

Classifiers in Thai Sign Language

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It has been shown that classifiers in sign languages are quite similar in morphology and constructions in cross-studies of sign languages. The similarities lie in the complex simultaneous components in the morphology and constructions. Such complexity and simultaneity of language production is inarguably unique to the visual-spatial modality. This paper studies the classifier morphology and constructions in Thai Sign Language (Thai SL). The classifiers are compared with classifiers of spoken Thai. The result shows the complex simultaneous components of the morphology and constructions of Thai SL classifiers. In comparison with Thai, the differences in noun classificatory device systems between Thai SL and standard Thai are shown. It is argued that similar to classifiers in both sign languages and spoken languages, classifiers in Thai SL display properties of language universals as well as linguistic typology.

Keywords: classifier, Thai, sign language

1. Introduction

Classifiers in sign languages are quite similar in constructions and morphology in the complex simultaneous components of the signs (Slobin et al (2003), etc.) Aronoff, Meir, Padden and Sandler (2003), in their study of two sign languages, American Sign Language (ASL) and Israeli Sign Language (ISL), argue that the similarities of the classifier constructions and morphology can be attributed to universals of visual-spatial cognition and the manual-visual modality of language production and perception. The similarities lie in the complex simultaneous components in the constructions and morphology, which is easier expressed in a visual-spatial modal than in an auditory modal. Aronoff et al argue that ASL as an older language when compared with ISL shows more arbitrariness in the noun classificatory device system and ISL classifiers are more iconically based. Moreover, ASL, in a manner similar to Creol languages, is developing in the direction of a spoken language where morphology is an arbitrary based system.

Pietrandrea (2002) in her studies of the lexical parameters of the sign in Italian Sign Language (LIS) shows that the handshape, movement and location as parameters of a hand configuration may be either iconic or arbitrary in association with meaning. From a corpus of 1,944 signs drawn from lexical entries in three LIS dictionaries and other resources, she finds that 50% of the occurrences of handshapes are iconic, 67% of the occurrences of body locations are iconic, and no occurrences of neutral space for movement are iconic. That is, movement is 100% arbitrary.

Emmorey and Herzig (2008), in their several experiments on both production and perception of ASL classifiers from both deaf and hearing participants, show that classifier constructions in ASL have both categorical and gradient properties. The basic classifier handshapes including the handshapes expressing sizes are categorical, i.e., discrete, which may be either iconic or arbitrary. However, the location of a classifier hand configuration which expresses the spatial relationship between the verb and referent noun(s) is gradient, i.e., analogue or iconic in that there are no clear boundaries between many forms on the

continuum. Since ASL displays both qualities blended in the classifier system, citing previous studies on ASL acquisition and grammatical system e.g., Newport 1981, etc., Emmorey and Herzig argue that ASL along with other sign languages and spoken languages display both categorical and gradient as well as iconic and arbitrary properties in the language system. Spoken languages cannot be said to be more arbitrary than sign languages. The difference between sign languages and spoken languages is in language modality.

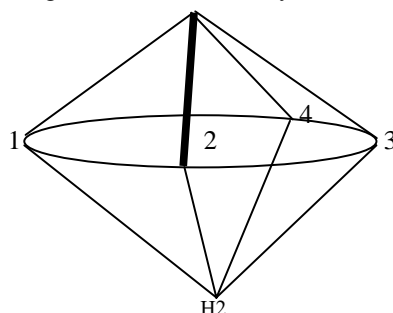
We show first in this paper that the classifiers in Thai SL are comparable to those of ASL and other sign languages in morphology and constructions, and that Thai SL classifiers show both categorical and gradient as well as iconic and arbitrary properties in the same manner as ASL classifiers do. We further compare classifier systems between Thai SL and spoken Thai. The result shows that although Thai SL and Thai differ in language modalities, both contain similar properties that define noun classificatory systems. The similarities and differences in the classifier systems between the two languages are explainable in terms of language universals and language typology.

