures of the character (i.e. constructed action). Hence, the eye gaze and head tilt position may not be accounted for by theories such as Point of View Predicate or Role Prominence Marker. Liddell and Metzger attempt to explain the phenomenon by saying that the mental space of the character is blended with the physical space of the signer when constructed action takes place. They further argue

As mentioned in the literature review, some researchers hold the view that a locus, as a point on the signing plane, automatically assumes all the referential properties once locus assignment is done (Friedman 1975, Klima & Bellugi 1979, Poizner, Klima, and Bellugi 1987). Liddell suggests that a locus is just where a token or surrogate is situated. The key difference between these two rivaling analyses rests with whether a locus represents the referent (i.e.locus=referent) or a locus is a place that an imagined referent occupies. Liddell (1990, 1994, 1995) uses the direction of pronominals and verb agreement to argue against the equality between a locus and its referent. He points out that pronominal signs are always directed towards at the referents' chest. If the referent is taller than the signer, the pronominal would point slightly upward. In contrast, a slightly downward pointing sign would be used if the referent is relatively shorter. He argues that this height agreement phenomenon is observed with both physically present and imagined referents, proving that imagined referents have a vertical dimension rather than just a 'point' on the horizontal signing plane. Similarly, agreement verbs such as 'ASK' in ASL requires the sign to move at roughly chin level between the signer and the addressee. In HKSL, both kinds of evidence are found. We have pointed out earlier that pronominal signs in the narrative data agree with the height of the imagined referents. If the referent is represented by just a point on the signing plane, all pronominal signs should have been directed downward and should not have shown any height variation. Inflecting verbs also reveal a vertical dimension of the referents. In the following HKSL example, the sign 'TEACH' has a slightly downward orientation because the referent who does the teaching is taller than the one being taught (Illustration 4 - 8):

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that given the blended space analysis, some of the nonmanual aspects of signing would be just gestural rather than linguistic. This new analysis assumes that the referents are not assigned loci in the signing space and is therefore irrelevant to our current discussion. Hence, we would like to stick to Liddell's earlier token-surrogate model.

(17) MOTHER GATHER-TOGETHER *TEACH*^{CD} WH-MARKER WAY WH-MARKER
'The mother gathered (her two kids) together and taught them how to go (to the park).'

In line with Liddell's proposal, the direction of pronominal signs and inflecting verbs provide evidence that referents can be represented by surrogates in HKSL.

Liddell does not state clearly what kind of empirical evidence may serve to prove the use of tokens in the signing space. A defining characteristic of tokens, however, is that their size is much smaller than the real entities. Using 'reduced-size' as a criterion, we observe that tokens in HKSL can be represented by certain classifiers. For instance, the two referents 'private car' and 'bicycle' in example (7), restated here as example (18), are represented by classifiers which are much smaller than their actual size.

(18) 'A car and a bike moved forward on the road.'
RH: CL: $_{RN}$CAR-MOVE-FORWARD$_{R}$
BH:
LH: CL: $_{L}$BIKE-MOVE-FORWARD$_{LF}$

Example (18) describes the spatial relation between the two referents and their movements. The size of the classifiers and the space scale are much smaller than the real world situation, thus lending support to Liddell's proposal on tokens.

Another example of tokens can be found in example (8), restated here as example (19):

(19) FEMALE $_{CF}$WALK-BY$_{RF}$
'A woman walked by.'

In this example, the spatial verb is a classifier depicting a pair of walking limbs. It indicates that the referent walks from one location to another. The size of the limbs and the physical distance involved are a reflection of the event on a reduced scale.

Basing on the evidence from pronominals, inflecting verbs and classifier verbs, we would like to suggest that HKSL provides evidence in support of Liddell's theory on tokens and surrogates. HKSL signers do not use a locus to stand for a referent. Rather, a locus can be conceived of as a location where tokens or surrogates are conceptually situated.

(4.2.2) Shift of loci / frame of reference in HKSL

This section will be devoted to the discussion of a shift of locus or the frame of reference in HKSL. In the literature review, two types of changes in the frame of reference have been mentioned: role play/shifted reference and locus shift arising from spatial verbs. Both types of changes are observed in HKSL, but they seem to be insufficient in accounting for all the shifting phenomena we observe in the HKSL narratives. Hence we would like to propose three more types of locus shifts resulting from loci contrast exaggeration, shifted focalization as well token-surrogate variation.

(4.2.2.1) Role-play/locus shift in HKSL

Recall that shifted reference refers to a phenomenon in which a third-person referent can occupy the sender locus and be referred to by a first person pronoun in a direct quotation of the referent's utterance (Engberg-Pedersen 1995). In the HKSL narratives, there are no examples of first-person pronouns as a reference to a third-person character, probably due to the fact that the pictures stimuli do not contain any quoted conversation and therefore there is no need to report the character's speech.

However, the absence of such first-person pronouns in our narrative data does not exclude the possibility of shifted reference in HKSL. In fact, according to our deaf informants, shifted reference is allowed. The following example is provided by one of our informants (Illustration 4 - 9):

(20) I SEE MOTHER CL:PERSON-SITTING$_R$, FATHER CL:PERSON-SITTING$_L$,

eye-gaze-right

body-shift-left

FATHER SAY INDEX^I HATE INDEX^R

'I saw my father and mother sitting next to each other. My father said, "I hate you."'

When producing 'FATHER SAY I HATE INDEX^R' (i.e. Father said, I hate you), the signer's body would slightly lean towards the left and look at the right. He would also assume an angry look. In other words, this example of shifted reference is also accompanied by shifted locus (the signer's shifting his body towards the locus of a referent), shifted reference (using a first person pronoun 'I' to stand for the 'father') and shifted attribution of expressive elements (assuming appropriate facial expressions). In line with Liddell's analysis, shifted locus can be subsumed under the analysis of surrogates. In example (20), the signer assumes the surrogate role of the referent by moving his body towards the locus and talking to the other surrogate. Shifted reference, however, is considered a marked expression. One informant reflects that although shifted reference can be used, he seldom does so and neither do his friends. A more natural way of expression he prefers is reported speech without a pronoun:

(20') I SEE MOTHER CL:PERSON-SITTING$_R$ FATHER CL:PERSON-SITTING$_L$

eye-gaze-right

body-shift-left

FATHER SAY HATE INDEX^R

'I saw my father and mother sitting next to each other. My father said (he) hated her.'

In example (20'), shifted locus is used without shifted reference. Despite the lack of shifted 1st person reference in HKSL narratives, we find abundant use of role-play and shifted attribution of expressive elements in our data. The signer assumes the role of the character and puts up appropriate facial expressions. For example, in example (14), which is restated here as example (21), the signer wears a surprising look when describing the cyclist realizing that a car was coming up from behind. He looks arrogant when describing how the driver overtook the cyclist:

(21) START MALE$_i$ RIDE-A-BICYCLE KNOW
(surprising look)

MALE$_j$ BACK MALE$_j$ DRIVE-A-CAR BE-BOASTFUL SOUND-THE-HORN
(arrogant-look----------)

MALE$_i$ RIDE-BICYCLE-AND-LOOK-BACK MALE$_j$ DON'T-CARE SPEED-UP
(frightened look----------) (arrogant-look----------)

Besides the facial expressions, the signer also shifts his body towards the loci of the referents.

Apart from role-play/shifted reference, locus shifts resulting from spatial verbs are also observed in HKSL. Example (8), restated here as example (22), shows that the referent 'FEMALE' changes from locus 'CF'(centre-forward) to locus 'RF' (right-forward) because of the spatial verb 'WALK-BY':

(22) FEMALE $_{CF}$ WALK-BY $_{RF}$
'The woman walked by.

The locus shift is induced by an actual change of the referent's geographical location in the story. That is to say, the referent moved from one location to another in the story, and this change is reflected by the initial and ending location of the spatial verb.

In the subsequent discourse, the signer refers to the referent again by placing the person-classifier of the referent 'FEMALE' at locus 'RF' (right-forward) rather than 'CF' (centre-forward). This locus shift is overtly stated by the spatial verb and the addressee should have no difficulty in noticing the change.

(4.2.2.2) Three more types of locus shift

In addition to role-play and spatial verbs, we would like to propose three more types of locus shift that are observed in HKSL. These include locus contrast exaggeration, shifted focalization as well as token-surrogate alternation.

(a) Locus contrast exaggeration:

The first locus shift phenomenon we would like to discuss is a shift resulting from an exaggeration of the contrast between two loci. In one narrative, the signer first describes the central character – 'the boy' – who is clearly located at the centre of the signing space, as the classifier predicate 'CL: PERSON-GO-INTO-SHOP' reveals:

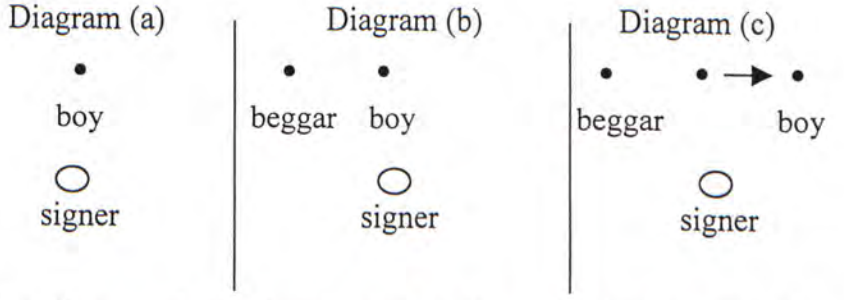
(23) WANT BUY AIRPLANE CL: $_{CN}$PERSON-GO-INTO-SHOP$_{CF}$ (Illustration 4 - 10)
'(the boy) wanted to buy an airplane. (He) went into the shop.'

After that, another character 'BLIND-BEGGAR' is introduced and assigned a locus on the left. When the description goes back to the boy, its locus is no longer occupying the centre of the signing space. Rather, it slightly shifts rightward, as the initial location of the verb 'WALK-TO' indicates:

(24) ... $_{R}$ WALK-TO $_{L}$ ....
'(The boy) walked to (the beggar)' (Illustration 4 - 11)

The shift of the boy's locus from the space centre to the right can be illustrated by the

following diagrams:



The first diagram shows that the original locus for the boy is at the centre. After the establishment of the beggar's locus on the left, as the second diagram indicates, the boy's locus is now on the right. An implicit locus shift from the centre to the right has taken place.

Note that before this implicit locus shift, there are no signs in the signing discourse indicating that the location of the boy in the narrative has changed. In fact, according to the story, the boy was in front of a toyshop before he saw the beggar. It is also from the toyshop that he walked to the beggar. Hence, the boy should be occupying the same topographical location in the story. The starting location of the verb 'WALK-TO' in the space is therefore assumed to be topographically identical to the original position of the boy, which has been represented by a locus at the space centre. This locus shift in the signing space functionally exaggerates the spatial contrast between the two loci, making them more distinguishable. This kind of locus shift is observed in several narratives, and very often it occurs when the signer introduces the second referent on top of the first one. Usually, the first character being introduced to the narrative discourse occupies the central location of the signing space. It moves sideward, however, when another locus is established in the signing space. This locus shift shows that the entire frame of reference is taking on some spatial readjustment which constantly keeps the referential loci spatially apart from each other.

In example (24), the locus shift for loci contrast is indicated by the initial location of the spatial verb 'WALK-TO'. In some other examples, the shift is reflected by a change in signer's body orientation. In the following example showing the beginning of the narrative 'A thief and a shopkeeper', the signer assumes a neutral body position when introducing the first referent 'thief':

(25) neutral-body-position

MALE ONE ... CL: $_{CN}$PERSON-GO-INTO-SHOP$_{CF}$ (pause) MALE SAY

neutral-body-position

WANT BUY (pointing upward)

'A man (i.e. the thief) went into the shop. He said he wanted to buy (that).'

The classifier predicate 'CL: $_{CN}$PERSON-GO-INTO-SHOP$_{CF}$' shows that the referent is conceived as occupying the centre of the signing space. The signer's body also assumes a neutral position. After that another referent 'shopkeeper' is introduced with a locus on the right side of the signing space, as reflected in the signer's shifting his body to the right. This rightward body movement has been discussed in example (16), restated here as (26) (readers may refer to Illustration 4-7 for the body shift accompanying 'MALE RESPONSIBLE'):

(26) body-shifts-right

MALE RESPONSIBLE GOOD CL:PERSON-TURN-BACK-AND-GO-UP

body-turn-to-the-left- side

MALE ...$_{LFU}$ TAKE-SOMETHING-DOWN$_{LN}$

'The man in charge said 'good', turned to the back and climbed up. The man (thief) turned to the left side and took something down secretly.'

When the description goes back to the first referent (i.e.thief) again, the signer turns

his body to the left side and performs the signs on the left side of the signing space. This indicates that the thief is conceived to be within the left side of the signing space. The following three diagrams illustrate this locus shift:

Diagram (a): locus of the referent 'thief' as indicated by CL: $_{CN}$ PERSON-GO-INTO-SHOP $_{CF}$

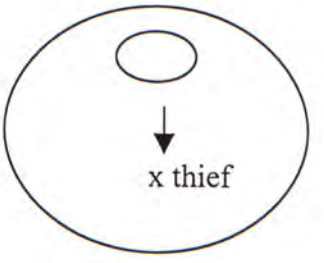


Diagram (b): signer's body shift to the right in description of the 2nd referent 'shopkeeper':

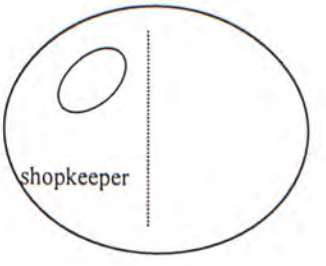
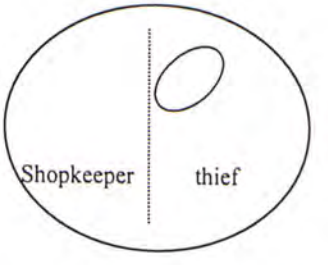


Diagram (c): the thief is now associated with the left side of the signing space. (Illustration 4 - 12)



(note that after a shift to the left, the signer's back faces the surrogate shopkeeper because the thief is intending to steal a radio secretly)

Like example (24), this locus shift from the centre to the left is not caused by an actual locative change of the referent in the story. It arises from the need to keep the two referential loci apart so that they can be distinguished with ease.

(b) Shifted Focalization

The second condition in which a referential locus may shift within the signing space is related to shifted focalization. Let's look at the following example describing a group of children playing ball game and the ball accidentally fell into a hole on the ground:

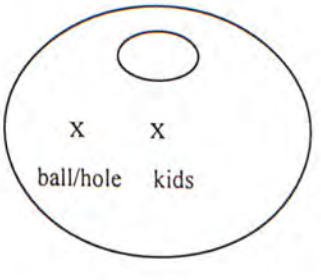
(27) 'Four kids were playing a ball in a playground. The ball was thrown up and it fell down. On the ground there is a hole which was deep.' (Illustration 4 - 13)

ONE PLAYGROUND THERE-BE FOUR LITTLE KID PLAY BALL

CL: $_{\text{C-mouth-level}}$BALL-THROWN-UP $_{\text{eye-level}}$ BALL-FALL-DOWN$_{R}$

INDEXRD CL: SHAPE-OF-HOLE$_{R}$ DEEP

The story begins with a description of four kids playing ball game in a playground. In line with our earlier observation of locus assignment, these referents are conceptualized as occupying the centre of the signing space, as the initial location of the ball (the classifier of the ball first appears at the centre at the mouth level of the signer) indicates. The ball-classifier then drops to a locus on the right of the signing space, where there is assumed to be a hole on the ground. The initial loci arrangement is shown in the follow diagram:



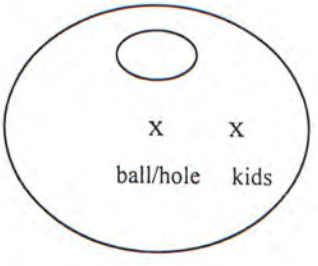
Interestingly, as the description of the ball in the hole continues, the locus of the hole gradually shifts from the right to the centre. Correspondingly, the locus for the kids

shifts from the centre to the left, as the following description shows (Illustration 4 - 14):

(28) CL: $_{CU}$ BALL-FALL-INTO-HOLE$_{CD}$ TAKE IMPOSSIBLE CL: $_{L}$FOUR-RUSH-TO$_{C}$
(gesture-pointing downward at the centre of the space)

'The ball fell into the hole. The four (kids) rushed to (the hole and point to the ball)'

In (28), the classifier predicate 'CL: $_{CU}$ BALL-FELL-INTO-HOLE$_{CD}$' now occupies the centre of the signing space. On the other hand, the classifier predicate '$_{L}$ FOUR-RUSH-TO $_{C}$' starts from the left side of the signing space, and stops at the centre, indicating that the locus of the four kids has been shifted to the left. The following diagram illustrates the new loci arrangement after the shift:



Note that this type of locus shift is different from loci contrast exaggeration we discussed earlier. In the previous case, the referential locus originally occupying the central position shifts aside because another locus has been set up in the opposite side. After the shift, the two loci occupy the locations on the left and right respectively. In the current example, however, the relative distance between the two loci remains constant. What happens is that the referential locus originally taking the central position is replaced by another one, and this is done by shifting the whole signing plane in front of the signer. The effect seems to be that the signer now focuses his attention on the ball inside the hole, and the locus shift reflects such a

changed perspective. This phenomenon is comparable to 'focalization' in spoken languages, and therefore we would like to call it *shifted focalization.*

In discourse analysis, focalization mainly deals with the narrator's perspective, and is the angle from which things are seen, felt, understood and assessed (Genette 1980). Focalization can be either external or internal. External focalization 'occurs where the focalization is from an orientation outside the story' (Toolan 1988), which means that the perspective of the narration is not associated with any of the character within the text. Using the words of Bal (1985), in external focalization, 'an anonymous agent, situated outside the fabula (a series of logically and chronologically related events that are caused or experienced by actors), is functioning as focalizor. Example (27) and (28) can be treated as an instance of external focalization because it seems as if the signer is now standing at the hole, describing how the hole looked like and how the four kids rushed to the hole from somewhere else.

