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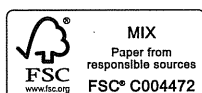
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James Myers

Sign Languages, Táiwan

1. HISTORY

Taiwan Sign Language (TSL) is a natural language developed and used by the deaf in Táiwan. According to the 2013 report of the Ministry of the Interior, Táiwan, there are about 13,396 citizens with hearing mechanism disability in Táiwan (<http://www.moi.gov.tw/stat/year.aspx/>). Smith (2005) reported that TSL is used by approximately 30,000 deaf people residing in Táiwan. However, as yet there is no official census of the population of TSL signers.

There are two types of sociolinguistic circumstances for the emergence of a natural sign language (Meir *et al.* 2010): village sign languages and deaf community sign languages. The former type arises in a relatively insular village where genetic deafness is transmitted, for example, Martha’s Vineyard Island in Massachusetts, USA. The latter arises when deaf individuals are brought together for educational purposes. Like the majority of the natural sign languages in the world, TSL belongs to the latter type.

The history of TSL can be dated back to when the first two schools for the deaf were established in 1915 and 1917, respectively, by Japanese during

the Japanese occupation of Táiwān (1895–1945) (Smith 2005). Since Korea was occupied by Japan during 1910–1945, both TSL and Korean Sign Language are historically related to Japanese Sign Language (JSL). Even today, the TSL lexicon still shares a high degree of similarity with that of JSL (Su and Tai 2009). After World War II ended in 1945, Táiwān was turned over to China. The Japanese teachers at both deaf schools in Táiwān were sent back to Japan, but the Taiwanese teachers at both schools continued to teach the students with JSL. In 1949, the Communist Party came to power in China, resulting in a large immigration of more than two million Chinese from Mainland China to Táiwān. Some deaf people and several former teachers at the Nánjīng 南京 and Shànghǎi 上海 deaf schools also came to Táiwān and brought with them Chinese Sign Language (→ Sign languages, Mainland China). Therefore, some signs from CSL have been introduced into TSL (Smith 2005).

TSL dialectal differences reflect its historical background. The first group of Japanese teachers at Tainan 臺南 Deaf School came from the Osaka area in Japan, while the first group of Japanese teachers at Taipei Deaf School came from the Tokyo area. The dialectal differences of JSL in these two areas thus contributed to the initial differences between the southern dialect and the northern dialect of TSL (Smith 2005). These two TSL dialects are mutually intelligible with grammatical structures basically the same. The differences between these two dialects are primarily lexical. The dialectal differences are noted in the TSL Browser (Tsay *et al.* 2009).

TSL was surrounded by Japanese and Southern Mǐn 閩 before 1945, and by Mandarin and Southern Mǐn after 1945. In addition to the contact with different varieties of Chinese Sign Language used in different major cities in China, character signs based on the Chinese writing system, for example, *zhōng* 中 ‘middle’, *qiān* 千 ‘thousand’, *Dīng* 丁 ‘(a surname)’, *pǐn* 品 ‘article’, *tài* 太 ‘too’, are commonly used, along with a few finger-spellings based on the English alphabet (see also Ann 1998). In addition to loan translations from Chinese, coinages are adopted for new things. For example, ‘high speed railway’, in addition to mimicking the shape of the engine, can also be

signed with the TSL sign for HIGH compounded with the sign for IRON, a loan translation from the Chinese term *gāotiě* 高鐵 (literally ‘high iron’, an abbreviation for *gāosù tiělù* 高速鐵路 ‘high-speed railway (<iron road>’). In short, TSL can always find ways to express new things.

In many countries, an artificial signed language based on the grammar of the official spoken language has been created for purposes of formal education and literacy. In the mid of 1970s, Signed Chinese began to develop as the language for education in deaf schools in Táiwān. It adopts TSL signs and signs invented based on Chinese orthography. In Táiwān, TSL is known as *zìrán shǒuyǔ* 自然手語 ‘natural sign language’, while Signed Chinese refers to the signed Mandarin known as *wénfǎ shǒuyǔ* 文法手語 ‘grammatical sign language’; CSL refers to the sign language used in mainland China, known as *Zhōngguó shǒuyǔ* 中國手語 ‘Chinese sign language’.