2. Thai Sign Language Classifiers

2.1 Basic Hand Configuration

Based on the analysis of Brentari (1996), the canonical syllable in ASL takes the configuration as in Figure 1 below :

Hand Configuration (Canonical Syllable)



where 1 = handshape and orientation

2 = movement

3 = location

4 = non-manual features

H2 = second hand

heavy line = nucleus of the syllable (adapted from Brentari 1996:63)

Figure 1 Basic Hand Configuration of ASL (adapted from Brentari 1996)

Tumtavitikul and Niwatapant (2008) show that this basic hand configuration with syllable internal-structure is also applicable to Thai SL. Tumtavitikul and Niwatapant cite examples of minimal contrastive pairs of each component of a sign in words such as “house” vs. “tent” for distinctive handshape; “good” vs. “bad” for distinctive orientation; “headache” vs.

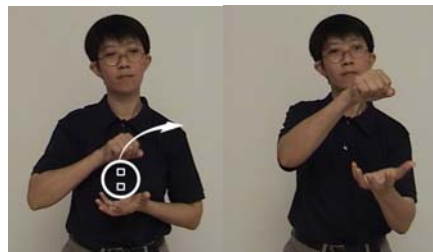
“toothache” for distinctive location and “come” vs. “go” for distinctive movement. Evidence for assimilation, reduction and deletion of sign components and of the syllable itself is also shown. For example,



Figure 2a ‘Pink’ (full form) Figure 2b ‘Pink’ variant 1 Figure 2c ‘Pink’ variant 2

Figures 2b and 2c above show the two variants of the word “Pink” which is a monomorphemic -polysyllabic word, a word with three syllables represented by three hand configurations. The second syllable in each variant is deleted. Both variants are reduced forms of the full form displayed in figure 2a.

Much like ASL, Thai SL syllables display both aspects that are the same and different from that of a spoken language. The syllable internal structure with nucleus and peripheral distinctive units can be compared to vowel and consonants in a spoken language. Nevertheless, these syllable components in Thai SL as well as ASL are both sequential and simultaneous as the entire hand configuration moves in a unit. Similar to ASL, the most important characteristic of Thai SL is simultaneity in time. This uniqueness of sign languages is evident in polymorphemic-monosyllabic words such as agreement verbs where a classifier being a bound morpheme is incorporated with the verb, usually as the referent noun object of the verb, and moves together with the verb in the same hand configuration (see figure 3 below). Syllables and words in Thai SL are evident that Thai Sign Language consists of linguistic units and structures comparable to the phonological units and structures in a natural language.



“I give a basket (as a gift) to you”

Figure 3 *The classifier morpheme for Direct Object ‘basket’ is incorporated simultaneously with the agreement verb ‘give’ in a polymorphemic-monosyllabic word ‘give’ (from Tumtavitikul and Niwatapant (2008) cf. Niwatapant (2006)).*

The incorporation of the classifier object to the verb “give” can be easily seen in the variation of the handshape as a function of the object noun. If the object noun is a “box” of gift, the handshape in fig. 3 above will change accordingly.


Moreover, Thai SL syllables are more complex than a syllable in a spoken language in that the movement component of a hand configuration which establishes a path of the thematic relation between the verb and the referent noun may itself be a morpheme of its

own (Aronoff, et al, 2003, Supalla 1986). Sign language syllables are complex in nature and maybe non-iconic in semantic association especially when the movement is non-iconic.


2.2 Basic Handshapes

Prillwitz, et al. (1989) analyze basic handshapes based on German Sign Language (DGS) as a combination of major hand features which are basic forms of hand, thumb combinations, finger specifications and finger parts. (cf. Hamburg Notation System for Sign Languages (HanonymSys version 2.0)

(<http://www.sign-lang.uni-hamburg.de/Projekte/HamNoSys/HamNoSysErklaer>). For example,

- (1) A basic form of hand may be a fist, an open hand, etc., e.g., , with a thumb position that may be folded in, upright or spread out,



with various degrees of bending, e.g., .


- (2) The thumb combinations can be a closure or an opening with various degrees of opening width and various degrees of bending of concerned fingers, e.g.,



- (3) The finger specifications are the selected finger(s) from a closed or an open handshape

base and specified with connections, e.g., .

- (4) Fingerparts are specifications of two fingers that cross (one on top of another) with or

without hidden thumb, e.g., .