On the other hand, 'internal focalization occurs when the focalization lies with one character who participates in the story as an actor'. The narrator adopts the viewpoint of one of the participants in the narration. With internal narration, the reader/audience not only watches with the character's eye, but will also be inclined to accept the vision presented by that character' (Bal 1985). Similar to external focalization, internal focalization in HKSL narratives can also be realized as a shift of locus. In one narrative account about 'an old fisherman and a naughty boy', the loci of the referents shift to mark the signer's focalization. At first, the first referent 'an old man' is set at the centre of the signing space. Then 'many kids' is given a locus on the left:

(29) THERE-BE-ONE OLD-MAN GO FISHING, MEANWHILE NEARBY $INDEX_{(Loc)}^{LF}$
THERE-BE MANY KIDS SWIMMING.

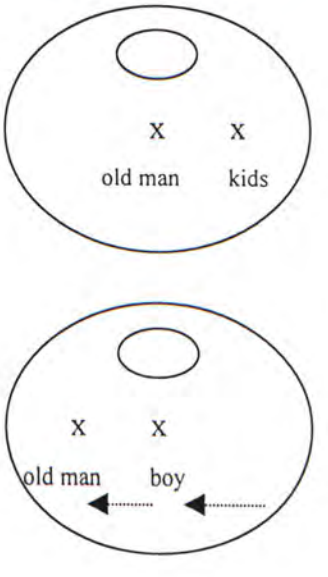
'An old man went fishing (locus-centre). Meanwhile a lot of kids (locus- LF) were swimming nearby.' (Illustration 4 - 15)

Immediately after setting these two loci, the signer describes a naught boy who saw the old man. The boy was one of the kids, and his locus should have been on the left side of the signing space. However, as the orientation of the verb 'SEE^{RF}' and the determiner of the old man 'INDEX$_{(Det)}^{RF}$' indicate, the boy is now situated at the centre whereas the old man's locus has shifted to the right (Illustration 4 - 16):

(30) THERE-BE MANY KIDS SWIM, THERE-BE-ONE NAUGHT SWIM-SLOWLY
SEE^{RF} $INDEX_{(Det)}^{RF}$ OLD KNOW OLD FISHING MAN

'Meanwhile a lot of kids were swimming nearby. A naughty boy swam slowly and saw the old man, knowing that the old man was a fisherman.'

The locus shift is shown in the following two diagrams:



◄..... : indicates the path of locus shift.

The description of the boy is accompanied with a mischievous facial expression. Apparently the signer assumes the role of the boy by shifting the locus from the left to the centre in his own conceptualization of the frame of reference, and then describes the old man from the 'eyes' of the boy. As the old man's locus is on the right after the shift, the verb 'WATCH' and the determiner are all directed to the right. This locus shift can be analyzed as internal focalization because the signer is narrating from the point of view of a character. Note that the locus shift is reflected through the directions or orientation of signs. No body orientation or non-manual features are involved in this shift.

Shifted focalization is reminiscent of shifted reference or role shifting mentioned in the literature, yet they are quite different. Role-playing (or role shifting, shifted reference, shifted locus, point of view predicate or role prominence marker) discussed in the studies of other sign languages is realized by the signer's shifting his body towards a locus in order to assume the role of that referent. That particular locus remains at the same location, nor do the other loci change their locations correspondingly in the signing space. In shifted focalization, however, the signer maintains a neutral body position. What gets moved is the framework of loci as a whole.

Another difference is that with role shifting, signers would only shift to a locus representing an animate referent. Shifted focalization, however, allows an inanimate locus to come into focus. Seen in this light, it is possible to hypothesize that role shifting (with shifting body orientation) is in fact another realization of internal focalization. Recall that in the literature, role playing is often claimed to bear a function of representing a referent's perspective, or is a way a signer may express his empathy towards the referent. These two effects are exactly the functions of internal

focalization claimed by discourse analysts.

Up to this point, we would like to suggest that focalization in HKSL, and probably other sign languages, is realized spatially. External focalization takes the form of shifted focalization – the locus under focus displaces the locus originally occupying the central position. Internal focalization can be manifested as shifted focalization or role shifting. In the latter case, the signer's body shift towards the locus to assume the referent's perspective.

(c) Token-surrogate alternation

The third type of locus shift is related to token-surrogate variation. According to Liddell, signers can represent referents either as surrogates or tokens. Surrogates are real-sized imagined entities whereas tokens are much smaller in size. While surrogates are conceived of in the space surrounding the signer, tokens are placed within the signing space. Following Fauconnier's mental space theory, Liddell proposes that signers evoke a *Surrogate Space* when they conceptualize the existence of surrogates in the physical space and in the same vein *a Token Space* is evoked by placing tokens on the signing plane. He points out that Surrogate Space can use the physical space which surrounds the signer whereas Token Space is limited to the size of the physical space ahead of the signer in which the hands may be located while signing (1995, p.33). Further, he suggests that 'it is a simple matter to alternate between a token representation of a referent and a surrogate representation of the same person during even a brief stretch of discourse' (1992). However, Liddell does not further elaborate how the alternation takes place and what the grammatical consequences would be. Given that Surrogate Space and Token Space differ in terms of the size of the imagined referents as well as the physical space utilized, it is expected that when these two spaces alternate in a discourse, the exact location of the

locus for the same referent would shift accordingly.

Earlier in our discussion on locus identification/assignment, we have provided an example which contains a locus at the back of the signer. We would like to make use of this example again here to illustrate what we mean by a locus shift caused by token-surrogate alternation:

(31) body-in-neutral-position

START $MALE_i$ RIDE-A-BICYCLE KNOW

body-lean-backward

$MALE_j$ BACK $MALE_j$ DRIVE-A-CAR BE-BOASTFUL SOUND-THE-HORN

head-turn-back + body-lean-forward head-to front + body-backward

$MALE_i$ RIDE-BICYCLE-AND-LOOK-BACK $MALE_j$ DON'T-CARE SPEED-UP

'The story begins. A man rode a bicycle and realized that another man drove a car behind him. The driver looked boastful and sounded the horn loudly. The cyclist looked back, but the driver did not care about him and sped up. '

In this example, the signer takes up the role of the surrogates of each referent by assuming their action and the facial expression. The forward-backward body orientation can be seen as evidence of role shifting. As pointed out in previous discussion, the two referents are associated with the front and rear hemisphere of the signing space. Later, however, the signer changes a Surrogate Space into a Token Space by placing two classifiers in front of his own torso to describe how the car took over the bike:

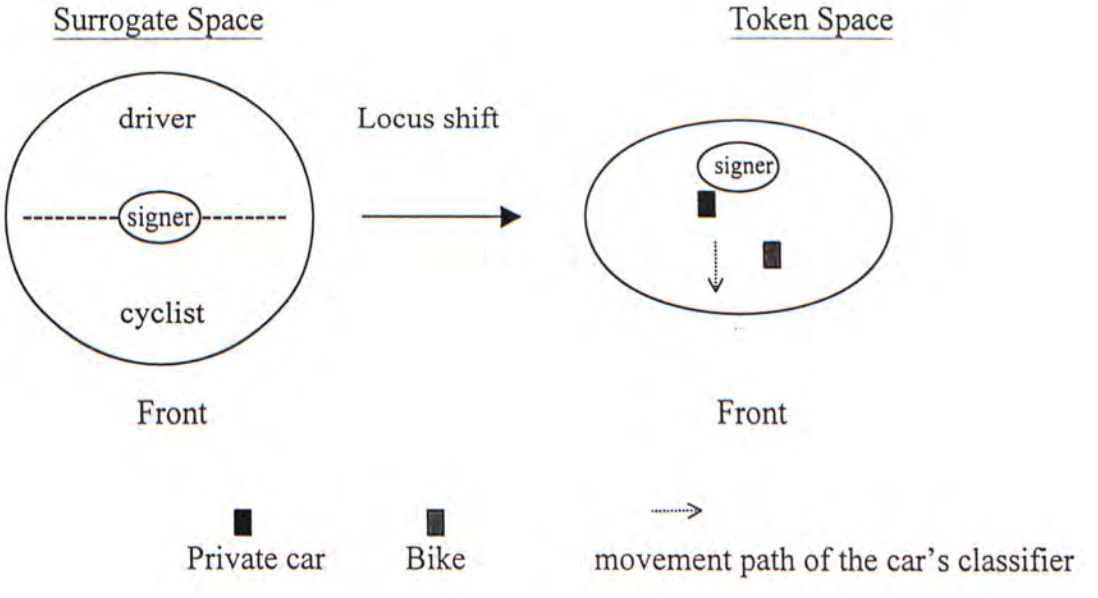
(32) 'The driver did not care about (the cyclist) and sped up. The car then overtook the bike. '

RH: MALE DON'T-CARE SPEED-UP CL: $_{RN}$ VEHICLE-MOVE-FORWARD $_{RF}$

BH:

LH: CL: $_{L}$ BIKE

The classifier by the signer's left hand stands for the bike and the right hand the private car. The loci of the two referents in the Token Space, however, are very different from those of the Surrogate Space, as the following two diagrams show:



It can be seen that as the size of the space contracts drastically from Surrogate Space (whole space surrounding the signer) to Token Space (just the space in front of the signer), and the loci of the referents also change from one location to another automatically. Note also that although the two locations of the private car in the two spaces are physically distinct, they represent the same geographical location in the story. The same holds true for the two locations of the bike. This kind of space alternation and locus shift is instantaneous and occurs frequently throughout a narrative discourse.

Locus shift due to token-surrogate alternations is more drastic when compared to those involved in loci spacing exaggeration and shifted focalization. This drastic shift raises an interesting question concerning coreferentiality. It has often been claimed that coreferentiality is maintained over a stretch of discourse through the use of a fixed referential locus. Now with token-surrogate alternation two different

locations may represent the same referent, and the traditional rule of coreferentiality is no longer applicable here. Then, how does the addressee know that the two locations which are physically distant from each other are in fact coreferential?

We would like to suggest that signers may rely on three possible cues. The first possible cue comes from the front-back contrast. The two surrogates set up in the Surrogate Space engage in a front-back spatial relation. In the Token space, one classifier is also placed in front of another, even though the physical distance between the two tokens is much shorter then that of the surrogates. The same spatial relation, despite a scale difference, may guide the audience to link up the token locus and the surrogate locus for the same referent appropriately. The second possible cue is the use of distinct classifiers. In HKSL, bicycles and private cars are represented by different classifiers. In example (32), the classifier for the car is a ʚ-handshape () with a contralateral palm orientation (i.e. the right palm faces the left side) while the bike classifier is a K-handshape () with a downward palm orientation. Since the identity of the surrogates is given at the outset of the story, the audience should have no difficulty associating the right surrogate with the right token.

The third possible cue the addressee might use is the left-right contrast. In the Surrogate Space, when the signer describes the cyclist's realizing a car behind him, the signer imitates the action of cyclist by turning his head to the right and looks at the back over the right shoulder. This backward-looking gesture may indicate that the car is slightly on the right behind the bike. This left-right contrast is carried over to the token space, where the right hand performs the car's classifier and the left hand the bike classifier. Although left-right contrast may not be too obvious in this example, our hypothesis is borne out by many other examples in our data. Example (25) and (26) in our earlier discussion, for instance, show that the two referents are represented by surrogates each occupying one side of the signing space: the

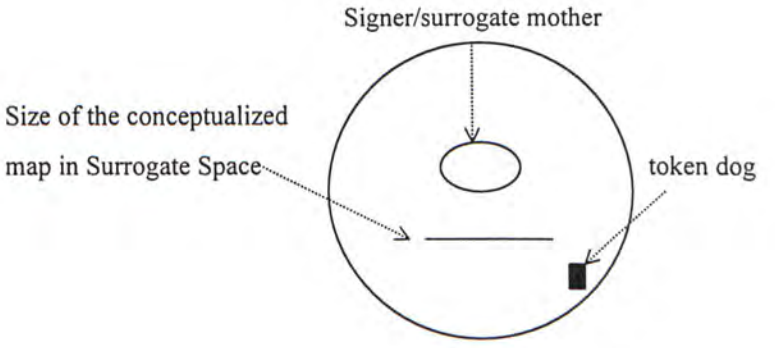
shopkeeper on the right while the thief on the left. Later when a Token Space is evoked, the signer also uses the right hand to represent the token for the shopkeeper.

Liddell (1995) points out that a Token Space can be smaller than the size of the physical signing space. He adds that under certain circumstances, such as a description of two related events, a signer can set up 'a Token Space on the right side of the physical signing space and another on the left side of the physical signing space'. (p.33) We do not find such parallel use of Token Spaces in our narratives. What we find, however, is that a Surrogate Space may co-exist with a Token Space. Example (33) is an extract describing a dog secretly getting into a food basket and a mother teaching her children to go to a park at the same time. The signer first evokes a Surrogate Space and assumes the surrogate of the mother. The signer imitates the mother's holding a map and reading it. While the signer is still maintaining the map-holding posture of the surrogate mother, he uses his right hand to perform a token for the dog, which gets into a basket on the left side of the signing space. To show how a Token Space is blended with a Surrogate Space, the signs we consider elements of the Token Space are typed in italics:

(33) 'The mother called the two children together. She held a map and studied it. Meanwhile a dog jumped into (the food basket) on the left.' (Illustration 4 - 17)

RH: CALL-TOGETHER READ ^{CD}
BH: 2-OFFSPRING (pause) MAP CL: HOLDING-MAP
LH: \----------

RH: SEARCH ^{CD} *DOG*$_{L}$ *PLAY* *CL:* $_{CF}$ *ANIMAL-JUMP-INTO* $_{LF}$ SEARCH^{CD}
BH:
LH: ----------

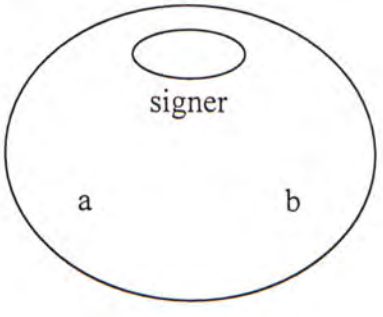


Front

We analyze the classifier for the dog as a token rather a surrogate for two reasons. First, according to Liddell, surrogates can only be conceived of but never 'placed' manually in the signing space because of its big size. Now the classifier dog is being placed in the physical space, it therefore fails to fulfill the criterion of being a surrogate. Second, this animal classifier is often used in other token space descriptions. These two factors prove that a Token Space is clearly evoked by the signer.

We find this example interesting because two spaces of different size scale are realized in the same physical space. In fact, the addressee must have the ability to discern the two distinct space scales if the utterance is to be interpreted correctly. According to the picture stimulus, the dog is outside of the vision of the mother when it gets into the food basket. Hence conceptually speaking, the dog should be distant from the mother and the kids. Also the story would only make sense if the dog lies outside of the mother's field of vision, otherwise the dog would have been noticed by its owner. If the addressee misinterprets the dog classifier as a real-sized surrogate, for example, then the mother's locus and the dog's locus would be too close together to make the story sound logical. The fact that the addressee has no difficulty in comprehending the conceptual distance between the referents indicates signers' ability to reconcile the two different space scales properly despite their coexistence.

In ASL, von Hoek is the only person who has also discussed the interaction of mental spaces and the use of loci. In line with Liddell's proposal, she (1996) argues that it is not uncommon in ASL discourse for one referent to be associated with multiple loci when more than one mental space is invoked. A referent may be given a distinct locus in the signing space for each conceived geographical location, which in turn constitutes a separate mental space. She provides an example in which the signer describes his interaction with a referent at two different places. The referent is first conceived as occupying locus 'a' at one particular location (i.e. 'room' in her example). Indicating verbs and pronominals associated with this referent show agreement with this locus. When the description shifts to another scene at another location (i.e. 'yard'), the locus 'b' is used instead to stand for the referent. The two separate loci for the same referent serve to distinguish the two separate events which occur at different geographical locations:



She emphasizes that other kinds of mental spaces do not give rise to multiple loci. For instance, the same referential locus would be used for the same referent occupying the same location in scenes differing only in terms of time. In other words, what she describes is that different mental spaces may arise from different scenes of events and the same referent may be associated with a distinct locus in each mental space. Our token-surrogate alternation is different from von Hoek's discussion in two ways. First, our examples involve mental spaces of different scales, while von

Hoek's examples are mental spaces of the same scale. (Though she does not state it explicitly, her examples clearly involve various token spaces.) Secondly, the token-surrogate alternation comes from one single event/scene, whereas in her examples each mental space stands for a single event/scene.

