Sign Languages of the World

A Comparative Handbook

Edited by
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1 Basic facts about Taiwan Sign Language

Language name: Taiwan shouyu (in Chinese); Taiwan Sign Language (in English)

Alternative names: Taiwan ziran shouyu ‘Taiwan natural sign language’

Location: Taiwan, Republic of China

Varieties: Northern dialect and southern dialect. Both are included in the Taiwan Sign Language Online Dictionary.

Number of signers: 30,000–60,000

2 Origin and history

Taiwan Sign Language (hereafter, TSL) here refers to the native language developed and used by the deaf in Taiwan. Smith (2005) reported that it was used by approximately 30,000 deaf persons residing in Taiwan, but did not mention how this estimation was obtained. According to the 2012 report of the Ministry of the Interior, Taiwan, there were about 122,285 citizens with Hearing Mechanism Disability in Taiwan. However, the report did not include information about how many of these citizens with hearing disability used TSL for communication.

The history of TSL can be dated back to when the first school for the deaf was established in 1915 by the Japanese during the period of Japanese occupation of Taiwan (1895–1945). Little is known about what kind of sign language had existed in Taiwan prior to the Japanese occupation. Korea was also occupied by Japan during 1910–1945. Therefore, TSL as well as Korean Sign Language are historically related to Japanese Sign Language (JSL). Even today, TSL still shares high degree of mutual intelligibility between the lexicons of TSL, JSL, and KSL (Su and Tai 2009).

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1 There has not been any official survey of the number of TSL signers. According to the former president of the National Association of the Deaf in the Republic of China, Mr. Yushan GU (personal communication), there are approximately 60,000 signers of TSL.

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During the Japanese occupation of Taiwan, soon after the first deaf school was established in Tainan (in southern Taiwan) in 1915, another deaf school was founded in Taipei (in northern Taiwan) in 1917. The first group of Japanese teachers at Tainan 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, indicated by $S$ and $N$, respectively, in the examples. These two TSL dialects are mutually intelligible. The grammatical structures for these two dialects are basically the same. The differences between these two dialects are primarily lexical. For example, the words FIVE, TEN, CAR, WINE, VEGETABLE, GREEN-ONION and PINEAPPLE are signed differently in these two dialects of TSL.

After World War II, in 1945, Taiwan was turned over to the Republic of China. The Japanese teachers at both schools for the deaf in Taiwan were sent back to Japan. 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 Taiwan. Some deaf people and several former teachers at the Nanjing and Shanghai schools for the deaf in China also came to Taiwan and brought with them Chinese Sign Language (CSL), known as zhongguo shouyu 'China sign language' in Mandarin. Therefore, some signs from CSL may also have been introduced into TSL.\footnote{For a more detailed description of the history of deaf education in Taiwan during 1945 and 1949, see Smith (2005).}

Also, after 1945, Mandarin Chinese replaced Japanese as the official language for education, administration, and mass media in Taiwan. Consequently, Signed Chinese, an artificial sign language created mainly by the educators based on the ambient spoken language Mandarin, became the instruction language at the deaf schools. Although Signed Chinese is very different from TSL in morphology and syntax, it has borrowed a large number of lexical items from TSL. In Taiwan, TSL is known as ziran shouyu 'natural sign language', while Signed Chinese refers to the signed Mandarin Chinese known as wenfa shouyu 'grammatical sign language'.

3 Bilingualism and language contact

3.1 Education

Nowadays, there are three public deaf schools located in northern, central and southern Taiwan. Since early 1970s, the Total Communication approach has been adopted for school instruction. Spoken Mandarin Chinese, Signed Chinese, and
written Chinese have all been used in classroom instruction, while Deaf students continue to use TSL to communicate with each other. Thus, in the three deaf schools, students are in contact with Mandarin Chinese, written as well as spoken, in addition to Signed Chinese and TSL. This kind of language situation has contributed to the change of TSL in the last century in both lexicon and syntax. When deaf children are enrolled in ordinary schools, they are drilled to have the oral communication skill in Mandarin Chinese. It is not unusual that they learn TSL as grown-ups to communicate with deaf signers of TSL. Deaf signers of TSL sometimes also use Signed Chinese to communicate with others, especially when encountering professional and technical terms.