In this manner with some adaptation, Thai SL classifier handshapes are analyzed into 80 basic handshapes as shown in tables 1a-c below. These handshapes are used as either one-hand or two-hand classifiers or both. The two-hand classifiers may either be two-parallel hand or two-different hand classifiers or both.

2.3 Classifier Types

Supalla (1986) defines classifiers in ASL as morphemes incorporated with verbs (of motion), marking the class or categorization of the referent nouns. He shows that although ASL classifiers may seem iconic in the outlook, the semantic constraints on ASL classifiers are the

same that operate in spoken languages of the world. The ASL classifier system is similar to those of spoken languages in terms of typology and semantic relations. Supalla (1986: 182-185) further summarizes ASL classifiers into five types as follows:

2.3.1. *Size-and-shape specifier (SASS)*

The handshape represents the size and shape of the referent noun. SASS classifier handshapes are iconic in nature.

2.3.2. *Semantic classifier*

The handshape represents the semantic category of the referent noun. These classifier handshapes are non-iconic but arbitrary in nature.

2.3.3. *Body classifier*

The body of the signer represents the referent noun which is animate.

2.3.4. *Bodypart classifier*

The bodypart of the signer represents the body part of the referent noun.

2.3.5. *Instrument classifier*

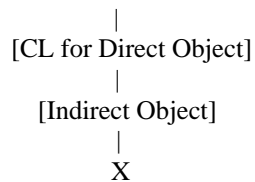
The handshape and movement represents the instrument acting upon the object noun.

Thai SL classifier handshapes can also be analyzed into these five main types. Type 3 and 4 which are non-manual involving body and bodypart will not be taken into consideration here. Of the 80 Thai SL classifier handshapes (cf. tables 1:a-c), 50 handshapes are primarily size-and-shape specifiers (SASS), 9 are instrument classifiers and 21 are semantic classifiers. Of the 21 semantic classifiers, 5 are numeric signs. Approximately 63% of the Thai SL classifier basic handshapes are primarily SASS, 11% are instrumental and 26 % are semantic. The proportion of SASS, instrumental and semantic is roughly 6:1:3. The figures clearly show that Thai SL classifier handshapes are more SASS and therefore, more iconic than arbitrary in nature. We are reminded that the entire hand configuration of a classifier involves movement and location of signing space and not just the handshape alone. Tables 1:a-c below demonstrate the 80 classifier basic handshapes with variants. The classifier handshapes are separated into three main types; SASS, Instrumental and Semantics. The one-hand and two-parallel as well as two-different hand classifiers are also notated in the tables.

2.4 *Morphology*



Brentari (1996), Aronoff, et al (2003) analyze ASL classifiers as independent morphemes incorporated into verbs creating complex multiple simultaneous morphemes in monosyllabic verbs. This is also true with Thai SL, for an example, the agreement verb “give” incorporates the classifier for direct object and may as well incorporate classifiers for subject and indirect object as schematized and displayed in figure 4 below (cf. Tumtavitikul and Niwatapant 2008). Such is a polymorphemic-monosyllabic word which is unique to sign languages (Brentari 1996).

[Subject]
|
[give]



(X = time slot in the timeline; CL = classifier)

Figure 4 A representation of the classifier morpheme incorporated into an agreement verb 'give' in 'I give a basket (as a gift) to you' in Thai SL (cf. figure 3 under 2.1 above)

Size and Shape Specifiers (SASS)						
1  1-H 2-H H1	2  1-H	3  1-H 2-H H1 H2	4  1-H H1	5 	6  1-H H2	
7  1-H H2	8  1-H 2-H	9  1-H 2-H	10  1-H 2-H H1 H2			
11  1-H	12  1-H 2-H	13 	14  H2	(variant of 14) 		
15  1-H 2-H		16  2-H H1				
17 	18 	19  1-H 2-H	20 	21  2-H	(variant of 21)  1-H	
22  2-H H1	23 	24  1-H				
25  2-H	26  1-H 2-H H1	27  1-H 2-H	28  2-H H1 H2	29 		
30  2-H	31  1-H 2-H H1	32 				
						