Token-Surrogate alternation also serves a focalization function in much the same way shifted focalization does. With Token Space, the signer enjoys a panoramic perspective over the whole scene. This is particularly useful when the signer wants to express the spatial-locative relation among various referents. Such kind of focalization is external. Surrogate Space, on the other hand, allows a signer to use a proximal angle to describe the minute details of the interactions among surrogates (e.g. role-shifting) and is therefore associated with internal focalization.

(4.3) Chapter Summary

In this chapter, we have discussed how space is used to represent referents in HKSL narratives. Evidence suggests that all subjects in the experiment use space referentially regardless of signing preference. Locative information of referents is conveyed through spatially related signs, which differ in the amount of information pertaining to the exact locations of the referents. It has been argued that HKSL signers set up conceptualized entities as tokens or surrogates in the signing space rather than treating a locus as a referent. In addition, the existing analyses concerning locus shift or shifted reference are insufficient in accounting for all types of locus change we observe in HKSL. Three more conditions under which a locus for the same referent may change over a discourse have been described. These conditions include loci contrast exaggeration, shifted focalization and token-surrogate alternation.

Chapter 5: Suggestions for Future Research

In this thesis, we have demonstrated that space lies in the core of the grammar of HKSL by showing that the space and nominals are inter-related at various linguistic levels. At the syntactic level, space is an important factor that affects the interpretation of the grammatical relations borne by nominals. Classifier incorporation and verb inflection exploit the three-dimensional area in front of the signer and they serve as overt indicators for the grammatical relations among verbs and nominals. If space is not used, signers need to resort to linear word order to differentiate subjects and objects. At the semantic level, although not all referential properties are to be represented spatially, there is a neat contrast between specific and non-specific referents. A specific referent can be assigned a referential locus in space, which provides a locative reference point for spatially-marked definite markers such as determiners, pronouns and eye gaze while a non-specific referent can be associated with an area in space, as illustrated by the sign '$\text{ONE}_{(\text{Pathlength})}$'. Other non-specific nominals such as generics are characterized with a general impossibility to be assigned spatial loci. At the discourse level, signers set up loci for the referents as a coreferential device. This referential framework, as we have shown, is a complex, dynamic network subject to constant modifications. Such loci modifications may be induced by a functional need to keep loci apart for a precise representation, or may indicate the focalized perspective of the narration, external or internal.

As the first attempt to characterize the relationship between space and nominals in HKSL, this thesis is limited in scope and many interesting issues have not been addressed. With respect to the identification of grammatical relations, our experiment fails to elicit sufficient non-manual features such as eye-gaze and head turning for analysis since these features only abound in a discourse context where referents are

localized. Although we have pointed out that non-manual features may not be a fundamental tool signers utilize in identifying grammatical relations in simple sentences, our result by no means implies that they play no role at all. There exists the possibility that non-manual features may share partly the function of word order in distinguishing grammatical relations, and this possibility cannot be fully refuted or proved unless further research is done.

We have tried to extend our analysis of simple transitive sentences to dative constructions with preliminary success and a few interesting phenomena concerning datives are observed. The first thing deserving our special attention is that dative verbs in HKSL seem to be inflecting in general, carrying the morphological potential to agree with the subjects and indirect objects through movement paths or hand orientations. One possible explanation is that dative verbs normally involve some kind of transfer, and this implicit transferal path in lexical meaning receives an overt representation in space in sign language. The intricate relation between space and lexical semantics would be an interesting research topic. Another intriguing puzzle is the apparent lack of dative shift. Recall that in a linear representation without inflection and classifier incorporation, the word order is normally Subject – Verb – Indirect Object – Direct Object. Signers either refuse or just marginally accept having the direct object before indirect object. Although the direct object would come before the verb in the presence of classifier incorporation and verb inflection, we do not consider this pattern an instance of dative shift because the all the grammatical relations are coded simultaneously by the polymorphemic predicate in the sentence final position. The lack of dative shift in the linear representation is interesting for two reasons. First, dative shift is reported in many spoken languages, including Cantonese, the spoken language used in the speech community in which HKSL signers live. In Cantonese, both 'Subject – Verb – Direct Object – Indirect

Object' and 'Subject – Verb – Indirect Object – Direct Object' are possible, with the former pattern more widely adopted. As we pointed out in footnote 23 in chapter 2, the personal preference of word order in HKSL is to a certain extent subject to the degree of Cantonese influence the signer is exposed to. Nonetheless, while the sequential order of a simple transitive sentence can be affected by Cantonese, our preliminary observation suggests the patterns of dative constructions remain intact. As a matter of fact, even the signers whose sign production shows the strongest Cantonese influence find having the direct object before the indirect object unnatural. One possible reason for the unacceptability of a direct object preceding the indirect object in a linear representation, we conjecture, may lie in the fact that dative verbs are inflecting in general, thus carrying intrinsically the ability to encode the subject and indirect object through verb agreement. Hence, the indirect object has a much stronger tendency to follow the verb immediately in a linear sequence. This fact about HKSL also raises an interesting typological question about the markedness of the two alternatives of dative constructions. Cross-linguistically, it is generally held that the 'Subject – Verb – Direct Object – Indirect Object' (e.g. John gave a letter to Mary) is less marked than the double object constructions (e.g. John gave Mary a letter). HKSL turns out to have the marked structure but not the unmarked one. Future research is recommended to find out what governs the dative patterns.

In chapter three, we have discussed several manual and non-manual markers that may signal certain referential properties. These markers include the numeral 'ONE', the Cantonese loan word 'THERE-BE', a determiner and a pronoun which realize as pointing signs, eye contact and gaze at referential loci. All these markers, however, are optional. As we pointed out, there are cases where neither manual or non-manual features can differentiate the (in)definiteness of a referent. How the addressee interprets the nominals properly in this circumstance remains an unsolved

puzzle. In addition to that, our findings also suggest that bare nouns abound in various semantic contexts. It can be generic, indefinite specific, definite specific, and non-specific indefinite in a postverbal position. What governs the appearance of bare nouns? What kind of cues would a signer adopt in order to interpret a bare noun? Although we suggest that addressees may need to rely on their activated memory for a proper interpretation, how this is done and under what conditions it can be done cannot be satisfactorily explicated unless further research is carried out.

Recall that certain handle classifiers and SASSes (i.e. size-and-shape-specifiers) do not require an overt NP to serve as an antecedent. We have argued that such classifiers are neutral with respect to (in)definiteness because there is no noticeable difference that may signal the referential status of the entity involved. This observation raises a question against the general consensus that classifiers are pro-forms. To derive the semantic interpretation of a classifier, what we normally do is to trace back to its antecedent and hence a classifier always receives a definite reading. In our argument, we also pointed out that when an object is realized as a classifier, we need to look at whether there is an overt NP within the same clause to judge whether that object is indefinite or not in that particular clause to the addressee. The semantic status of the handle classifiers and SASS in question therefore presents a theoretical problem: a classifier can be indefinite despite being a pro-form. Future research is therefore recommended to solve this seemingly contradictory observation.

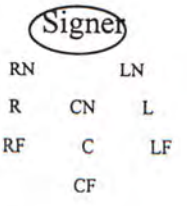
The use of referential loci is one of the widely discussed topics in sign linguistics and the literature accumulated is abundant. Our argument about the establishment of tokens and surrogates and the suggestion on the conditions governing the shift of a locus only represent a very small portion of the issues concerning loci that can be investigated. One of the limitations of our current study is that all of 14 narratives in Experiment 2 involve only a few characters and we

therefore fail to find out how loci can be arranged or rearranged throughout a discourse in the presence of more loci. It would be very interesting if we can observe how the frame of reference shifts if more loci have been established in the space. We also consider the interaction of space types and the lexical signs a worth-investigating area. In fact, Liddell is not the first person who points out that different space scales are invoked throughout a discourse and in each space type the signs and the functions performed can be very different. Schick (1990), for instance, also mentions that semantic classifiers normally set up a Model Space because of the reduced size of entities represented but the space scale induced by handle classifiers correspond to the real world size. Liddell differs from Schick in that he adopts the mental space model first proposed by Fauconnier in representing the space scale contrasts. Yet, several important issues need to be addressed before the mental space model can be extended to other space-related issues in sign languages. For instance, how can the several space types, namely, the Real Space, the Token Space and the Surrogate Space be linked up together? Although we have suggested that signers may rely on several possible cues to link up a token locus and a surrogate locus for the same referent, a lot more research is needed before formalized principles can be worked out.

As the first attempt to investigate the linguistic properties of HKSL, this thesis could only cover a few areas of the language. However, the result so far evidently suggests that HKSL is a complicated language regulated by systematic linguistic principles and is undeniably an independent language rather than simply a manually-coded version of Chinese. We strongly wish that this study can arouse further research interest in HKSL and in the long run benefit the deaf signers, who have always been the suppressed, deprived minority in the territory.

Appendix 1: Notation Conventions

MAN GO HOME	English glosses are given to all of the signs in this thesis. Written in small capital letters, the English glosses are the closest translations of the signs. The gloss for each individual sign will be separated from others by spaces. Chinese glosses are given only if necessary.
'The man went home'	Full English translations of sign sentences are given in single quotation marks.
LEAVE-BY-PLANE	Sometimes the meaning of a sign does not correspond to a single word in English and complex glosses are necessary. In this case, the glosses are connected by hyphens to indicate that the words combined as a whole are represented by one single sign.
CL	'CL' stands for a classifier: e.g. CL: PERSON : the person classifier e.g. CL: WASH-ANIMAL : a classifier predicate meaning 'wash an animal'
INDEX	'INDEX' refers to a pointing sign. Pointing signs serve several functions in sign languages and they are differentiated by the subscript in parenthesis following an index sign: (a) $INDEX_{(Det)}$: pointing sign as a determiner (b) $INDEX_{(Pron)}$: pointing sign as a pronominal (c) $INDEX_{(Loc)}$: pointing sign as a locative adverbial
Non-manual features	Non-manual features are indicated on top of the English glosses. The line underlying the non-manual feature indicates its scope over the utterance. The nature of the feature is stated at the end of the line. body-shift-right e.g. MAN GO HOME The above example shows that the signer's body shifts to the right when signing the predicate 'GO HOME'.

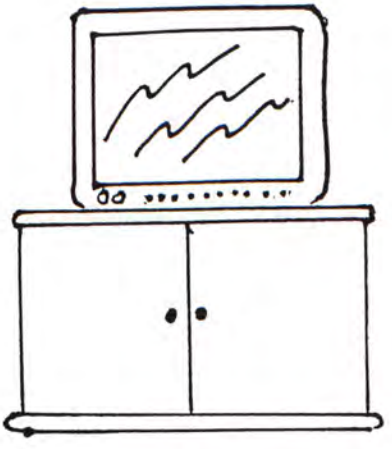
Subscript	The subscript indicates the spatial location at which the sign is made. The following subscripts are used in this thesis: **L**: *left* - a locus on the signer's left **R**: *right* - a locus on the signer's right **C**: *centre* - a locus in front of signer's torso **N**: *near* - a locus near the signer (in close proximity). **F**: *far* - a locus relatively further away from the signer when compared to **N**. **U**: *up* - a locus higher than the horizontal signing plane. These indexes may be combined to give the exact location of a sign.  If the sign is made at a particular location, the subscript is given after the sign: e.g. CL: PERSON $_{CN}$: the person classifier being placed at CN If the place of articulation of the sign changes from one location to another, the subscript for the initial location is written in front of the sign and the one for the ending location is indicated after the sign: e.g. $_{LF}$ WALK $_{RF}$: the sign 'WALK' begins at LF and ends at RF Occasionally, description such as 'eye-level' or 'mouth-level' would be given in the subscript to indicate the exact location of a sign.
Superscript	Superscripts indicate the orientation/direction of a sign. **L**: towards left **R**: towards right **U**: upwards **D**: downwards **F**: forwards **C**: straight towards the front **I**: towards signer **RH**: towards the right hand. **LH**: towards the left hand. e.g. WATCH ^{FU} : the sign 'WATCH' is oriented forward and upward

RH: BH: LH:	Sometimes the transcription of a signed sequence will be represented by three separate lines: RH (right hand), BH(both hands) and LH(left hand). This format aims at giving readers a better idea on how signs are made simultaneously or sequentially by two separate hands. Two-handed signs are given at the BH line. A simple sign sequence will be adopted when the use of separate hands is not important for the syntactic analysis.
Broken lines ----------	Broken lines show that a sign is being held when another sign is produced. For instance, in the following example, the signer retains the person classifier (at point 'centre-near') by his right hand while signing 'FEMALE' and another human classifier by the left hand (at point 'centre forward'). RH: MALE CL:PERSON $_{CN}$ ---------- BH: LH: FEMALE CL:PERSON $_{CF}$
Connecting lines 	The connecting lines show : (i) how a sign is formed by 2 separate components: RH: MALE WASH BH: DOG CL: WASH-ANIMAL LH: CL: ANIMAL In this example, the classifier predicate CL:WASH-ANIMAL consists of 'WASH' (right hand) and the animal classifier (left hand). (ii) how one part of a two-handed sign is retained: RH: CUT BH: BREAD A-LOAF-OF-BREAD ____/CL:CUT-THE-LOAF-OF-BREAD LH: In this example, the left hand part of 'A-LOAF OF BREAD' is retained for a short while, then it is combined with 'CUT' (by right hand) to form the classifier predicate 'CUT-THE-LOAF-OF-BREAD'.

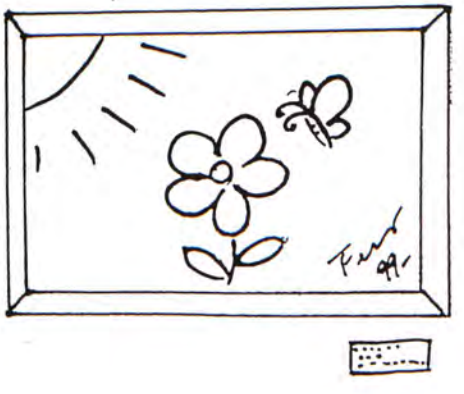
Appendix 2: Examples of Picture Stimuli for Experiment 1

Non-reversible sentences

A girl watches television.

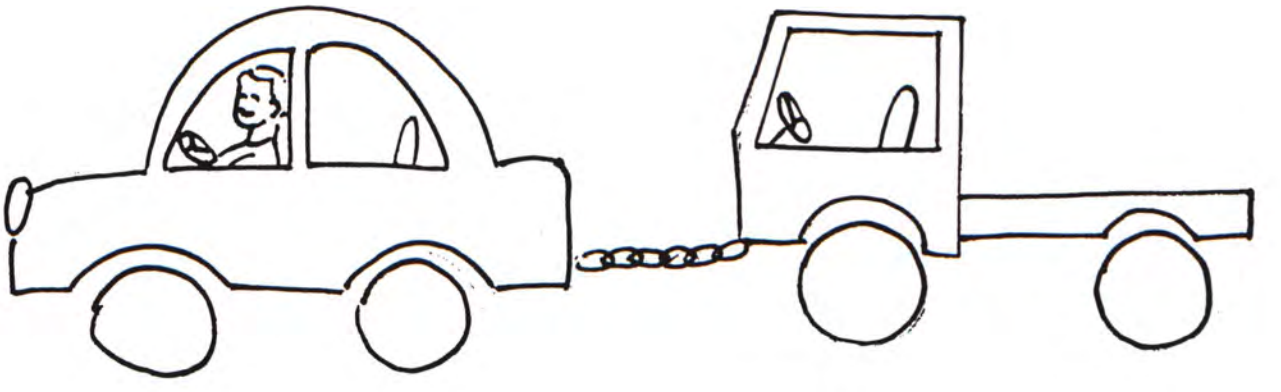


A girl looks at a painting.