Although Signed Chinese adopts lexical items from TSL, in actual discourse the mutual intelligibility with TSL is largely reduced due to the differences in grammatical structures (Myers *et al.* 2011). The extent to which Signed Chinese facilitates deaf education is still not clear (Liu and Tseng 2007).

2. GRAMMAR

2.1 Phonology

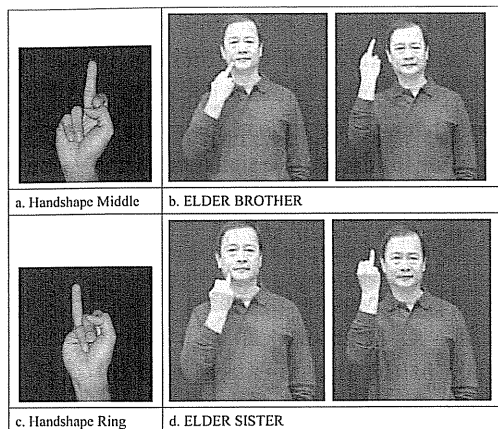
As in all sign languages (see Sandler and Diane Lillo-Martin 2006), signs in TSL are composed of the following aspects of contrastive elements: (i) handshape, (ii) location, (iii) movement, (iv) hand orientation, and (v) non-manual features. These contrastive elements serve the same function as fundamental contrastive elements in spoken languages.

Sixty lexically distinctive handshapes have been identified in TSL (see Appendix for the complete list of handshapes); also see Ann (2006) for the physiological bases of handshapes in TSL.

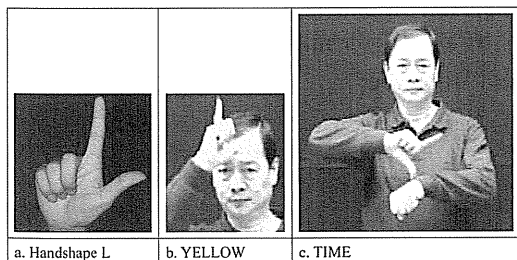
The following examples illustrate phonemic contrasts in these aspects. Lexical terms are given in upper case by convention. Pictures of the demonstrator are from the TSL Database (Tsay *et al.* 2009) of the Sign Language Research

Group at National Chung Cheng University, Táiwān (the pictures are used with the approval of the demonstrator, Mr. Gù Yùshān 顧玉山).

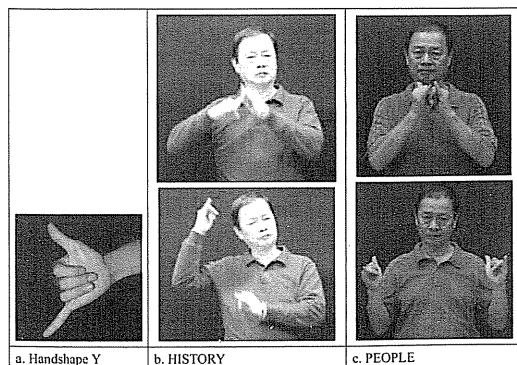
1. Phonemic contrast in handshape: Middle (ELDER BROTHER) *versus* Ring (ELDER SISTER)



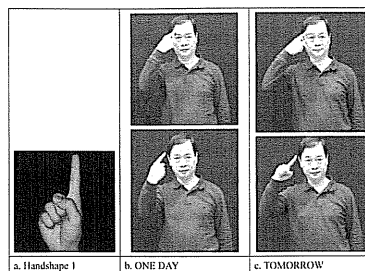
2. Phonemic contrast in location: Forehead (YELLOW) *versus* Wrist (TIME)



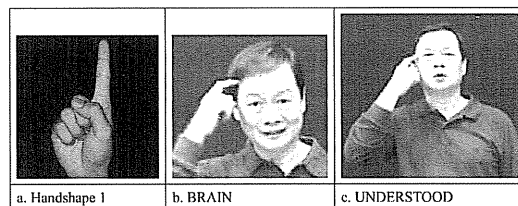
3. Phonemic contrast in movement: Vertical (HISTORY) *versus* Horizontal (PEOPLE)