	33 	34 	35 	36 1-H 2-H 		
	37 1-H 2-H	38 1-H 2-H H2	39 1-H 2-H H1 H2	40 2-H H2		

Table 1a Thai Sign Language Classifier Basic Handshapes (**1-H** = one-hand classifier; **2-H** = two-parallel hand classifier; **H1**, **H2** = two-different hand classifier; H1 = first hand and H2 = second hand)

SASS						
						
	41 1-H	42 H1	43 1-H 2-H	44 2-H H1		
						
	45	46	47			
						
	48 1-H	49				
						
	50 1-H					
Instrument Classifiers						
						
	51 1-H 2-H H1 H2	52 1-H	53 H1	54 2-H H1		
						
	55 1-H 2-H	56 2-H	57 1-H 2-H H1			
						
	58 1-H 2-H H1 H2	(variant of 58) 1-H H1	59 H1			

Numerical / Semantic Classifiers






















	 60 1-H 2-H H1 H2	 61 1-H H1	 62	 63 1-H 2-H	 64 1-H 2-H H2	
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Table 1b Thai Sign Language Classifier Basic Handshapes (1-H = one-hand classifier, 2-H = two-parallel hand classifier, H1, H2 = two-different hand classifier, H1 = first hand and H2 = second hand)

Semantic Classifiers

 65 2-H H1	 (variant of 65)	 (variant of 65)				
 66 1-H						
 67 1-H	 68 1-H H1	 69				
 70	 71 1-H					
 72 1-H 2-H						
 73 1-H 2-H						
 74 H2	 (variant of 74) 1-H	 75	 76 1-H	 77 1-H	 78 H1	





 79 2-H	 (variant of 79)	 (variant of 79)				
 80 1-H						

Table 1c *Thai Sign Language Classifier Basic Handshapes* (1-H = one-hand classifier, 2-H = two-parallel hand classifier, H2, H1 = two-different hand classifier, H1= first hand H2 = second hand)

2.5 Classifier Constructions

In the studies of *Universals and Typology of Noun Classificatory Systems*, Aikenvald (2003: 13) referring to Allan (1977) gives the definition of Classifiers as “morphemes which occur in surface structures under specifiable conditions, denote some salient perceived or imputed characteristics of the entity to which an associated noun refers and are restricted to particular construction types known as classifier constructions.” Classifiers categorize nouns semantically, according to their shape, size, animacy, structure, location, and/or function. In her studies of *Universals and Typology of classifiers*, Aikenvald finds that typology is based on the morpho-syntactic environments of the classifiers-- their constructions. There are mainly eight types of classifiers in world languages: Noun classifiers; Numeral classifiers; Relational classifiers; Possessed classifiers; Possessor classifiers; Verbal classifiers; Deitic classifiers; and Locative classifiers. A brief definition of these eight types are summarized in the following (cf. Aikenvald 2003: 17-18):

2.5.1 Noun classifiers

These are independent words or affixes attached to nouns within a noun phrase (NP). A noun classifier refers to the inherent properties of the noun it is associated with.

2.5.2 Numeral classifiers

These are either free forms or affixes attached to numerals or quantifiers. A Numeral classifier occurs before or after numeral in a numeral NP.

2.5.3 Relational classifiers

These refer to the function of a noun in a possessive relation, the way it is possessed or treated.

2.5.4 Possessed classifiers

These categorize the possessed noun in a possessive NP according to its inherent properties.

2.5.5 Possessor classifiers

These categorize the possessor noun in a possessive NP according to its inherent properties.

2.5.6 Verbal classifiers

These are usually affixes realized on verbs. A verbal classifier refers to the inherent properties of the noun which is thematically related to the verb as its subject or object.

2.5.7 Deictic classifiers

These are morphemes attached to deictics within an NP. A deictic classifier qualifies the noun with respect to its inherent properties or orientation.

2.5.8 Locative classifiers

These classifiers appear in adpositional NP characterizing the head noun according to its inherent properties.

Languages are not restricted to just one type of noun classificatory device system. Some languages have different classifier systems within one language. Languages with multiple classifier systems have the same set of morphemes used in more than one classifier environment. Thai, for example, is one of these languages with multiple classifier systems. While Thai classifiers are mainly numeral classifiers with the typical characteristics of a numeral classifier system that does not have plural markings on nouns nor plural agreements, the same set of classifiers in Thai may occur in several morpho-syntactic environments.