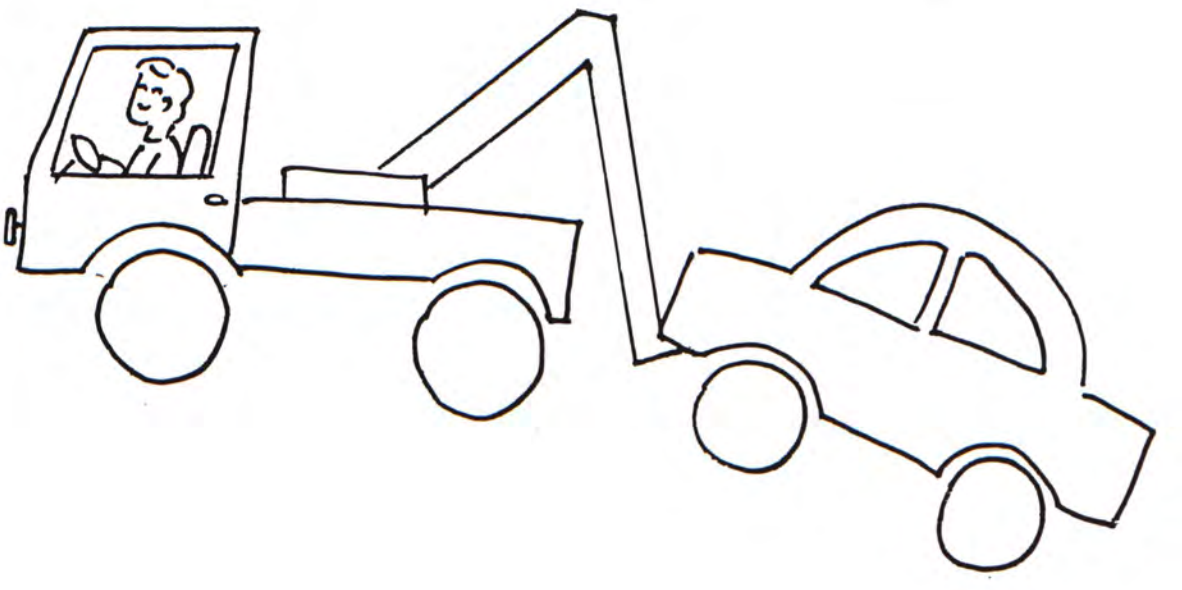


Reversible sentences

A car tows a truck.



A truck tows a car.



Appendix 3: Topic, Comment and Topicalization in HKSL:

In the literature, the notion 'topic' has been used in various senses. In discourse analysis, 'topic' can be defined as the main propositional theme(s) underlying a discourse. It is the question of 'immediate concern' being talked about in a stretch of sentences (Keehan & Schieffelin, 1976). Not necessarily stated explicitly, the topic needs to be present in the shared, activated knowledge of the interlocutors. A topic, no matter overt or covert, facilitates the understanding of a discourse as it sets up a framework within which the discourse proceeds. These frameworks can be spatial (e.g. I went to the Disney Land yesterday. There.....) , temporal (e.g. In the Middle Ages,.....) or individual (e.g. I would like you to know more about my sister. She...). (Sutton-Spence & Woll, 98) This is a very broad definition, theoretically speaking, and is not a language-specific feature. Presumably, a topic exists in all structured discourse irrespective of language types.

Some discourse analysts narrow down the range of possible topics to those propositions previously introduced in the preceding context (Venneman):

> 'The expression 'topic' or 'topic of discourse' as referring to a discourse subject on which the attention of the participants of the discourse is concentrated. Such concentration of attention is usually, though not always, brought about by an immediately preceding textual mentioning of the discourse subject.'

In other words, topics are propositions originating from previous textual context. As Davison (1984) puts it, discourse topic may be linguistically expressible, but they are defined as topics by factors other then linguistically properties.

Alongside with the discourse perspective is the syntactic understanding of 'topic'. Hockett (1958) proposes that a sentence can be thought of comprising topic and comment: the speaker announces a topic and then says something about it. The 'sentential topic' may or may not coincide with the grammatical subject in a sentence:

(1)Mary's newborn baby | is cute.
Subject predicate
Topic comment

(2) Stephen King's new novel, I haven't read yet.
Topic subj. predicate

The generative grammarians further propose that 'topic' is a structural position preceding the subject. Other constituents, usually noun phrases[1], can move into this position via a process known as 'topicalization ':

(3) 我 睇 過 呢 本 書
I read ASP Det CL book
'I have read this book.'

(4) 呢 本 書， 我 睇 過 e
Det CL book, I read ASP e
'This book, I have read.'

In essence, 'topic' identifies a particular focused sentential constituent. The object of the above example is moved to the sentence initial position to become a topic. Topics can be base generated as well, as the following Chinese example shows:

(5)生果 呢， 我 最 鍾意 食 榴槤
fruit SFP I most love eat durians
'As for fruit, I love eating durians most.'

In this example, no movement has taken place and the topic 'fruit' is base-generated in a position prior to the subject. Languages can be classified into topic-prominent or subject-prominent depending on the degree to which topic-comment structures are basic in a language.

A number of studies unanimously suggest that topic-comment structures can best describe sign languages. However, a closer look at these studies reveals that rather different definitions are adopted in their analyses.

Fischer(1974, 1975) argues that ASL has a basic order of SVO, which is most common when subjects and objects are reversible. OSV, VOS are also possible orders when the object or the whole verb phrase is topicalized, the process of which is usually followed by an intonation break. It is noteworthy that Fischer makes no

[1] Davison (1984) points out that in principle, constituents other than noun phrases, e.g. prepositional phrases, adverbs and whole clauses, can also become topic. But the most observable and definable linguistic features of topics are usually those associated with noun phrases.

commitment into saying that ASL is a topic-prominent language, nor does she mention the extent to which topicalization is productive in the language. The only thing certain is that Fischer uses a syntactic definition of 'topic'. It is considered to be a structural position for other constituents to move into. Topic only appears when there is topicalization.

Fischer's view is supported by Liddell (1980), who further elaborates on what 'intonation break' could mean: the topicalized item is slightly lengthened; the signer raises the eyebrows, leans back his head slightly and has a different facial expression. Besides an object and a VP, a subject can also be topicalized, depending on whether there is an intonation break after the subject. Hence, altogether there are four possible word orders in ASL:

S V O (No topicalization)
S, V O (Topicalization of subject)
O, S V (Topicalization of object)
V O, S (Topicalization of verb phrase)

Once again, Liddell does not make the claim that ASL is topic-prominent.

In Woodward's analysis of ASL (1972), 'topic' is not a position for other constituents to move into. In alignment with Bruner (1968), Woodward considers 'topic-comment structure' universal in all natural human languages, including sign language. All sentences can be analyzed as having a topic and a comment. The examples given by him seem to suggest that topics can coincide naturally with subjects:

Man | see girl
Man | friend
Man | good.
Topic Comment

In a sense, topic and comment are equal to subject and predicate. His definition is different from the proposal of Fischer and Liddell.

Friedman strongly disagrees with Fischer and Liddell in that the basic ASL sentences tend to be verb-final and the word order is not fixed. In OSV construction, the object is not followed by any intonation breaks as suggested by Fischer and Liddell, therefore not a result of topicalization. However, she still agrees that topic-

comment is basic in ASL. She defines 'topic' as nominals which are established first – thus creating a scene and as such become definite. Given this definition, 'any nominal (or several), whether appearing later as the agent or patient (or whatever) of a particular verb, may be the topic of any given sentence or discourse'. (p.142) She further argues that verb signs are only articulated after the nominal referents are established, thus implicitly excluding the possibility of VO, S structures. To put it differently, topics are nominals which will be commented later by predicates. Given the assumption that verbs always appear in sentence-final position, her analysis seems to suggest that in a simple sentence transitive sentence SOV, both the subject and the object will become topics.

The ASL studies discussed above generally adopt a syntactic perspective of 'topic' in their analyses. In their discussion of BSL, Sutton-Spence & Woll (1998) blend the discourse and syntactic accounts together:

> 'In BSL, ...the topic is the subject of the sentence. It is also the focus, the old information, the theme of discourse, or the person or thing about which the conversation is taking place... the comment is what is said about the topic. It is also the predicate, and the new information about the topic.'

They also observe that a topic is always followed by a pause and accompanied by widened eyes, and optionally a head nod. With such marking of topic, SVO, OSV and VOS are possible orders.

The problem of this BSL analysis is that it confuses discourse 'topic' with syntactic 'topic'. The theme of a discourse may be something other than the subject of a sentence as it can be a covert proposition underlying a stretch of sentences. It is also problematic to say that topic is the subject of the sentence. If topic is equivalent to the subject, why do we need the notion 'topic' , after all? It seems that the authors want to incorporate all varying definitions into one, but actually such an approach does not reveal much about the sentence patterns in BSL.

Deuchar (1984) proposes that both BSL and ASL are topic-prominent languages because they satisfy most of the topic-salience criteria set by Li & Thompson (1976). These criteria include the absence of passive constructions, lack of dummy subjects and the existence of double subject constructions.

As the foregoing literature review suggests, it is a surprise that there exists no

consensus as to the exact meaning of terms such as 'topic-comment', 'topic' or 'topicalization' even though they are extensively used in the description of sign languages.

The first question one must address in order to resolve the confusing status of 'topic' in sign languages is which definition of 'topic' one wants to deal with. As the discourse-wise understanding of 'topic' refers to the propositional framework facilitating the understanding and development of discourse, it is rather fundamental to human communication. Hence, it may not reveal much about the unique word order patterns in sign languages.

The syntactic perspective seems to be a better choice. As the literature review shows, sign linguists are divided in their concepts of 'topic'. A relatively more general approach is to view all sentences as consisting of topic and comment. This approach is assumed by the work of Woodward and Friedman. In such case, the topic may or may not coincide with the subject of the sentence. This definition, however, does not illuminate the distinction between subject-prominence and topic-prominence, the notions of which have been important in terms of language typology and syntactic analysis, due to the fact 'topic' and 'comment' are devised from the outset to describe linguistic universals only.

Owing to these reasons, it is decided that in this analysis of HKSL, 'topic' is used to identify the structural position in front of the subject for base-generated NP or other moved constituents. The questions we want to investigate are as follows:

- Are there topic-subject-predicates in the HKSL data?
- If so, are there nonmanual markings for topic?
- What contituents can become the topic of the sentence?

It has been proposed that VO-S and O-SV are possible topicalized orders in both ASL and BSL. In all our experiment data on HKSL, however, VO-S and O-SV are almost non-existent. The unfavorable result of Experiment 1 is expected because the sentences elicited are short and simple. The second experiment, however, was originally designed for longer sentences. It was thought at the beginning of the study that if HKSL is a topic-prominent language like Chinese, there must be instances of topic-subject-predicate in the data.

What occur most in the data of the Experiment 2 is subject-predicate sequences.

Similar to the result of the first experiment, overt objects follow the verbs unless there is an incorporation of locus and hand configuration. Verbs and other predicates such as adjectives also follow the subjects. This observation echoes Padden's (1983) observation that subject-predicate is a general constraint on ASL sentences. The possibility that the subject is topicalized exists but cannot be proved. In ASL and BSL, the topicalized elements are always accompanied by non-manual signals such as widened eyes, raised eyebrows, different head position or a slight pause after the topicalized constituent. These nonmanual signals markings serve as reliable indicators for topicalization. In our data, nevertheless, subjects are seldom accompanied by any of the topic features mentioned above. In the twelve narratives collected in the 2nd experiment, there is only one instance of a nominal (the first COMPANY in the example) marked by raised eyebrows, lengthening and a pause:

(6) COMPANY, ELECTRICITY SWITCH-ON ALL COMPANY

The sequence can still be acceptable if these non-manual signals are removed. There are no other systematic markers which may signal topicalization. It is true that some of the subjects are followed by a slight pause, but a pause alone cannot suggest anything. The pause can be caused by a number of factors, linguistic or nonlinguistic. It might be indicating the constituent boundary between a subject and predicate or just a moment of hesitation in the picture-story telling. On the other hand, pauses also occur in many other places within a narrative. Due to the lack of evidence, it is unjustifiable to claim that subjects are always topicalized in a subject-predicate sequence.

Although not much evidence of topicalization is found in the data, our deaf informants comment that OSV sequences are acceptable in HKSL. Examples given by the informants are shown as follows:

(7) GHOST, I FEAR
'I am afraid of ghosts.'

(8) GHOST, I FEAR NOT
'I am not afraid of ghosts.'

(9) THAT CAR, I WANT BUY
'I want to buy that car.'

(10) COMPUTER, MICHAEL LIKE
'Michael likes computer.'

These instances are clear examples of topicalization. Note that it is not obligatory for

these topicalized elements to be followed by a pause or other non-manual signals. Base-generated topics are equally permissible:

(11) CAR, I LIKE BLUE.
'As for cars, I like blue ones.'

(12) MY HOME, ALL BED-ROOM NICE.
'As for my home, all rooms are nice.'

VO, S sequences, however, are generally rejected:

(13) *LIKE COMPUTER FATHER
'Father likes computer.'

(14) *BUY BOOK, FATHER
'Father bought (some) book(s)'.

VO sequence can only be topicalized if it is a complement to a verb.

(15) PLAY COMPUTER, I LIKE.
'I like playing computer.'

(16) BUY BOOK, YOU BE-RESPONSIBLE
'You are responsible for buying books.'

(17) PARTICIPATE-IN GAME, BROTHER WILL-NOT
'Brother won't participate in the game.'

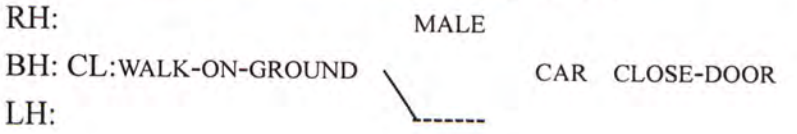
(18) PARTICIPATE-IN GAME, BROTHER CAN
'Brother can participate in the game.'

These examples, together with the OSV sequences, suggest that the complements of verb can be topicalized. Subject may also be topicalized, but no non-manual markings are available for proving so. Topicalization of VO sequence is prohibited.

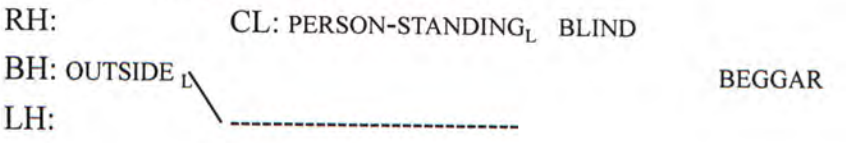
Recall that in our discussion of Noun-Classifier Sequencing Principle, classifier predicate may come before the corresponding noun, but the former needs to be followed by the latter immediately. In the following three examples, the person

classifier predicates are placed before the subject:

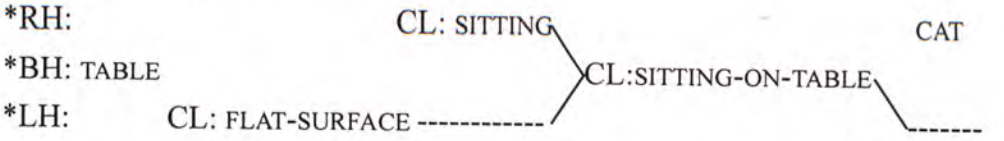
(19) A man walks to the car and closes its door.



(20) A blind beggar stands outside.

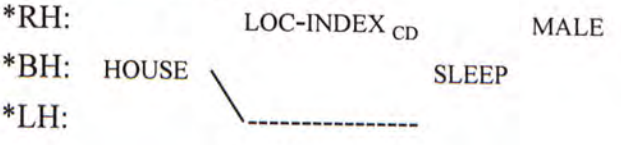


(21) A cat sits on a table.

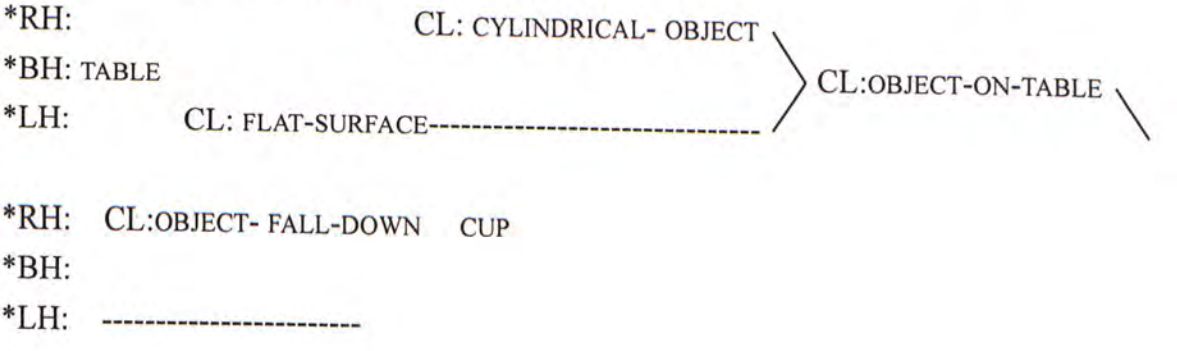


Note that all these topicalized classifier predicates involve agentive person/animal intransitive classifiers. Topicalization of other kind of classifiers and non-classifier type intransitive verbs are not acceptable:

(22) A man sleeps at home.