4. Phonemic contrast in hand orientation: Inward (ONE DAY) *versus* Outward (TOMORROW)



5. Phonemic contrast in non-manual features: No facial expression (BRAIN) *versus* Lip-rounding, sucking air and head movement (UNDERSTOOD)

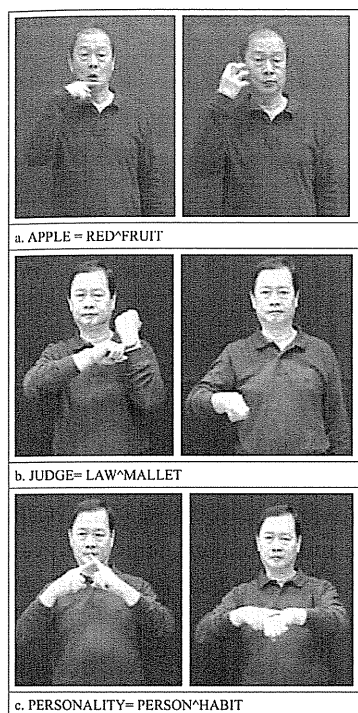


2.2 Lexicon

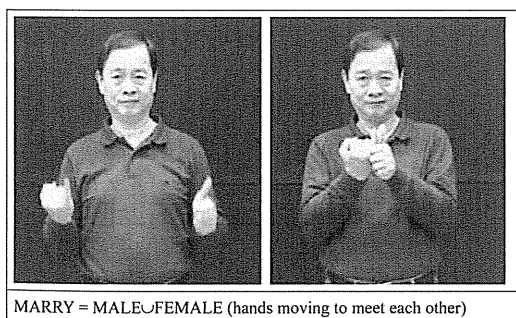
There have been several books that have collected the vocabulary of TSL, notably Shǐ and Dīng (1979, 1984). The Sign Language Research Group at the National Chung Cheng University in Táiwān has constructed an online dictionary Taiwan Sign Language Browser (Tsay *et al.* 2009), which contains more than 3,000 lexical items with video demonstrations. The development of this online dictionary is still on-going.

Compounding is the most productive morphological mechanism. Serial compounds and parallel compounds (where morphemes are articulated simultaneously) are given (6) in (7), respectively (“^” indicates concatenation and “~” indicates simultaneity).

6. Serial compounds: [modifier^noun] or [noun^noun]



7.



2.3 Three types of verbs

As in other sign languages (see Padden 1988), verbs in TSL can be classified into plain verbs, agreement verbs and spatial verbs. Plain verbs do not move through sign space to show grammatical relations. They use SVO word order to indicate the subject-object grammatical relation. Agreement verbs indicate the subject-object grammatical relationship by moving through sign space. Spatial verbs convey the information about movement and location of an object in the real world or movement through conceptual space.

Words such as LIKE, REMEMBER, FAMILIAR, THINK, FEAR are plain verbs in TSL. They show relatively little modification and do not move through space to show grammatical information. Manner and aspect are marked in plain verbs by different speeds of repetition of the verb and the presence of non-manual features.

Words such as BELIEVE, TELL, GIVE, ASK, SEE, PAY and ANSWER are agreement verbs. Agreement verbs move through space to indicate the subject-object grammatical relationship, and also allow the inclusion of information about person and number of the subject and the object. Unlike plain verbs, agreement verbs are marked for subject-agreement or object-agreement in that they change their forms to indicate the agent-patient relation.

In general, the starting point of the movement of agreement verbs is the location of the subject, while the end point is where the object is. However, the agreement verbs INVITE, TAKE-FROM, BORROW, among others, are exceptions to this generalization. These verbs show 'backwards agreement', where the starting point marks the object and the ending point marks the subject.

Spatial verbs use topographic space, not syntactic space. While syntactic space is used for agreement verbs to move to indicate grammatical relationship, topographic space is used by spatial verbs to recreate a layout of movement in the real world (Sutton-Spence and Woll 1999). Spatial verbs in TSL include RUN, JUMP, WALK-TO. In addition, spatial verbs may inflect to show manner and aspect, but they do not inflect for person or number. They can give information about the path, trajectory and speed of movement of the action described by the verb, and about the location of the action.