Aronoff et al (2003: 63-65) citing Grinevald (2000) summarizes that classifiers in sign languages are mainly verbal classifiers. They are bound morphemes that are affixed to the verbs. There are two main types, semantically, of classifiers in sign languages; 'essence categories' and 'physical categories'. The 'essence categories' are comparable to semantic classifiers in Supalla (1986) and 'physical categories', Size and Shape Specifiers. Verbal classifiers in sign languages are not entirely the same as verbal classifiers in spoken languages since classifiers in sign languages may as well serve different functions in discourse, e.g., in referent tracking, backgrounding, modifying, etc. This is in agreement with Wilbur (1987) who analyzes ASL classifiers as morphemes attached to the verb in a predicate as its object and/or subject, providing information about the properties of the referent noun. Wilbur notes that ASL classifiers may vary in functions and may occur in different types of predicate. He further identifies three classifier types for ASL based on Schick (1985) which are 'SASS', 'handle' and 'class' or semantic. The functions and constructions of the classifiers can be summarized as in the following, bearing in mind that the classifier incorporations are non-linear: (cf. Wilbur 1987:97)

- (5) SASS classifiers may function as an adjective describing the referent noun, an instrument performed by the verb, or the location of the referent noun with the following construction:

[V-CL] ;CL may be adjectival, locative or instrumental and V= verb

- (6) 'Handle' classifiers may function as subject, indirect object and/or direct object of a transitive or bi-transitive verb, or as an instrument "handling" the activity by the verb upon the referent noun with the following construction:

[V-CL_O (-CL_S) ({-CL_{INST} -CL_{IO} })] ; S= subject, O = direct object,
IO = indirect object, INST= instrument

- (7) Semantic classifiers may function as the subject of an intransitive verb or the location of the subject of the stative verb with the following construction:

[V- CL_S (-CL_{LOC})] ; LOC = location

Thai SL classifiers are comparable to ASL classifiers in that Thai SL classifiers are mainly verbal classifiers which may vary in functions and may occur in different types of polymorphemic-predicate (Collins-Ahgren 1990). Thai SL classifiers, excluding non-manual parameter, may be analyzed with three main types: SASS; instrumental; and semantic (cf. Tables 1:a-c). The classifiers may function as subject, object and/or indirect object for a transitive and/or bi-transitive verb, or as an adjective, a location, an instrument, or an anaphor. Thai SL classifiers take all of the VP constructions as in ASL. For example,

- (8) An SASS classifier as the direct object of an agreement verb in the sentence (*I*) give a basket (as a gift) to you (cf. Figures 3 and 4), takes the following construction:

[V- Cl_O -CL_S -CL_{IO}] ; where subject and object are both zero morphemes.

- (9) An instrument classifier for the verb ‘write’ as in (*I*’m) writing with a pen takes the following construction:

[V- CL_{INST}] ; where the classifier for ‘pen’ functions as an instrument incorporated with the verb.

- (10) A semantic classifier functioning as a location as in the sentence (*I*’m) writing on a piece of paper takes the construction:

[V- CL_{INST} -CL_{LOC}] ; where a second hand is the classifier for ‘paper’ functioning as a location.

The focal point is that these classifiers simultaneously occur and move together in a unit with the verbs they incorporated with. Hence, the VP constructions are poly-morphemic and mono-syllabic taken Brentari’s point of view (cf. Figure 1 under 2.1)

3. A Comparison between Thai Sign Language and Thai Classifiers

3.1 Constructions

According to the typology of classifier constructions proposed by Aikenvald (2003), Thai is a language with multiple classifier systems where the same set of classifier morphemes have several morpho-syntactic environments. Aikenvald analyzes Thai classifiers as mainly numeral classifiers with four other morpho-syntactic environments for the same set of classifier morphemes (Aikenvald 2003: 207, 213-214) with the following constructions:

- (11) N [num-CL] as numeral CL, for example,

- [róʔ sǎ:m kʰan] ‘Three cars’
 car three – CL
- (12) N [CL-det] as deictic CL (det = determiners or demonstratives), for example,
 [róʔ kʰan ní] ‘This car’
 car CL - this
- (13) N [CL-adj] as adjectival modifier, for example,
 [róʔ kʰan lék] ‘small car’
 car CL – small
- (14) [CL-N]_N as noun CL, for example,
 [baj má:j] ‘leaf’, [tôn má:j] ‘tree trunk’, [kìŋ má:j] ‘branch’
 CL- plant CL - plant CL - plant

where noun CLs are used for distinguishing different aspects of the same noun.