(23) A cup falls from a table



On the other hand, HKSL also satisfies some criteria set by Li & Thompson for topic-prominent languages. For instance, HKSL seems not to have passive structures

or expletive subjects. Double subject construction is also found:

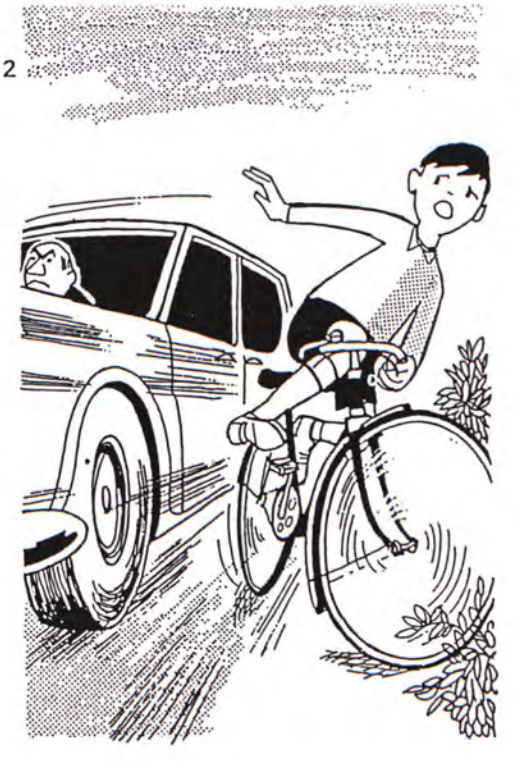
(24) HONG KONG STUDENT, THEY LAZY
'Hong Kong students, they are lazy.'

(25) MY HOME, ALL ROOM NICE
'My home, all of the rooms are nice.'

Basing on the intuition of the deaf informants, we would like to propose that in HKSL, objects, verb complement and person/animal classifier predicates can be topicalized. Although some criteria for topic-prominent languages are satisfied, at this stage there is still insufficient evidence to say that HKSL is topic-prominent. As a matter of fact, topicalization can exist in many languages, including subject-prominent languages such as English. The most crucial concern should be whether or not topicalization is frequent and prevalent. A wider data coverage is necessary before any conclusion is drawn.

Appendix 4: Picture Stimuli for Experiment 2

(1) A cyclist and a driver



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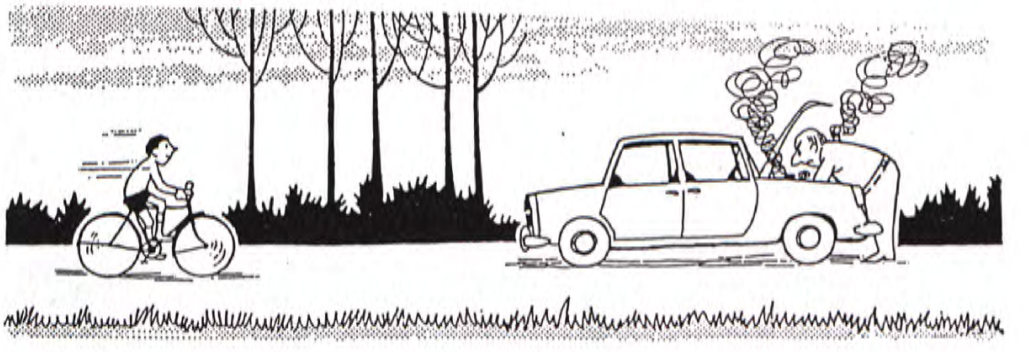

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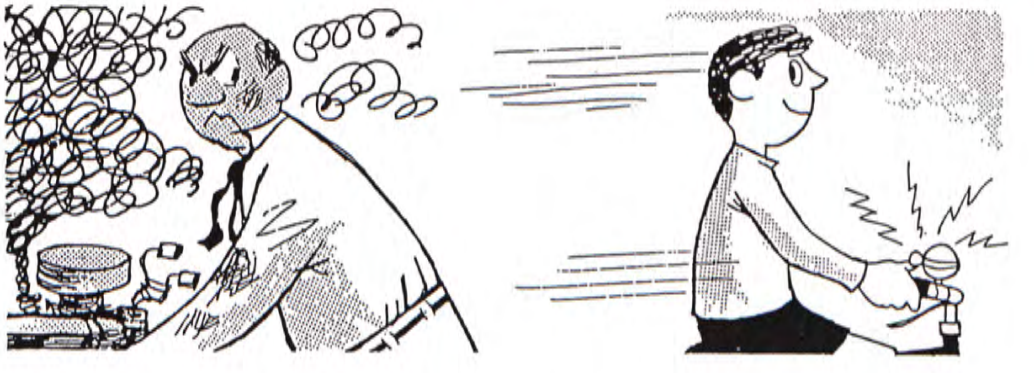
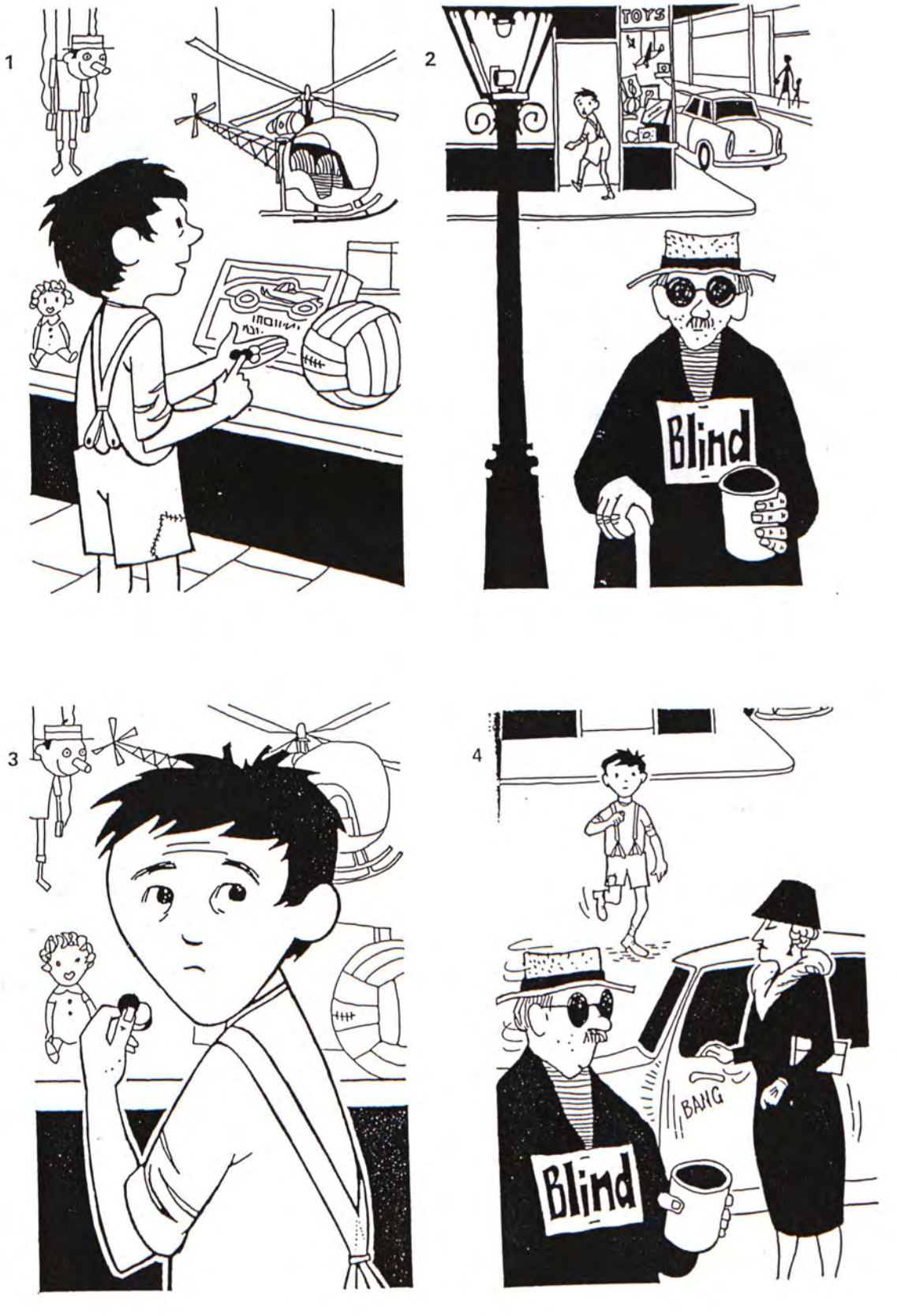


(2) A boy and a blind man



5

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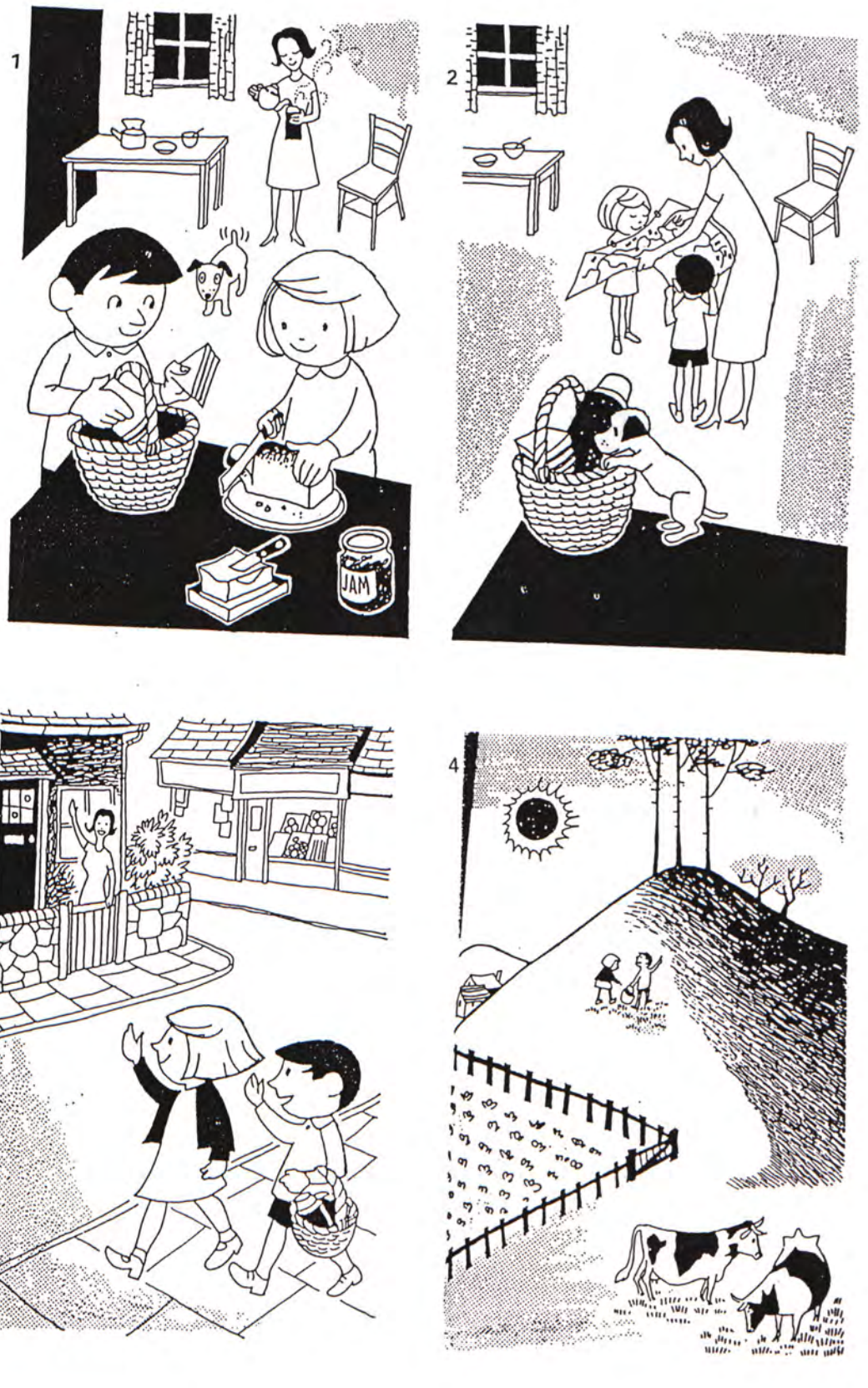
(3) A dog and 2 kids



5

6

(4) A thief and a shopkeeper

6

5

(5) Hide and seek in a garden

1

2

3

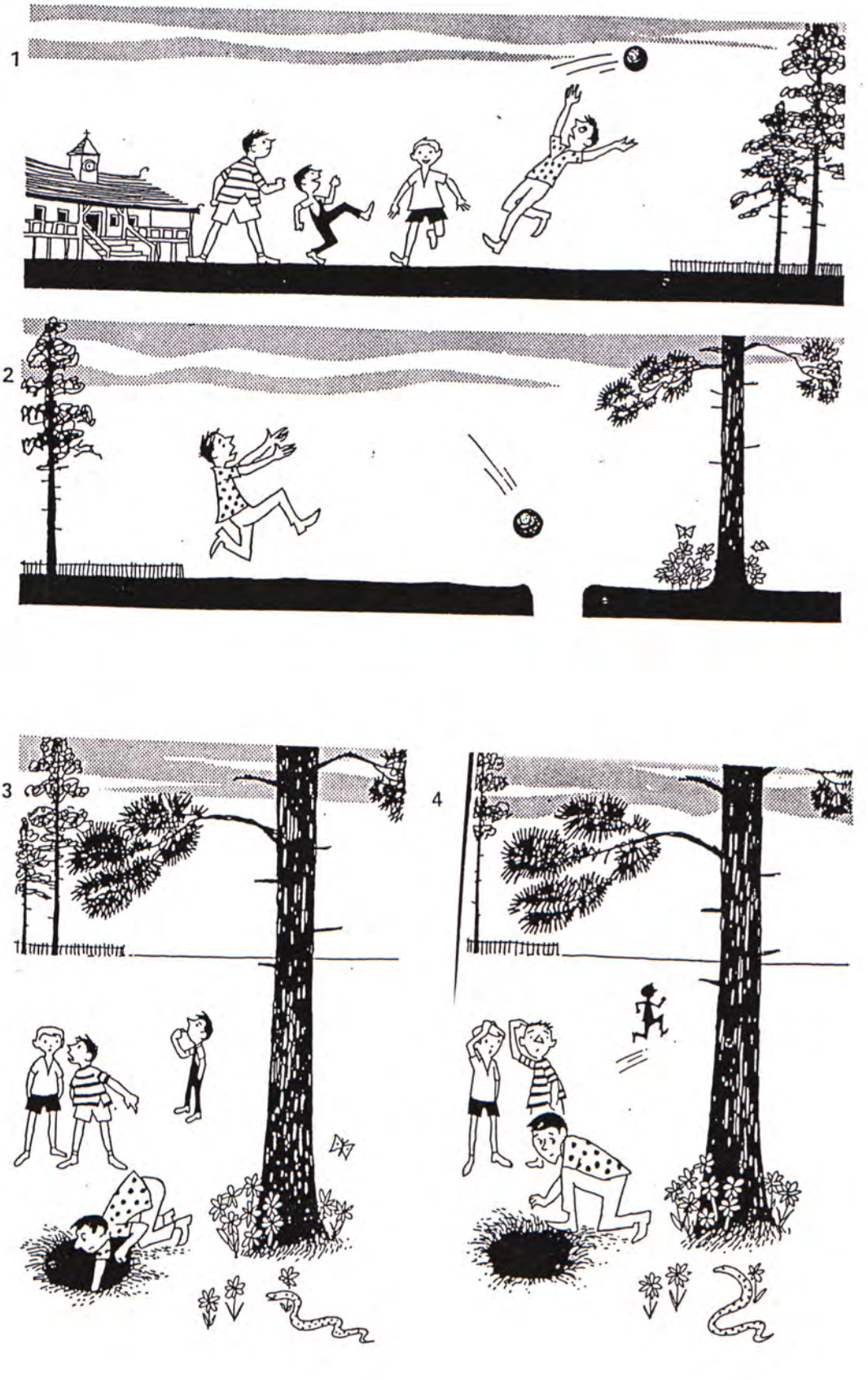
4


5


6


7

(6) Ball game in a playground



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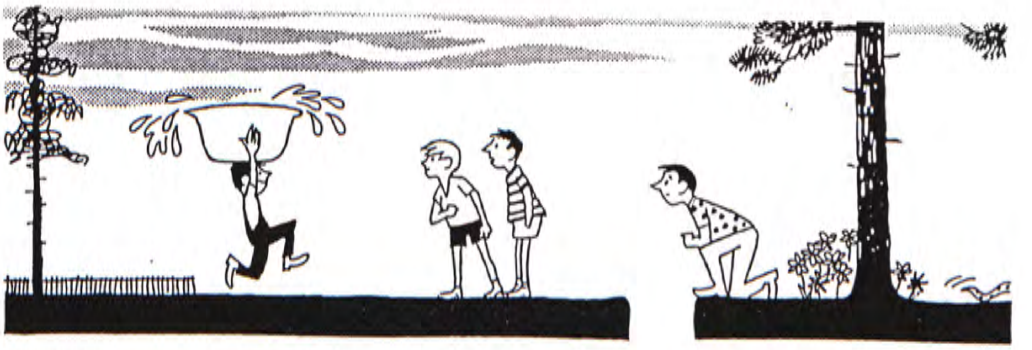