2.4 Morphosyntax

Verb inflections in TSL include agreement and aspect markers, but tense markers have not been observed yet. Agreement includes subject-object agreement, verb-subject agreement, gender agreement, and number agreement. Verb agreement is marked by moving the hand away from the subject and towards the object to show the subject-object relation. For those verbs

involving ‘backwards agreement’, the direction of the hand movement shows the object-subject relation.

Aspect marking includes perfective, progressive, and durational aspect, which indicates prolonged status and/or intensity and frequency.

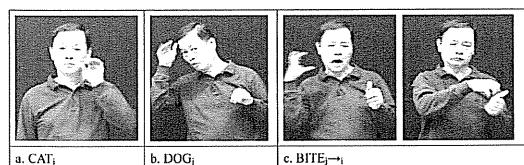
Intensity and frequency are often marked by reduplication. Reduplication with a simultaneous raise of the hand(s) also indicates the increase of degree or intensity in either quality or quantity. For example, the verb ADD is signed with the side of one fist (facing outward) touching the side of the other fist (facing inward). When the movement in ADD is reduplicated together with the reduplicated raise of the two hands, it means “keep adding”.

2.5 Classifier constructions

Classifier predicates play a crucial role in sign language grammar. As in other sign languages, a classifier predicate in TSL consists of a classifier and its simultaneously co-occurring predicate, as shown in examples (8)–(10) below.

In (8), the verb BITE moves from the agent DOG (co-indexed with *j*) towards the patient CAT (co-indexed with *i*). Note that the patient CAT is signed first so that the dominant hand, which signs the agent DOG, can easily move toward the patient CAT without changing the hand. This same-hand principle explains why sign languages have a tendency for OSV order for agreement verbs (Fischer 1975, Tai and Sū 2006).

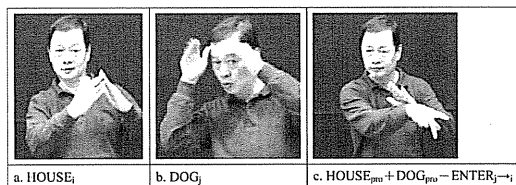
8. The dog bit the cat.



Some verbs also show agreement with the subject and predicate classifiers. In (9), HOUSE_i is mentioned first (9a), and then the subject DOG_j is signed in full form in (9b). However, in (9c) the animal classifier, used as the proform DOG_{pro}, serves as an inflection on the verb ENTER_{j→i}. (9c) also illustrates a classifier predicate in which both subject and object in proforms are

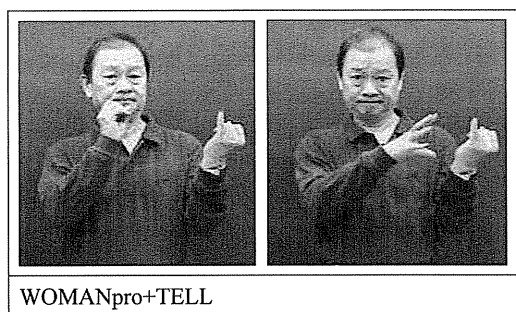
simultaneously signed with the verb (Chang *et al.* 2005).

9. The dog entered the house.



While gender agreement is typologically rare, it is indicated in TSL with predicate classifiers. For example, the default form of the sign TELL uses the thumb of the non-dominant hand. However, with a female object, the pinky is used instead, as shown in (10).

10. Tell her.

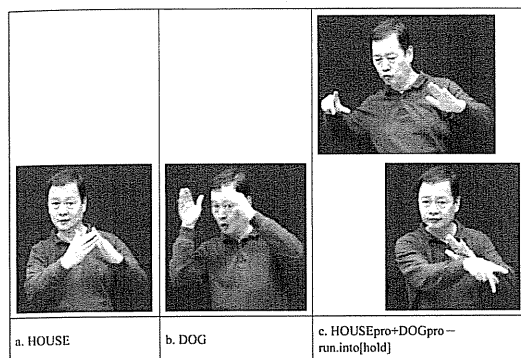


Classifiers in TSL are all drawn from the list of basic handshapes shown in the Appendix. They are based on a small set of physical and semantic features as shown in numeral classifiers in spoken languages (Aikhenvald 2000). Whole entity classifiers stand for animate entities, size and shape classifiers for inanimate entities, instrument classifiers for instruments, limb and part classifiers respectively for animate entities and inanimate entities, and handling classifiers for handling different kinds of objects (Tai *et al.*, in preparation).