3.2 Standardization

In the mid-1970s, the Ministry of Education formed a work group of representatives of the three deaf schools to standardize and unify the signs to be used for instructional purposes in Taiwan. They determined a basic vocabulary of approximately 1750 signs and also invented signs for words and concepts often used in teaching. This collection of signs, widely adopted from Signed Chinese, Shouyu Huace (Li 1978), was accepted with great enthusiasm by the educators. However, because very few deaf people were even marginally involved in the work preparation, the Deaf community was disappointed and felt that the work failed to reflect their views as to how signs should be presented (Smith 2005). In the subsequent editions of this work (Ministry of Education 1987, Ministry of Education, Special Education Work Group 2000a, 2000b), more deaf signers were involved.

While the educators in deaf schools prefer using the “standardized” signs which are mostly based on Signed Chinese, TSL signers continue to use and consider the original signs as more “natural”, except for technical terms or modern inventions. In the TSL Online Dictionary to be introduced in this chapter, all variations of signs are included without any intention of standardizing the language.

3.3 Influence from dominant languages

In Taiwan, Mandarin Chinese is the official and most dominant spoken language. Its immediate influence shows in the prevailing use of Signed Chinese in the deaf education system. Although Signed Chinese is based on the grammar of Mandarin Chinese, thus called wenfa shouyu 'grammatical sign language', it shares a large number of lexical items with TSL.

TSL and Signed Chinese in Taiwan are mutually intelligible mainly at the level of the shared vocabulary and frozen phrases. In actual discourse, the mutual intelligibility might be reduced due to the differences in grammatical structures.
In addition to Mandarin, deaf and hard-hearing persons are also exposed to two other Sinitic languages, Southern Min (also called Taiwanese) and Hakka. The influence of these two spoken languages has not been reported.

Chinese is used in all printed materials such as documents, books, and newspapers. When specific Chinese characters are being referred to, they are either written out on paper or traced the character with the index finger on the palm of the weak hand (Smith 1989). Character signs based on the Chinese orthography are commonly used in TSL (see Section 6.1).

4 Political and social context

4.1 Organizations


The National Association of the Deaf in the Republic of China was established in 1992 to promote academic research of Deaf culture and the improvement of the welfare for the hearing-impaired. It also aims to assist the government in planning for a barrier-free environment for hearing-impaired people. They also provide employment and psychological counseling for the deaf.

The Chinese Deaf Association was established in 1995 by a group of enthusiastic deaf people to develop a barrier-free environment for the Taiwanese hearing-impaired and to establish an Overseas Study Guidance Center for the Hearing-impaired. They also established the Employment Library Center and the Employment Guidance Center for the Hearing-impaired to further guarantee the rights and welfare of the deaf people.

4.2 State of the language

Due to the policy of “mainstream” education, the majority of deaf and hard-hearing students are trained to orally use Mandarin Chinese as their main communication tool. This policy is preferred by the parents of deaf children and endorsed by the experts in the field of special education. Therefore, deaf and hard-hearing children are encouraged to enroll in schools for the hearing children to receive the same curriculum as hearing students. As a result, the number of deaf children enrolled in the three public deaf schools has been shrinking and these three schools have been forced to enroll other kinds of students with special needs (e.g., handicapped, autism, mentally retarded) to prevent the schools from closing.
The official governmental policy requires TSL interpreters in courts and civic services for deaf persons, as well as in national broadcastings of important news. However, the majority of the parents and speech therapists prefer deaf and hard-hearing children to be able to have the oral skill of communication.

4.3 Language maintenance efforts

In the United States, ASL seems to be accepted as a real language by the general public, and many universities accept ASL courses to fulfill foreign language requirements. Also generally understood in the U.S. is the notion that culture and language exit together and Deaf culture is perceived by many as a natural part of American multiculturalism. In contrast, the Deaf culture of TSL is not appreciated as such. Parents of deaf children prefer to enroll their children in schools for hearing children. Even if they have to enroll their deaf children in deaf schools, they put pressure on deaf schools not to teach TSL. However, some local educators, psychologists, and linguists have expressed their concern that this may not be the wisest policy in the long run. More importantly, the Deaf themselves are teaching TSL, publishing TSL textbooks, and participating in research projects of TSL as well as in international forums on sign language and deaf education. Thus, against the lack of general appreciation of Deaf culture in the society, there are positive signs for the acceptance of TSL in deaf community and educational circles.

5 The structure of signs

Regarding distinctive features of signs, we introduce handshape, place of articulation, movement, orientation, and non-manual features.

5.1 Handshape

TSL has 62 distinctive handshapes based on previous studies and our collection of TSL signs (cf. Smith and Ting 1979, 1984; Lee 2003; Chang, Su, and Tai 2005). See Appendix I for the list of handshapes in TSL.