6

(7) A boy and a fisherman

1

2

3

Appendix 5: Illustrations

Illustration 1-1: SMART

Illustration 1-2: FAMOUS

Illustration 1-3: INTRODUCE

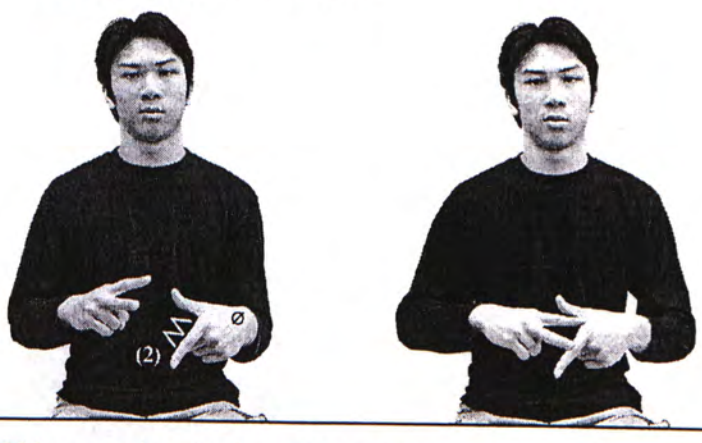


Illustration 1-4: INTRODUCE-ONESELF-TO-EACH-OTHER-IN-A-GROUP

Illustration 1-5: two persons sit close to each other

Illustration 1-6: two persons sit widely apart

Illustration 1-7: one person sits behind another

Illustration 1-8:

DOG

CL:ANIMAL$_R$

CAT

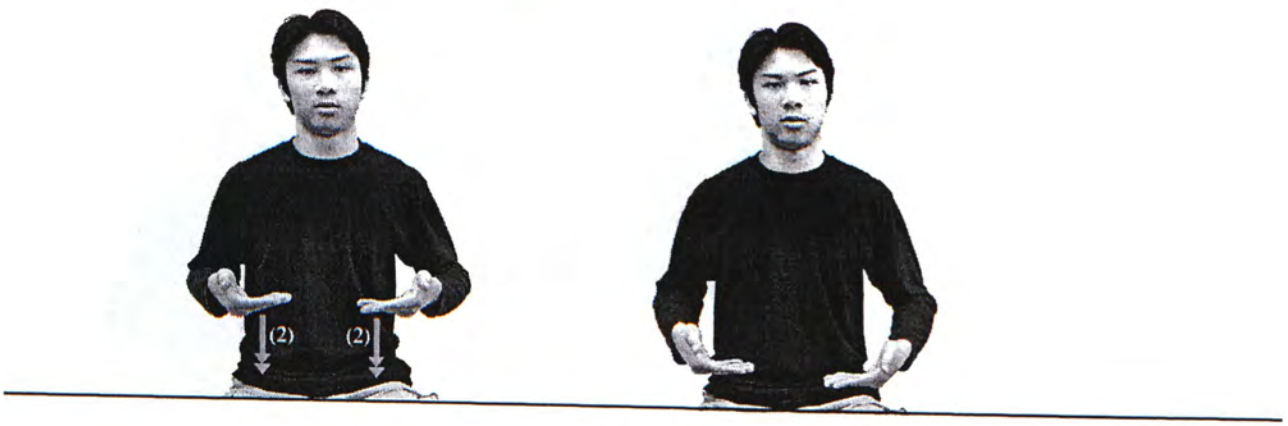
CL:ANIMAL$_L$

$_R$BITE$_L$

Illustration 1-9

YESTERDAY

NOW



TOMORROW

FUTURE

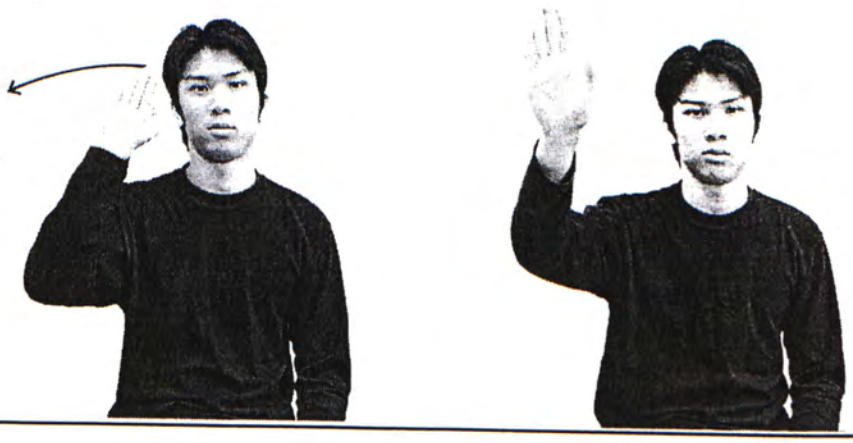


Illustration 1-10

1st person pronoun

2nd person pronoun

3rd person pronoun

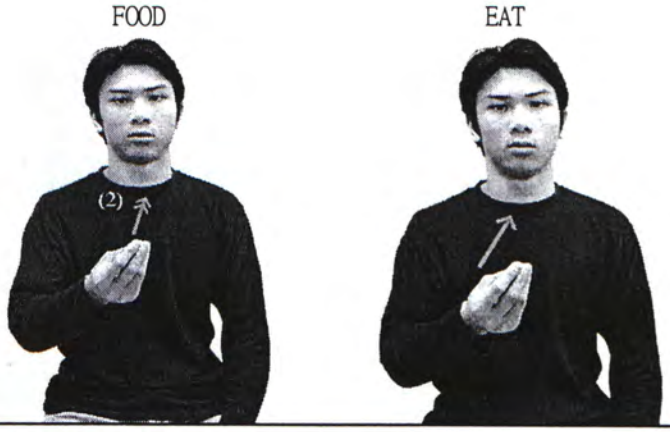
Illustration 1-11

1st person plural pronoun

2nd person plural pronoun

3rd person plural pronoun

Illustration 1-12



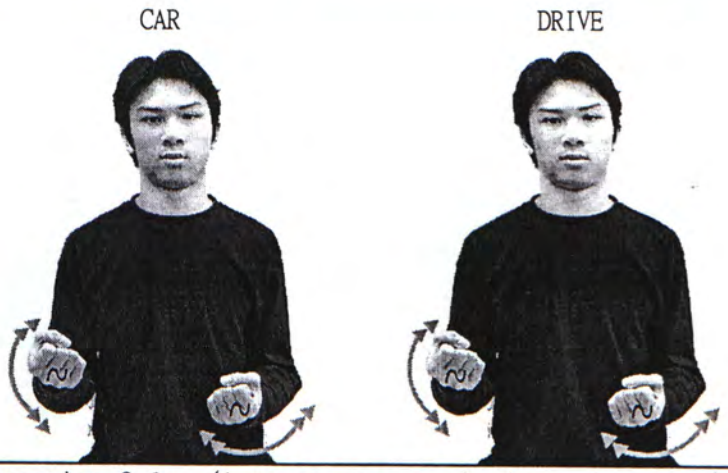
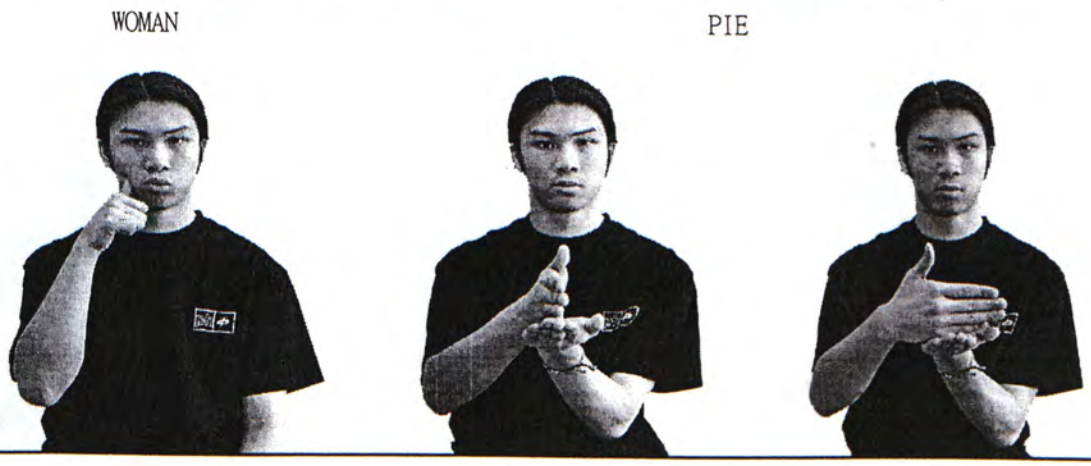


Illustration 2-1: 'A woman puts a pie into the oven.' (ASL example)



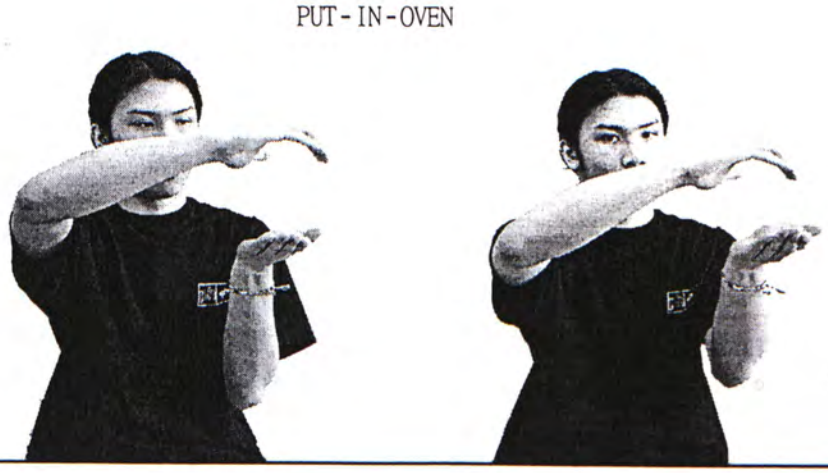


Illustration 2-2: A man cuts some bread.

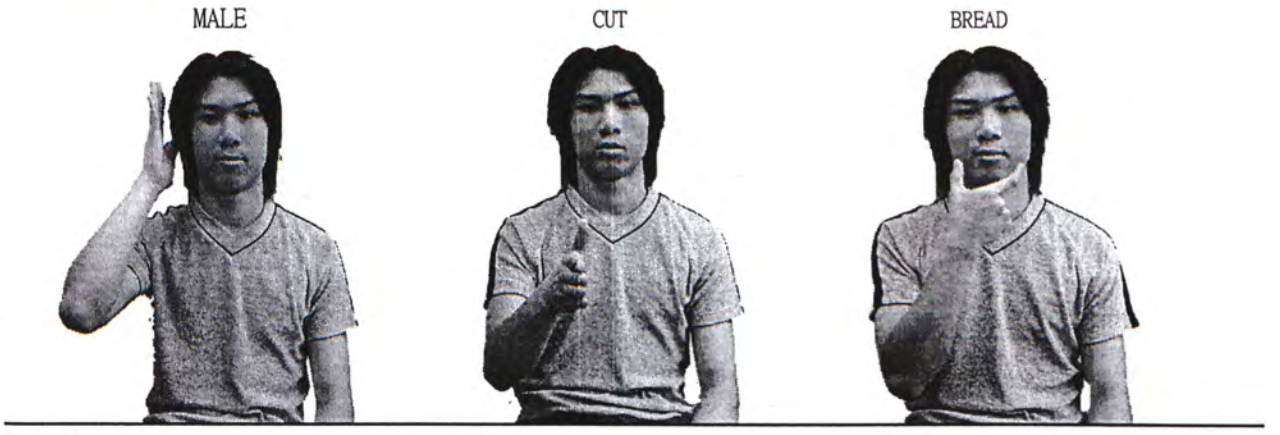


Illustration 2-3: A man washes a dog.

Illustration 2-4: 'A man washes a dog.'

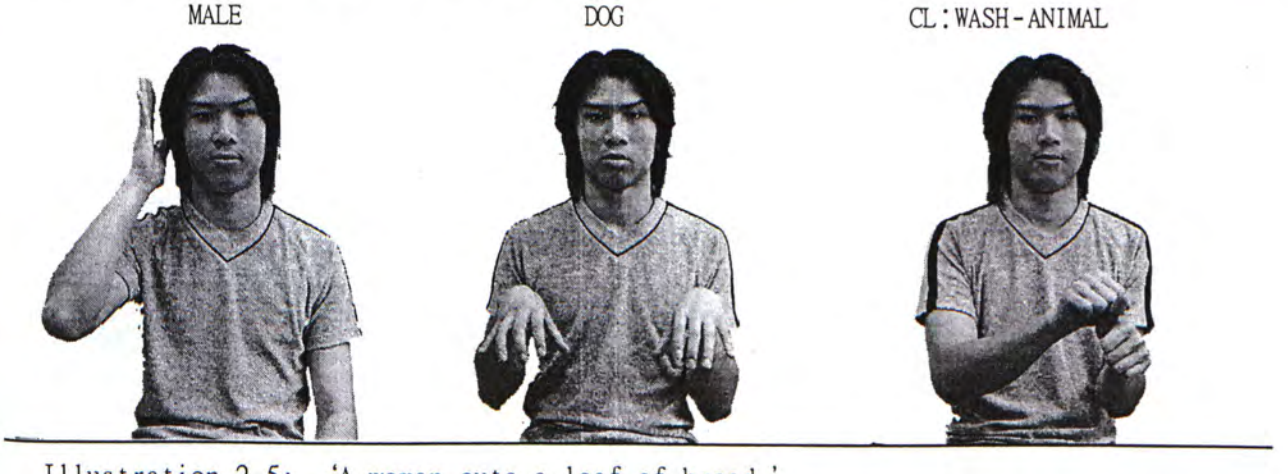


Illustration 2-5: 'A woman cuts a loaf of bread.'

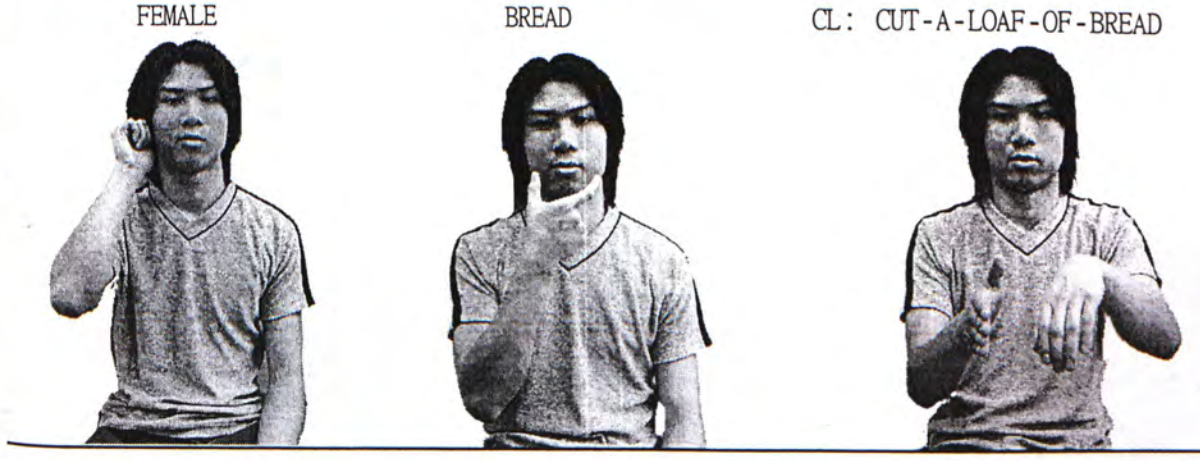


Illustration 2-6: 'A man washes a dog.'

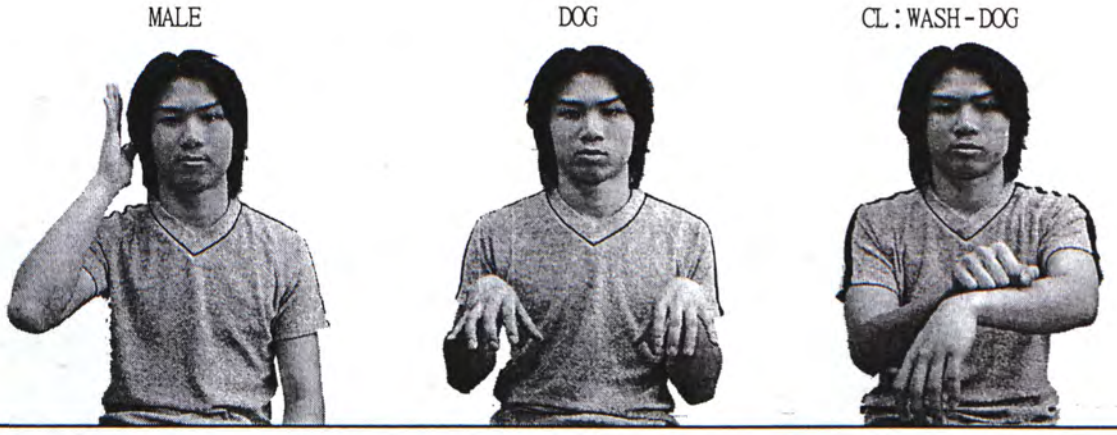


Illustration 2-7: 'A girl eats a pie.'