2.6 Aspect marking

TSL can mark the perfective aspect on verbs of motion by holding the final position at the end of the verb. In (11), there is a hold at the end of the sentence marking the termination of the action.

11. The dog ran (has run) into the house.



A more common way of expressing perfective is to add the morpheme TERMINATED after the verb as in (12).

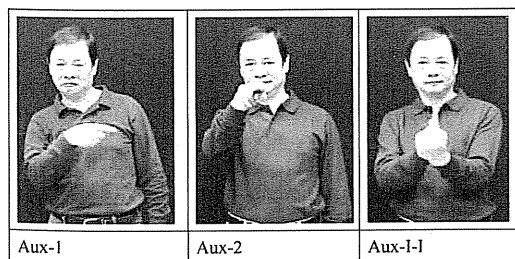
12. He has come (arrived).



2.7 Auxiliary signs

Signs serving as auxiliary verbs are in general absent in sign languages. TSL was the first sign language to be demonstrated to have auxiliary verbs. Smith (1990) has identified three auxiliary verbs in TSL. They are Aux-1, Aux-2, and Aux-11, as shown in (13).

13. Three auxiliary verbs in TSL



Their primary function is to convey the subject-object relationship in situations where the main verb does not move in space to indicate the subject-object relationship. They occur before

the main verb and the hand moves to carry the subject-object agreement for the main verb. Aux-1 is the most frequently used auxiliary verb. The fact that auxiliary verbs must occur before the main verb argues for their status as auxiliaries and provides evidence for SVO as the basic order in TSL, even though OSV and SOV are the most common surface word orders in this language.

2.8 Word Order

Plain verbs in TSL use SVO word order to indicate the subject-object grammatical relation, although OSV and SOV orders are also very common due to topicalization. Agreement verbs indicate the subject-object grammatical relationship by moving through sign space, using OSV order due to the same hand principle. The word order of spatial verbs conveys the information about movement and location of an object in the real world. Auxiliary signs precede the main verb. Thus, as argued by Smith (1990), SVO is the basic word order in TSL.

2.9 Non-manual expressions for modals, negation and questions

While auxiliaries for agreement are placed before the main verb, modals (epistemic and deontic) are usually placed after the main verb, though some can be placed either before or after the main verb. When placed before the verb, they also carry a connotation of willingness and ability on the part of the subject.

Negation and other negative expressions are invariably ordered after the main verb. The negation signs or signs with negation incorporated in them are accompanied with different kinds of facial expressions and head movements. For example, in (14), the negation sign is accompanied with narrowed eyes (en) and a head shake (hs), while the lips are kept together and pushed out (mm). In (15), the negation sign is accompanied with narrowed eyes, head tilted back (ht<), and tongue protruded (th).

14. en/hs/mm
HE TALL NOT-HAVE 'He is not tall.'

15. en/ht</th

HE SIGN LANGUAGE NOT-ABLE 'He doesn't know sign language.'

In *wh*-questions, question words such as 'who', 'what', 'where', 'when' and others are placed at the end of the sentence (Chen 2012). They are also accompanied with non-manual expressions. For example, in (16), the question word 'who' is accompanied with eyes opened (eo), brows knitted (úú), and head tilted slightly forward (ht>). In (17), the question word 'what' is accompanied with eyes narrowed, brows knitted, and head tilted slightly back.

16. eo/úú/ht>

LIKE HE WHO 'Who likes him?'

17. en/úú/ht<

YOU THINK WHAT 'What are you thinking about?'

Yes-No questions in TSL are generally expressed without a question marker at the end of the sentence. Rather, non-manual expressions are used either at the very end of the sentence or accompanying the predicate. For example, in (18), the non-manual expression consisting of opened eyes, head nod (hn), and raised brows (úú) is used after the predicate 'be drunk'. In (19), the same non-manual expression is used but co-occurs with the predicate rather than after.