Interestingly, Thai, under scrutiny, also shows on rare occasions, verbal classifiers (Aikenvald 2003: 9). This may have been taken for granted since subject and object often take the form of zero pronouns in Thai. Verbal classifiers in Thai are linear and are similar to those that occur in spoken languages in general. Verbal classifiers in Thai take the following construction:

- (15) (S) [V-(O)] [num-CL] as verbal CL, for example,
 [tʰam kʰwam sǎʔà:t sǎ:m kʰráŋ læ:w]
 (I've) cleaned (it) three times already
 Do cleaning three -CL already

When the classifier constructions between Thai and Thai SL as shown in 2.5 are compared, one main difference found is that verbal classifier construction is central to Thai SL as in ASL and other sign languages. While many spoken languages have verbal classifiers, the classifiers are affixed to the verb sequentially. In the case of Thai, the classifiers are adjacent to numeral number and occur after it and both come after the verb in a sequence. Classifiers in sign languages are incorporated into verbs simultaneously and not sequentially. Such a salient feature of simultaneity in time is possible due to language production-perception modality which is found across sign languages. Simultaneity does take place in spoken languages where physiology of speech production allows multiple layovers of features, for example, stress, tone, intonation, duration superimposed onto segments e.g., vowels and consonants. Such phenomena are well-known and well-studied in phonology. Due to physiological constraints, simultaneity in grammatical categories as of verb and classifier or noun and classifier are not made possible in speech production modals since it would be impossible articulatorily for any speaker. Even if this were possible, it would have burdened the auditory process enormously in perception for the listener. (Emmorey 1995 cited in Aronoff et al. 2003: 58)

The classifiers in both Thai and Thai SL are similar in terms of making use of multiple classifier systems, but the two differ in the dominant classifier construction. Thai SL is

mainly a verbal classifier system, similar to ASL and other sign languages while Thai is mainly a numeral classifier system. Thai SL classifiers and Thai classifiers differ by typology.

3.2 Semantic Categorizations of Nouns

The comparison of classifiers on semantic categorizations of nouns between Thai SL and Thai are made by studying classifiers that are used with 510 nouns selected from the Royal Institute Handbook on Thai Classifiers. The criteria for the selection from a list of over 3,000 lexical entries of nouns are familiarity and frequency of use judged by a native Thai SL signer. The result is as follows:

3.2.1 One-Hand Classifiers

There are 45 one hand Thai SL classifiers. These correspond with 95 Thai classifiers. The classifiers are used with at least 233 nouns. These one-hand classifiers are marked with '1H' in the Thai SL classifier basic handshapes chart (cf. tables 1a-c).

3.2.2 Two Paralell-Hand Classifiers

There are 36 two-paralell hand classifiers. These correspond with 102 Thai classifiers. The classifiers are used with at least 276 nouns. Among these 36 classifier handshapes, only 11 handshapes are not used as one-hand classifiers. All these 36 classifier handshapes are marked with '2H' in Tables 1a-c.

3.2.3 Two Different-Hand Classifiers

There are 45 two-different hand classifiers which are combinations of two different handshapes from a set of 28 Thai SL classifier basic handshapes. These classifiers are used with at least 76 nouns. Among these 28 handshapes, only 5 handshapes are not used either as one-hand classifiers or two-parallel hand classifiers. All these two-different hand classifier handshapes are marked with either 'H1' and/or 'H2' in Tables 1a-c, 'H1' for the first hand which is normally the active hand and 'H2', the second hand which is normally the passive one.

In all, there are 126 Thai SL classifiers for the 510 nouns. These are made up of a total of 61 classifier basic handshapes. All are shown in Tables 1a-c. For the same set of 510 nouns, there are at least 175 Thai classifiers being used, redundancies omitted.