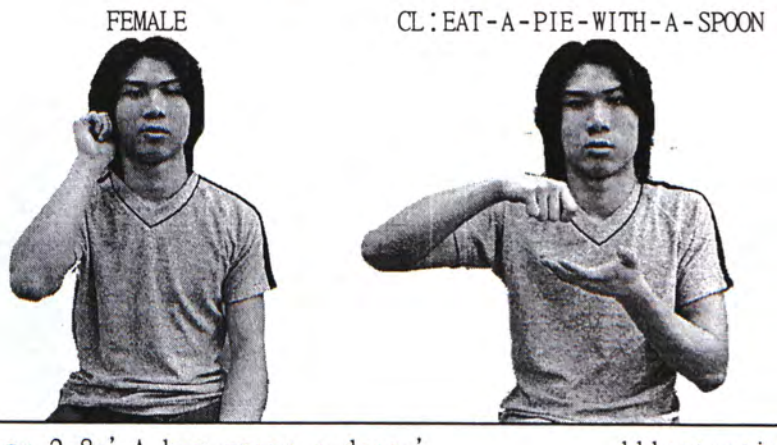


Illustration 2-8:' A boy opens a door.'

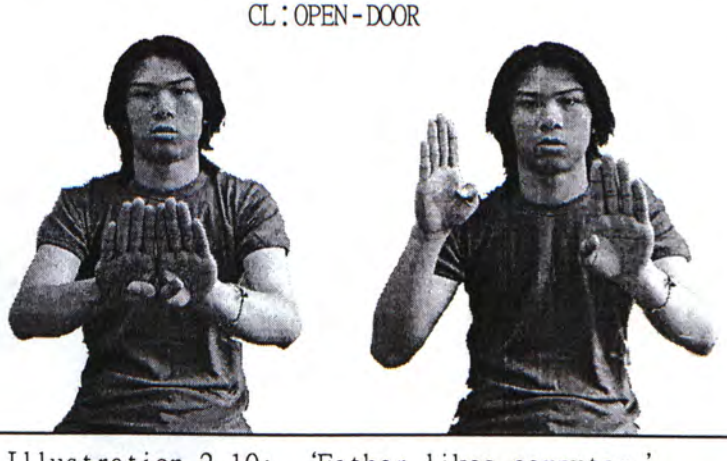


Illustration 2-9:' A man drives a car.'

Illustration 2-10: 'Father likes computer.'

Illustration 2-11: 'Father understands sign language.'

FATHER UNDERSTAND SIGN-LANGUAGE

Illustration 2-12; 'A man reads a book.' (ASL example)

BOOK CL:READ-BOOK

Illustration 2-13: 'A cat chases a rabbit.'

CAT CHASE RABBIT

Illustration 2-14: 'A car tows a truck.'

CAR TOW GOODS CAR

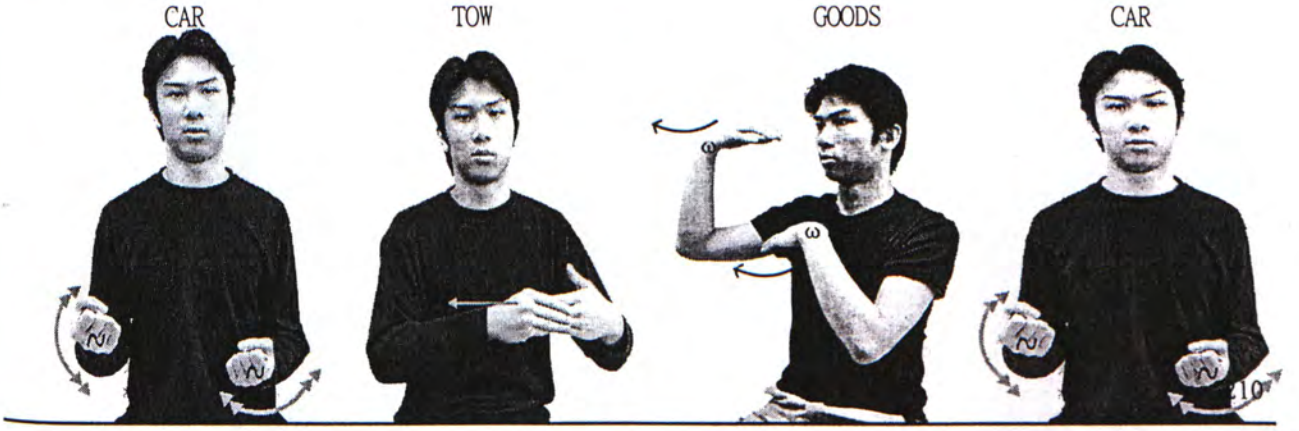
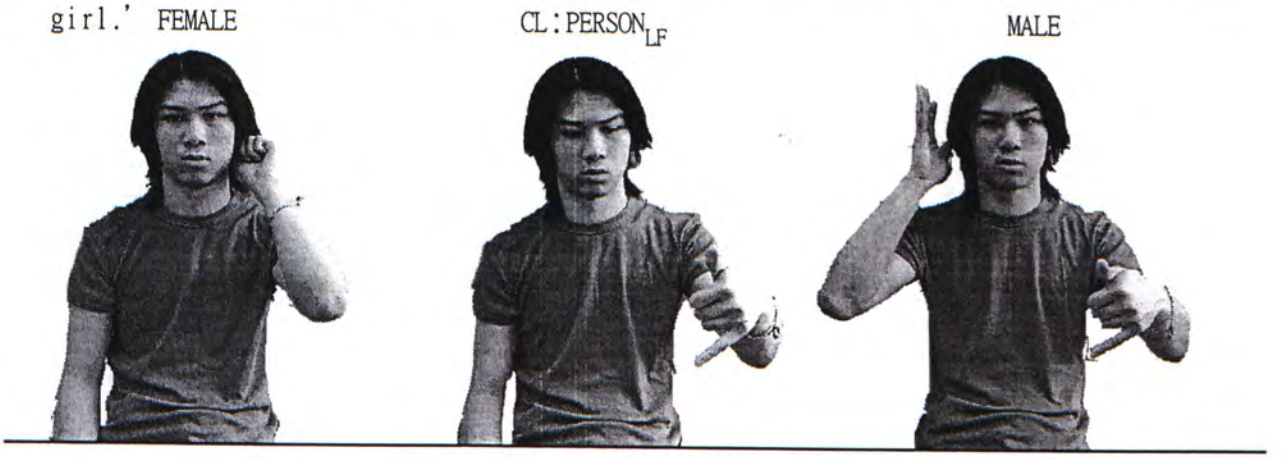


Illustration 2-15: 'A boy pushes a girl.'

Illustration 2-16: 'A boy and a girl are next to each other. The boy pushes the girl.'



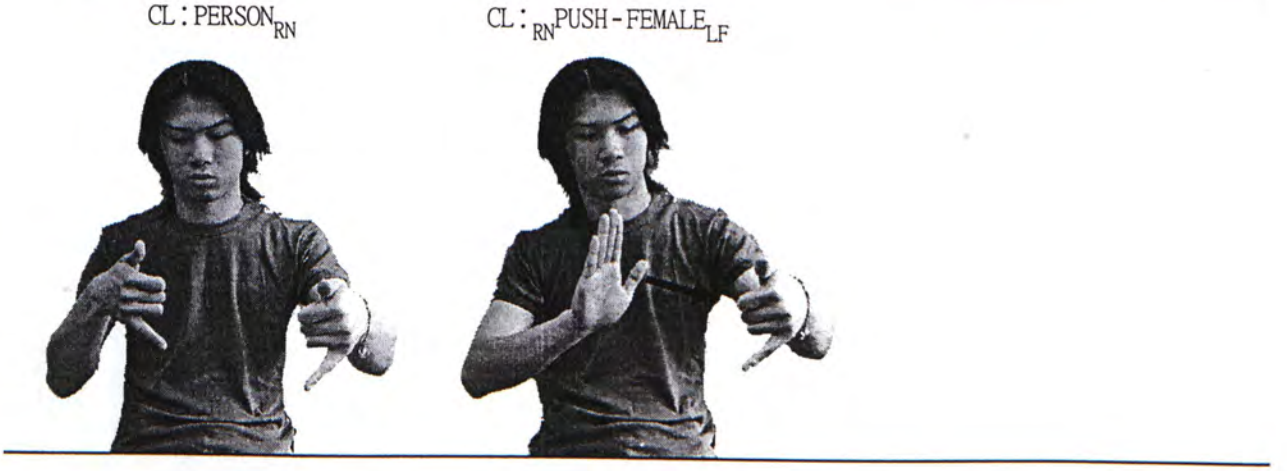
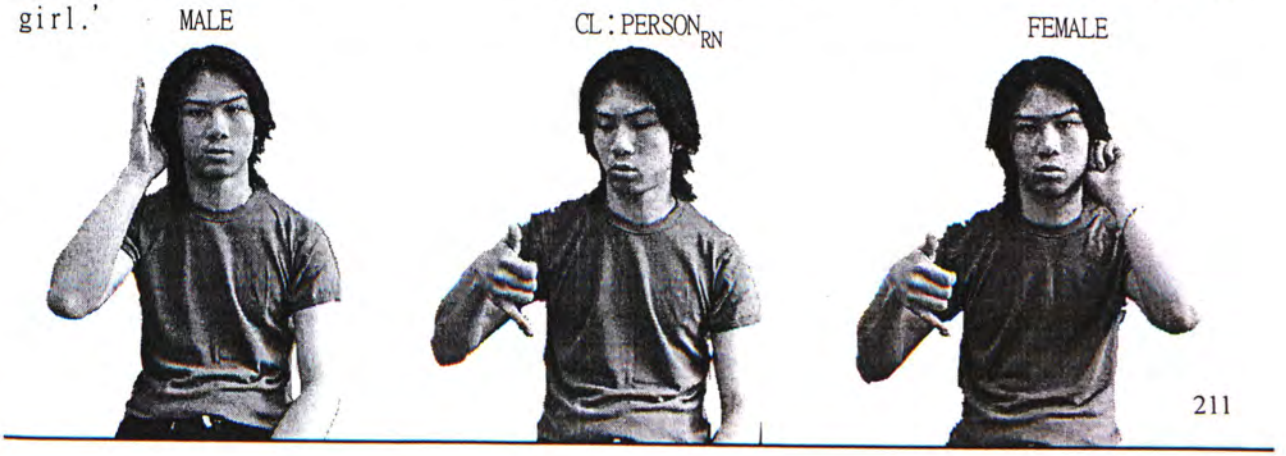


Illustration 2-17: 'A boy and a girl are next ot each other. The boy pushes the girl.'



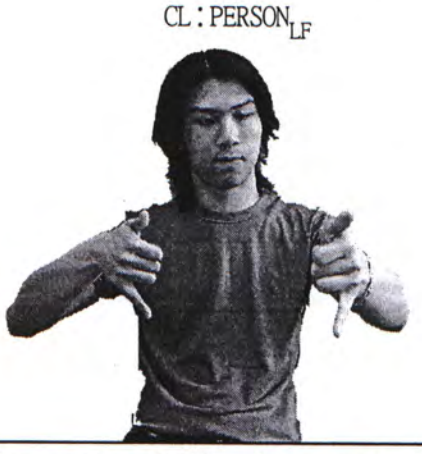
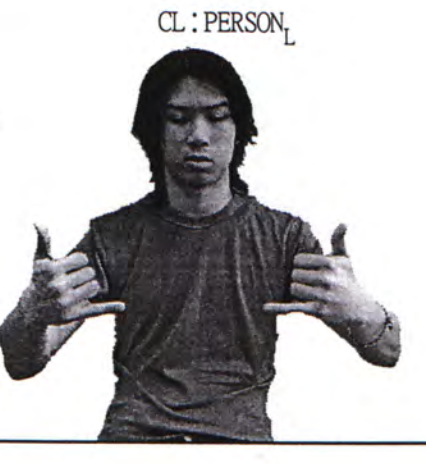


Illustration 2-18: 'Two students are next to each other.'



'One student teaches another student.'

Illustration 2-19: 'A boy and a girl are next to each other. The boy kicks the girl.'

*Readers may refer to Illustration 2-15 for the first part of this example.

Illustration 2-20: 'Two men are next to each other. They fight each other.'

CL: 2-PERSONS-FIGHT-EACH-OTHER

Illustration 2-21: 'There is a rock. A man kicks the rock.'

ROCK

CL: ROUND-OBJECT$_L$

MALE

CL: PERSON$_R$

CL: $_R$PERSON-KICK-ROUND-OBJECT$_L$

Illustration 2-22: 'Father borrows some money from mother.'

FATHER

BORROW

MOTHER

MONEY

Illustration 2-23: 'Two students sit together.'

TWO

STUDENT

CL : PERSON$_R$

CL : PERSON$_L$

^{R}BORROW - FROM - PERSON^L

MONEY

Illustration 2-24: 'Two students sit together.'

'One student gives a gift to another student.'

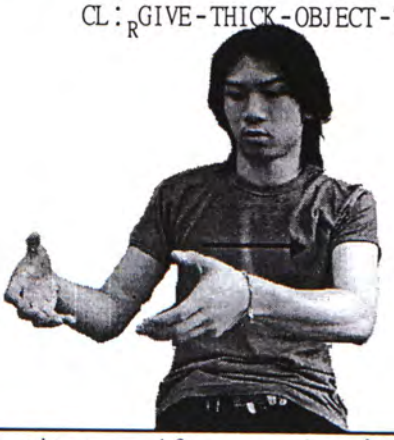


Illustration 2-25: 'Father gives a gift to mother.'

Illustration 3-1: 'ONE'

Illustration 3-2: 'A man'

MALE

Illustration 3-3:

THERE-BE

ONE

Illustration 3-4: 'INDEX$_{(Det)}^{CU}$'

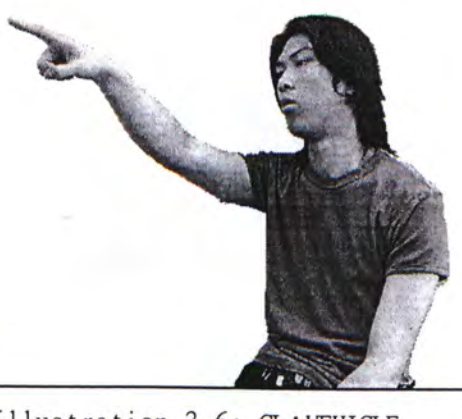


Illustration 3-5: INDEX$_{(Det)}^{CU}$

MALE

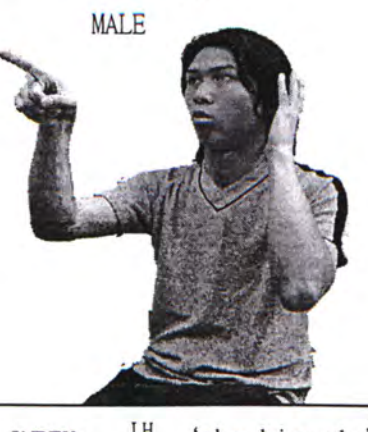


Illustration 3-6: CL:VEHICLE$_{R}$ 'the car'

INDEX$_{(Det)}^{LH}$ 'the bicycle'

INDEX$_{(Pron)}^{RH}$

CL:BICYCLE$_{LF}$

Illustration 3-7: $INDEX_{(Pron)}$ LH 'the beggar'

CL:$PERSON_L$

Illustration 3-8: CL:WALK 'held a bag... and walked along'

CL:HOLD-A-BAG

Illustration 3-9: CL: RIDE-A-BIKE / RIDE-THE-BIKE

'rode-a-/the-bike'

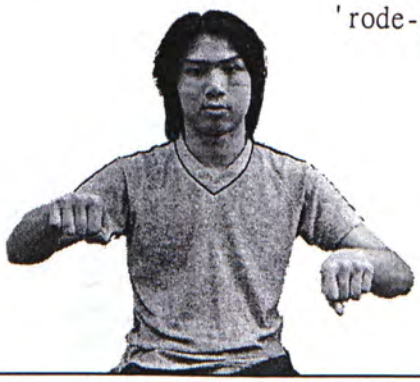


Illustration 3-10: CL:COVER-A-BASKET 'cover a basket'

CL:OPEN-THE-BASKET 'open the basket'

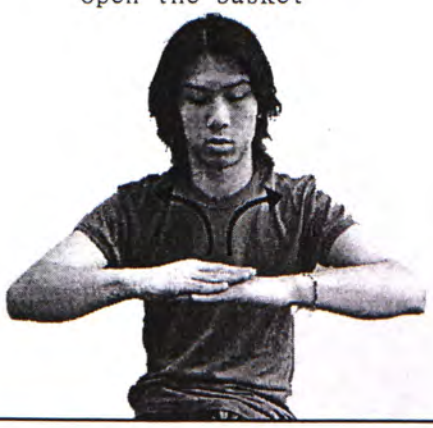


Illustration 3-11: 'A woman walks by. The beggar thanks her.'

FEMALE

CL: $_{CN}$WALK-BY$_{RF}$

INDEX$_{(Pron)}$ LH

CL: PERSON$_{RF}$

CL: PERSON$_{L}$

CL: THANK^{RH}

Illustration 3-12: '...playing a ball...'

PLAY

BALL

Illustration 3-13: 'saw (the beggar) .... gave (money) (to the beggar)...'