5.2 Place of articulation

PLEASE vs. BE is a minimal pair that contrasts in location. They both use the handshape B (1a), with the palm parallel to the center plane of the body. The index

3 Handshape names adopt the American Sign Language handshape names in English alphabet and numbers with necessary variations. See Appendix I for more details.
finger of the hand in PLEASE makes contact on the forehead (1b), while in BE, the contact is at the chin (1c). See Appendix II for TSL notation conventions.

(1) Phonemic contrast in location: PLEASE vs. BE

(a) Handshape B  
(b) PLEASE  
(c) BE

5.3 Movement

MALE vs. THANK is a minimal pair that contrasts in local movement. Both signs use the handshape Open A (2a), but in MALE the hand rotates back and forth at the wrist (2b), while in THANK the thumb repeatedly bends (2c).

(2) Contrast in local movement: MALE vs. THANK

(a) Handshape Open A  
(b) MALE  
(c) THANK

5.4 Orientation

NOW vs. CALM-DOWN is a minimal pair that contrasts in hand orientation. They both use the handshape Open B (3a) on both hands, and both start with the hands palm-downward and involve downward movements, but in NOW, the fingertips of both hands point forward away from the body (3b), while in CALM-DOWN they point towards each other (3c).

4 Pictures in this paper are from the TSL Database of the Sign Language Research Group at the National Chung Cheng University, Taiwan, unless otherwise noted. The demonstrator is Mr. Yushan Gu.
(3) Contrast in hand orientation: NOW vs. CALM-DOWN

(a) Open B (b) NOW

(c) CALM-DOWN

5.5 Non-manual features

HEAD vs. UNDERSTAND is a minimal pair that contrasts in non-manual features. They both involve the handshape 1 (4a), with the index tip contacting the temple, but in HEAD no facial expression is made (4b), while in UNDERSTAND, the mouth is rounded and sucks in air, and the head moves backward at the same time (4c).

(4) Contrast in nonmanual features: HEAD vs. UNDERSTAND

(a) Handshape 1 (b) HEAD (c) UNDERSTAND
6 Associated sign systems

6.1 Character signs

Character signs based on the Chinese writing system are commonly used along with fingerspelling based on English alphabet. The following methods of constructing character signs in TSL have been identified by Ann (1998).

1. To imitate the shape of either the whole or a part of a Chinese character by means of handshape: 王, 田
2. To trace either the whole or a part of a Chinese character in the air: 千, 就
3. To combine both (1) and (2) methods: 丁, 毛
4. To use both handshape and the mouth: 中, 品
5. To combine a natural sign with tracing: 太

Loan translations from Chinese coinages are also adopted for new things. For example, ‘high speed railway’, in addition to the mimic sign of the shape of the engine, can also be signed with TSL sign for ‘high’ compounded with sign for ‘iron’, a loan translation from the Chinese term 高铁 ‘high iron’. Blending of TSL signs and character signs are also adopted to describe new things. For instance, ‘cancer’ is signed with TSL sign for the sickness plus character sign for 品, pattern after the Chinese character 病, which consists of a radical for sickness and a component character for 品. In short, TSL can always find ways to express new things.

6.2 Fingerspelling and initialization

Fingerspelling and initialization based on English alphabet are adopted in TSL. For instance, M stands for McDonald because of its logo. English proper names such as Chomsky, and abbreviations, such as MSN and AED, are spelled out in ASL English alphabet. Examples of initialization would be F for ‘fruit’ and B for ‘beer’.

7 Basic morphology and lexicon

7.1 Noun morphology: Compounding

7.1.1 Serial compounding

Compounding differs from affixation in that more than one root morpheme is involved. There are many examples of serial compounds in TSL, which are distinguished from phrases by the order of the morphemes (sometimes reverse of that found in phrases), semantic opacity, and phonological simplification. Below we illustrate the first two of these diagnostics (originally established for ASL by Liddell and Johnson 1986; see also Smith 1982).
Noun phrases in TSL usually have the order [noun^modifier]. So the [modifier^noun] or [noun^noun] structure suggests compounding. Examples in 5 illustrate non-phrasal morpheme order.

(5) Serial compounds: [modifier^noun] or [noun^noun]
(a) APPLE = RED^FRUIT
(b) JUDGE = LAW^MALLET
(c) PERSONALITY = PERSON^HABBIT
(d) HEARSE = COFFIN^CAR

Examples in 6 illustrate semantic opacity.