4. Discussion

It has been shown in 3.1 and 2.5 above that classifiers in both Thai SL and Thai are quite similar as they both bear the universal properties of classifiers - being morphemes semantically categorizing the referent nouns and occur in restricted morpho-syntactic environments, the classifier constructions. Classifiers in the two languages differ only by typology. Classifiers in Thai are mainly numeral classifiers with multiple functions and the ones in Thai SL are mainly verbal, also with multiple functions.

Collins-Ahlgren (1990) in her study of Thai Sign Language formally learned by the deaf in the northern province of Chiang Mai in Thailand, analyzes Thai SL classifier morphemes in polymorphemic predicate constructions as unique to sign languages and different from spoken Thai classifiers. She distinguishes six types of Thai SL classifier

handshape morphemes: ‘whole entity’ which is semantic; ‘surface’, comparable to locative; ‘depth, width and shape’, comparable to SASS; ‘instrument’; ‘perimeter’, roughly a broad specification of shape of the referent noun, and ‘extent’ which describes volume or amount of the referent noun, comparable to numeral and quantity in a sense. She further makes comments in comparison between spoken Thai and Thai SL classifiers that one crucial difference between the two is the socio-linguistic aspect. Spoken Thai is sensitive to social stratification whereas Thai SL is not. For example, the classifier for person in general is [k^hon] ‘คน’ but for royalties, it is [ʔon] ‘องค์’. So different classifiers used with the same noun are not reflected in Thai SL classifiers. Collins-Ahlgren summarizes that both Thai and Thai SL classifier systems are similar in that they both are natural language devices for noun categorization similar to classifier systems of other world languages. While Thai SL is a predicate-classifier language, spoken Thai is not, and they both are but two different natural languages. One who acquires both is a bilingual (1990: 115-116).

On semantic categorizations of nouns: For 510 nouns selected for this study, there are 126 Thai SL classifiers. These classifiers are based on 61 basic handshapes (cf. Tables 1:a-c). The classifiers correspond with at least 175 Thai classifiers, redundancies omitted. Most classifiers in Thai SL cover a different set of nouns when compared with the corresponding Thai ones, and the reverse is true for Thai classifiers. For example, the one-hand classifier handshape number 2 (SASS) covers at least 13 nouns and corresponds with at least 12 Thai classifiers, one of which is an SASS, [mét] ‘เม็ด’. On the contrary, this Thai classifier, [mét] ‘เม็ด’ (SASS) corresponds with at least 9 Thai SL one-hand classifiers; handshapes numbers 1, 2, 8, 9, 11, 26, 43 which are all SASS and numbers 71, 73, both of which are Semantics.

Another example: the two-parallel hands classifier handshape number 28 (SASS) covers at least 47 nouns and corresponds with at least 26 Thai classifiers, one of which is an SASS, [baj] ‘ใบ’. In contrast, this Thai classifier, [baj] ‘ใบ’ (SASS), corresponds with at least 4 Thai SL two-parallel hands classifiers; handshapes number 15, 16, 39 which are all SASS and number 60, a semantic classifier. [baj] ‘ใบ’ also corresponds with ten other one-hand classifiers; handshapes numbers 3, 4, 6, 9, 10, 31, 37, 39 which are all SASS and numbers 51, 52 which are both instrumental.

It should be noted that the two-different hand classifiers will not be compared nor discussed in details here. Of these 61 Thai SL basic classifier handshapes, half are SASS. Each of these SASS classifier handshapes categorizes a different set of nouns when compared with the corresponding Thai classifiers. This shows that nouns are perceived and categorized differently in Thai SL and Thai. Some nouns that are categorized by the same SASS Thai SL classifier are used with different classifiers in Thai and vice versa. What Thai signers categorize as having similar or comparable shape and size may not be categorized similarly by non-signing Thai speakers and vice versa. The categorical boundaries are drawn differently in each language. This difference is true between classifier systems of any two spoken languages. There is no two spoken languages that categorize all the nouns identically. Sign languages are not different in this regard. In our comparison of classifier handshape number 2 in table 1a as an SASS one-hand classifier for round object of small size is used with an intestine, a roll of film, a clove of garlic, a piece of coal, an eye, a button, pearl, larynx, etc. (cf. Table 2), with a set of at least 13 nouns.