18. eo/hn/úú

BROTHER DRUNK 'Is your brother drunk?'

19. eo/hn/úú



















































FATHER WORK 'Is your father working?'

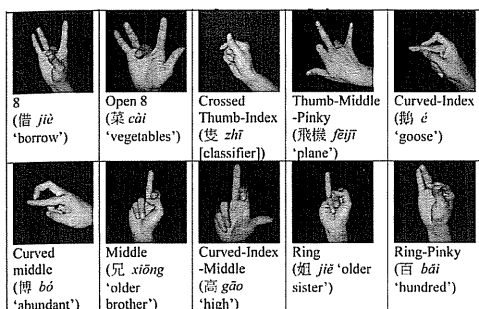
3. PROSPECTS

Linguistic study of TSL is still in its infancy. However, our knowledge of TSL will be enriched with the future study on the grammatical role of non-manual expressions, especially facial expressions and prosody. Raw data from elicited and natural narratives and conversations are being collected and analyzed to uncover many hitherto hidden facts and generalizations of TSL.

APPENDIX. HANDSHAPES IN TAIWAN SIGN LANGUAGE

Handshape names in TSL adopt the American Sign Language names with necessary variations. In parentheses are the handshape names in Chinese used in previous studies on TSL (e.g., Smith and Ting 1979, 1984).

				
Open A (男 <i>nán</i> 'male')	Flexed A (副 <i>fù</i> 'deputy')	B (胡 <i>hú</i> 'foreign')	Open B (手 <i>shǒu</i> 'hand')	Bent B (九 <i>jiǔ</i> 'nine')
				
C (方 <i>fāng</i> 'square')	Bent C (紳 <i>shēn</i> 'gentry')	F (錢 <i>qián</i> 'money')	Open F (WC)	G (像 <i>xiàng</i> 'resemble')
				
I (女 <i>nǚ</i> 'female')	Flat I (千 <i>qiān</i> 'thousand')	Curved I (蟲 <i>chóng</i> 'worm')	K (欠 <i>qiàn</i> 'to owe')	Open K (布袋戲 <i>bùdài xì</i> 'hand puppet')
				
L (六 <i>liù</i> 'six')	Bent L (句 <i>jù</i> 'sentence')	Curved L (爺 <i>yé</i> 'grandpa')	Curved-baby L (難 <i>nán</i> 'difficult')	Flexed L (很 <i>hěn</i> 'very')
				
Extended N (鴨 <i>yā</i> 'duck')	O (零 <i>líng</i> 'zero')	Open O (果 <i>guǒ</i> 'fruit')	Flat O (萬 <i>wàn</i> 'ten thousand')	Baby O (呂 <i>lǚ</i> [a surname])
				
Bent-baby O (雞 <i>jī</i> 'chicken')	R (筆 <i>bǐ</i> 'pen')	S (拳 <i>quán</i> 'fist')	U (棕 <i>zōng</i> 'palm tree')	V (二 <i>èr</i> 'two')
				
Curved V (二十 <i>èrshí</i> 'twenty')	W (三 <i>sān</i> 'three')	Curved W (三十 <i>sānshí</i> 'thirty')	Unspread W (童 <i>tóng</i> 'child')	X (十 <i>shí</i> 'ten')
				
Y (民 <i>mín</i> 'people')	L-1 (守 <i>shǒu</i> 'defend')	X-1 (奶奶 <i>nǎinai</i> 'grandma')	1-1 (語 <i>yǔ</i> 'speech')	Flat 1-1 (龍 <i>lóng</i> 'dragon')
				
1 (一 <i>yī</i> 'one')	3 (七 <i>qī</i> 'seven')	Curved 3 (虎 <i>hǔ</i> 'tiger')	4 (四 <i>sì</i> 'four')	Curved 4 (四十 <i>sìshí</i> 'forty')
				
5 (五 <i>wǔ</i> 'five')	Bent 5 (同 <i>tóng</i> 'same')	5-Curved (八 <i>bā</i> 'eight')	Curved 5-Pinky (八 <i>bāshí</i> 'eighty')	Piled 5 (薑 <i>jiāng</i> 'ginger')



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