SEE^{L}

GIVE^{L}

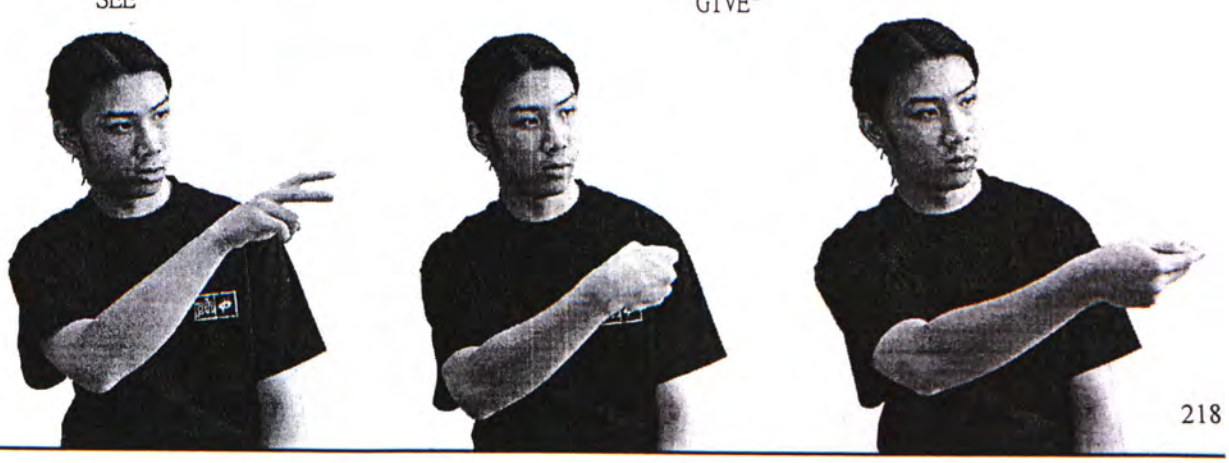


Illustration 3-14: ONE (Pathlength)

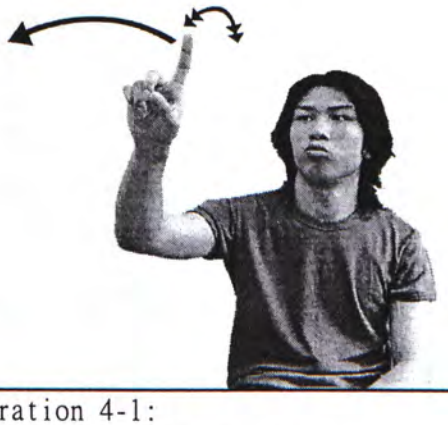


Illustration 4-1:

CL: $_{LN}$BIKE-MOVE-FORWARD$_{L}$

MALE

PRIVATE

CL: $_{RN}$CAR-MOVE-FORWARD$_{R}$

CL: $_{L}$BIKE-MOVE-FORWARD$_{LF}$

Illustration 4-2: $_{CN}$WALK-BY$_{RF}$

Illustration 4-3: 'There, a dog gets into a food basket.'

INDEX$_{(Loc)}^{LF}$ DOG CL: $_{C}$ANIMAL-GET-INTO-BASKET$_{LF}$

Illustration 4-4:

MOTHER (gaze-centre-forward)

Illustration 4-5:

BACK

Illustration 4-6:

DRIVE-A-CAR

body-lean-backward

BE-BOASTFUL

boy-lean-backward

SOUND-THE-HORN

head-turn-back+body-lean-forward

RIDE-BICYCLE-AND-LOOK-BACK

Illustration 4-7: 'The man in charge...'

body-shift-right

MALE

RESPONSIBLE

Illustration 4-8: 'The mother...taught (her two kids)...'

TEACH^{CD}

Illustratio 4-9: 'My father said," I hate you."'

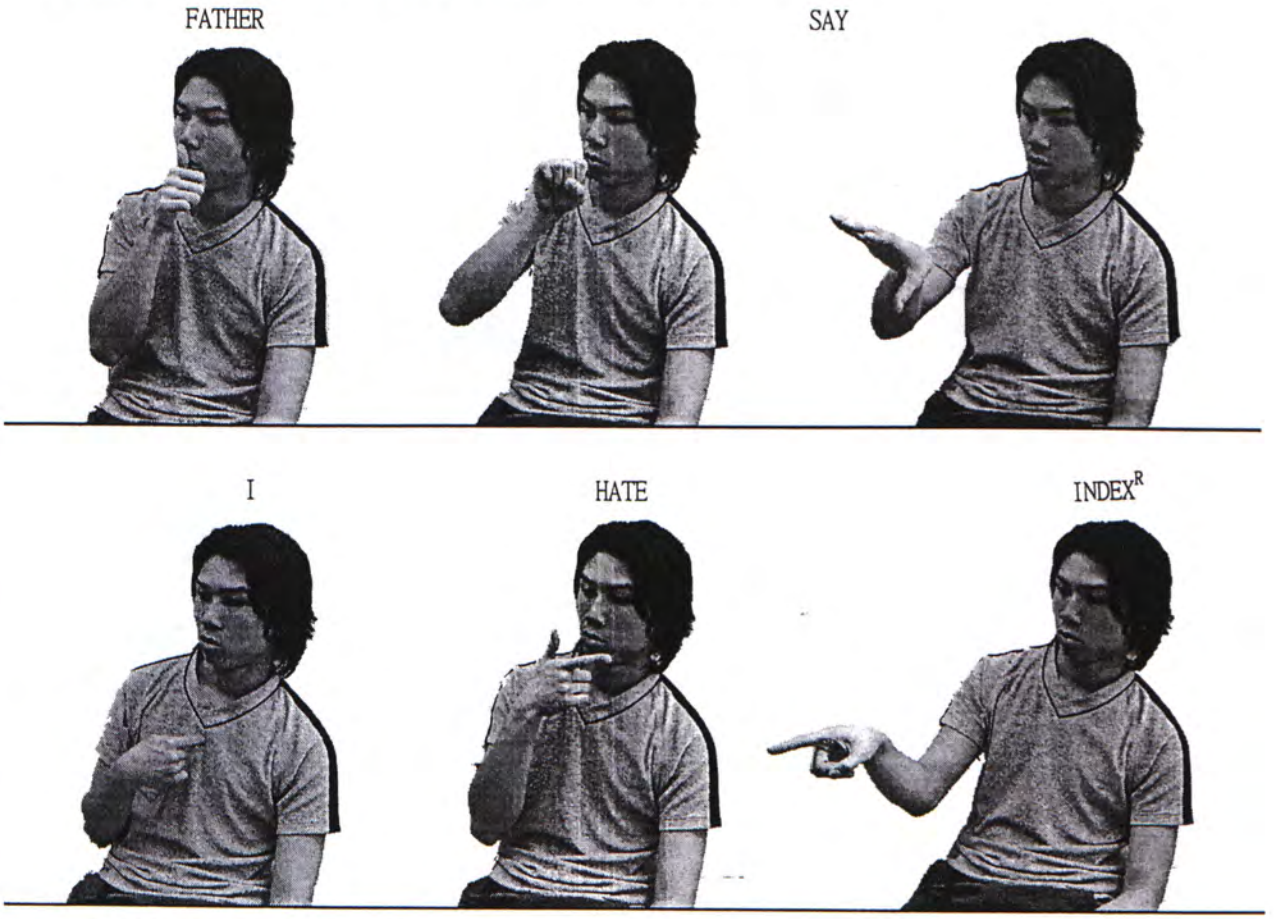


Illustration 4-10: '(He) went into the shop.'

CL: $_{CN}$PERSON-GO-INTO-SHOP$_{CF}$

Illustration 4-11: '(The boy) walks to (the beggar).'

CL: $_{R}$WALK-TO$_{L}$

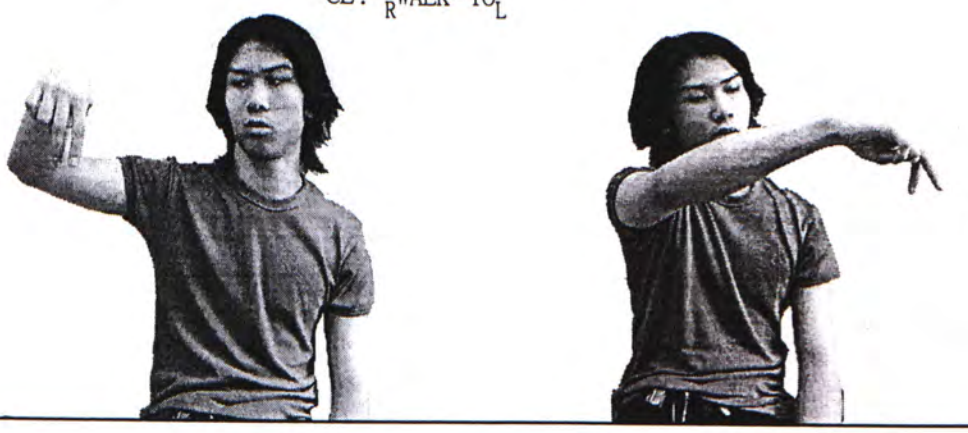


Illustration 4-12: 'The man (thief)turned to the left side and took something down.'

MALE

LFU$^{TAKE-SOMETHING-DOWN}_{LN}$

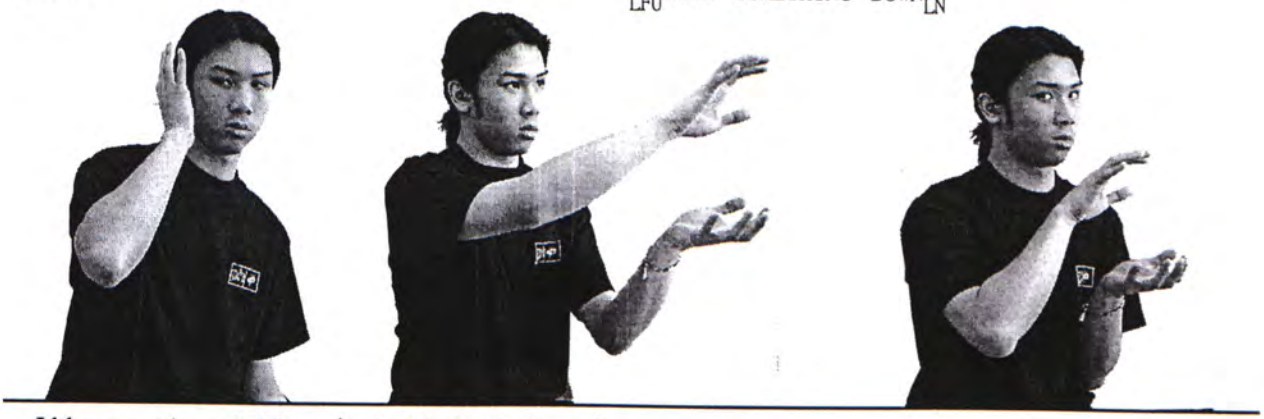
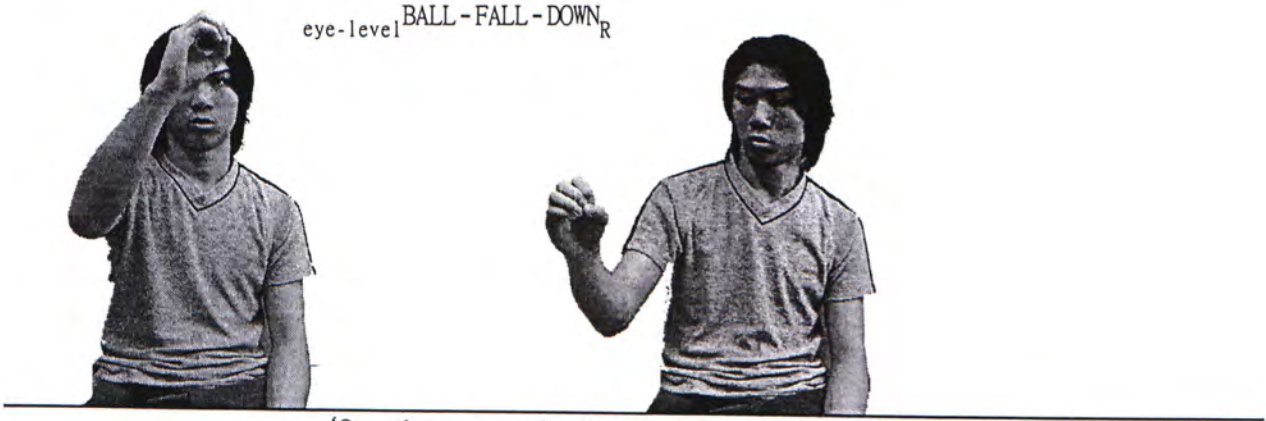


Illustration 4-13: 'A ball fell down.'

eye-level$^{BALL-FALL-DOWN}_{R}$



'On the ground there was a hole...'

$INDEX_{RD}$ $CL:SHAPE-OF-HOLE_{R}$

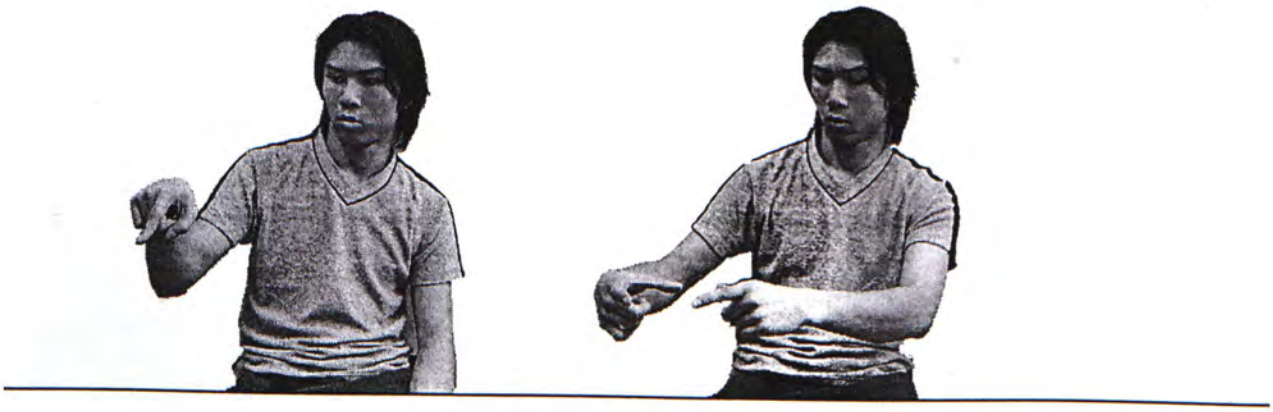
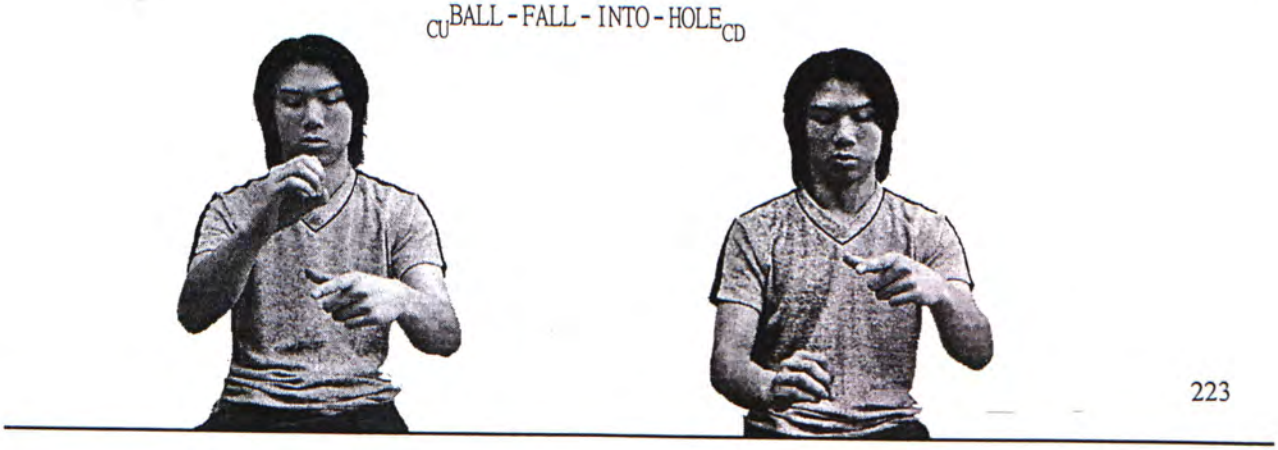


Illustration 4-14

CU$^{BALL-FALL-INTO-HOLE}_{CD}$



CL:$_{L}$FOUR-RUSH-TO$_{C}$

Illustration 4-15:

INDEX$_{(Loc)}^{LF}$

Illustration 4-16:

SEE^{RF}

Illustration 4-17:..she held a map and studied it. Meanwhile a dog jumped into (the basket) on the left.

CL:HOLD-AND-READ-A-MAP

DOG

CL:$_{CF}$ANIMAL-JUMP-INTO$_{LF}$

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