(6) Serial compounds: semantic opacity
(a) COFFEE = BROWN^STIR
(b) ONE-O’CLOCK = TIME^ONE
(c) DEFICIT = RED^HIGH-LEVEL
(d) SURRENDER = WHITE^FLAG

Some serial compounds seem to follow templates. For example, [X^PLACE] is a productive compounding template, as shown in the Example 7.

(7) Serial compounds with template [X^PLACE]
(a) TRAIN-STATION = TRAIN^PLACE
(b) COURT = LAW^PLACE
(c) POLICE-OFFICE = POLICE^PLACE

7.1.2 Parallel compounding

In MARRY, one hand with the sign MALE and the other hand with the sign FEMALE move simultaneously to meet each other in front of the chest (8), while in DIVORCE, the hand with the sign MALE and the other hand with the sign FEMALE move simultaneously apart from each other (9).

(8) MARRY = MALE∪FEMALE – together (hands moving to meet each other)
Interestingly, parallel compounds may be contained within serial compounds, while the reverse is apparently impossible. This is consistent with phonological arguments (given below) that different compound types may be "ordered differently" in a lexical phonology analysis (or in equivalent constraint-based analyses). In WIFE and HUSBAND, MARRY (a parallel compound with MALEuFEMALE) is signed followed by FEMALE and MALE in the Example 10 and 11 respectively.

(10) WIFE = MARRY (MALEuFEMALE) ^ FEMALE

(a) MARRY  (b) FEMALE

(11) HUSBAND = MARRY (MALEuFEMALE) ^ MALE

(a) MARRY  (b) MALE
7.2 Verb morphology: agreement and aspect marking

7.2.1 Verb Inflection

The classic work on TSL verb inflection is Smith (1989). Verb inflections in TSL include agreement and aspect markers, but apparently not tense markers.

Agreement includes subject-object agreement (usually simultaneous/non-concatenative), verb-subject agreement (using predicate classifier), gender agreement, and number agreement. Aspect marking includes perfective, progressive, and durational aspect which indicates prolonged status and/or intensity and frequency.

7.2.2 Agreement

Here are some general observations about agreement in TSL. First of all, agreement showing a grammatical relation is marked by non-concatenative morphology, specifically by moving the hand away from the subject and/or towards the object. This appears to be a sign language universal (Aronoff, Meir and Sandler 2000) leading some to question whether this should be understood as grammatical agreement at all, rather than an iconic representation of relations between entities in some mental space (e.g., Liddell 2003).

In the following Example 12 'The dog bit the cat,' 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, possibly due to topicalization or a topic-comment structure).

(12) (a) CATi (b) DOGi (c) BITEi→j

'The dog bit the cat.'

Secondly, some verbs also show agreement with the subject via the use of (predicate) classifiers (though again Liddell 2003 and Chang, Su, and Tai 2005 disagree with this analysis).

In the following Example 13 'The dog entered the house', HOUSEi is mentioned first (13a). Then the subject DOGj is signed in full form in (13b), but in the form of an animal classifier DOGpro being inflected on the verb ENTERi→j as in (13c) (this
kind of predicate classifier is considered a “proform (pro)” in Chang, Su, and Tai (2005).

Thirdly, there also appears to be agreement with gender and number features. Gender agreement (if used) is also indicated by predicate classifiers. In the following Example ‘Tell her,’ the third person singular pronoun, indicated by the left position, is marked with the female classifier, the pinky. (Note that the default form of the sign TELL uses the thumb. See Example TELL (one female person) (14)).

Agreement verbs will be introduced below in the section of Basic Syntax.

7.2.3 Aspect marking

Regarding aspect marking, TSL marks perfective aspect on verbs of motion by holding the final position at the end of the verb, similar to what Sandler (1993) observed for ASL. In the following Example 15, there is a hold at the end of the sentence marking the termination of the action.
(The dog ran (has run) into the room.

A more common way of expressing perfective is adding a morpheme FINISHED after the verb.

'He has come (arrived).'
Intensity and frequency are often marked by reduplication. For example, in the examples in (17), the reduplication does not only indicate the repetition (i.e. frequency), it has a connotation of getting more annoying (intensity).