For the same set of nouns, there are at least 12 spoken Thai classifiers used, some are a partial repeat of the referent noun, e.g., [duaj] ‘ดวง’ for [duaj taa] ‘an eye’, [lû:k] ‘ลูก’ for

[lû:k kràʔ-dtùak] ‘larynx’. Some are more generic classifiers used for round objects of less specific sizes and shapes, e.g., [mét] ‘เม็ด’ for pearl, button, Jackfruit seed (a kind of dessert). Some are not SASS and cover nouns that bear no resemblance to a small round object, e.g., a generic Thai classifier [tua] ‘ตัว’ for a chess piece, etc. Each of these 12 Thai classifiers has its own set of referent nouns which may or may not overlap with one another.

It can be derived from the fact that each of these 126 Thai SL classifiers, with exception of a few, is used with multiple nouns and corresponds with multiple classifiers in spoken Thai, and the reverse is true for each of the corresponding Thai classifiers, that Thai SL classifiers can be arbitrary as much as the corresponding Thai ones. Some Thai SL classifier may be a repeat of the referent noun by the handshape and is iconic. But for the same SASS classifier, it often covers other nouns which bear no obvious resemblance to the handshape as well, in which case, it is arbitrary. Moreover, the entire hand configuration with its movement which is arbitrary can become arbitrary and complex.

5. Summary

Handshapeswise, Thai SL classifiers may be more iconic in appearance, but morphologically, the classifiers are complex especially in the polymorphemic-monosyllabic constructions. The simultaneous morphemes cannot be matched with by any spoken language. Typologically, the two languages have a similar classifier system as of universals in languages but the two differ in typology. Thai classifiers are basically numerical classifiers that have multiple functions whereas Thai SL classifiers are basically verbal classifiers which also have multiple functions. The verbal classifier constructions in Thai SL, being non-linear, are as complex, if not more so, as the Thai numeral classifier constructions.

Thai S L Classifier	Referent Nouns	Corresponding Thai Classifiers
 number 2 (SASS) for round object, small size	<ul style="list-style-type: none"> - pearl, button - chess piece - eraser - larynx (adam’s apple) - garlic - eye - charcoal 	<ul style="list-style-type: none"> - [mét] ‘เม็ด’ (SASS) - [tua] ‘ตัว’ (general) - [kǎn] ‘ก้อน’ (SASS) [tʰâ:ŋ] ‘แท่ง’ (SASS) [ʔan] ‘อัน’ (general) -[lû:k] ‘ลูก’ (SASS) -[tɕʰùk] ‘ลูก’ (SASS) - [duaŋ] ‘ดวง’ (SASS, partial repetition of noun) - [kǎn] ‘ก้อน’ (SASS) [tʰǎn] ‘ท่อน’ (SASS)

	- intestine	- [t ^h ɔ:] ‘ท่อ(ลำไส้)’ (SASS)
	- abscess	- [húá] ‘หัว’ (SASS)
	- small bell	- [lú:k] ‘ลูก’ (SASS)
	- film (role)	- [múan] ‘ม้วน’ (SASS)
	- jackfruit seed	- [mét] ‘เม็ด’ (SASS)

Table 2 A comparison between Thai Sign Language Classifiers and corresponding Thai classifiers and the referent nouns

Finally, semantically, most Thai SL classifiers cover a different set of referent nouns when compared with the corresponding Thai ones. Even an SASS classifier handshape, with its wide scope of referent nouns, many of its referent nouns bear no physical resemblance to the handshape - this argues for arbitrariness. Moreover, when the entire hand configuration is considered where handshape is just a component of its parts, the classifiers are more arbitrary than iconic since hand movement is arbitrary. In all, Thai SL classifier system cannot be said to be less arbitrary or less complex than that of spoken Thai. On the contrary, taken all these into consideration, Thai SL classifiers may be said to be as complex and arbitrary if not more than the Thai ones. Age-wise, Thai SL is much younger than spoken Thai, the difference between the two is no less than half a millennium.

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