(17) Intensity and frequency marked by reduplication
(a) ASK-ASK-ASK ‘keep asking’
(b) TELL-TELL-TELL ‘keep telling’
(c) SCOLD-SCOLD-SCOLD ‘keep scolding’

Reduplication with a simultaneous raise of the hand(s) also indicates the increase of degree or intensity in either quality or quantity. For example, ADD is signed with the side of one fist (facing outward) touching the side of the other fist (facing inward) in (18). When the movement in ADD is reduplicated together with the reduplicated raise of the two hands, it means ‘keep increasing’, as in Example (19).

(18) ADD

(19) Intensity and frequency marked by reduplication
(a) ADD (reduplication + raising the hands) ‘keep increasing’
(b) QUARREL (reduplication + raising the hands) ‘keep quarreling (getting more and more serious)’
(c) ARGUE (reduplication + raising the hands) ‘keep arguing (getting more and more serious)’

Raising hands in these examples naturally accompany reduplication.

7.3 Classifiers

Classifier constructions refer to complex predicates that express motion, position, stative-descriptive information, and handling information (Emmorey 2002).

Classifiers in TSL are all drawn from the list of basic handshapes shown in Appendix I. TSL classifiers can be categorized based on a small set of physical and semantic features underlying lexicon and syntax of human languages following Pinker (1989), including whole entity classifiers (for animate entities, inanimate
entities, instrument), limb classifiers, part classifiers, handling classifiers, and extension/surface classifiers. See Appendix III for the list of classifiers for each category.

8 Basic syntax

8.1 Three types of verbs and word order

As in other sign languages, 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 subject-object grammatical relation, although OSV and SOV orders are also very common due to topicalization of the object. 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 real world. The moved objects may be the subject or the object. In essence, agreement verbs move in syntactic space, while spatial verbs move in topographic space (Sutton-Spence and Woll 1999). The word order of agreement verbs is usually OSV, but SOV is also acceptable. As for the spatial verbs, the location of a referent (or an object) is usually signed first followed by the referent and the spatial verb.

In the section below, we briefly illustrate the three types of verbs, showing their word orders and the classifiers used in classifier predicates vs. spatial verbs.

8.1.1 Plain verbs

Words such as LIKE, REMEMBER, BE-FAMILIAR-WITH, THINK, FEAR, among others 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 speed of repetition of the verb and presence of non-manual features. For example, to express the idea of doing something for a long time, the movement of the verb sign is typically lengthened. To indicate intensity, the verb sign is normally shortened and made with tense, retracted movements (Smith 1989: 82-83).

Because plain verbs are frequently made using the body as the location, they are sometimes known as “body-anchored” verbs (Sutton-Spence and Woll 1999). As they are “body-anchored”, they do not move through space to indicate the subject-object grammatical relation or to give information about person and number of the subject and object. For example, to sign the verb LIKE, the tips of the index finger and the thumb contact the facial location, as shown in (20c).
Since plain verbs cannot move through space to show the information of grammatical relations, the subject (i.e. BROTHER) and the object (i.e. DOG) do not change the movement and orientation of the verb, as shown in (20). However, topicalization of the object is also more frequently used in discourse.

(20)

(a) DOG
(b) BROTHER
(c) LIKE.

"(My) brother likes dogs."

8.1.2 Agreement verbs

Examples of agreement verbs in TSL are BELIEVE, TELL, GIVE, ASK, SEE, PAY, ANSWER, and many others. Agreement verbs move through space to indicate the subject-object grammatical relationship, thus also allowing the inclusion of information about person and number of the subject and object. This is accomplished by moving the verb in syntactic space. That is, information about who is carrying out the action, and who or what is affected by the action is shown by changes in movement and orientation of the verb.

Unlike plain verbs, agreement verbs change their forms in accordance with the subject or object of the sentence. The different forms that these verbs assume reflect different combinations of subjects and objects. Take the sentences in (21) and (22) for example, the agreement verb BELIEVE moves toward the position where the object is located. In (21) the verb moves toward the object position, i.e. MOTHER, whereas in (22) the signer is the object; therefore, the verb moves toward the signer himself.

(21)

(a) MOTHER
(b) MOTHER_pro +FATHER
(c) BELIEVE-MOTHER.

"(My) father believes (my) mother."
It should be pointed out that in an agreement verb, there is a start point (subject agreement marker), a path movement (verb stem), and then an end point (object agreement marker). In general, the starting point of these verbs is the location of the subject, while the end point is where the object is. However, the agreement verbs such as INVITE, TAKE-FROM, BORROW, etc. are exceptions to this generalization. These verbs show “backwards agreement” where the start point marks the object and the end point marks the subject.

8.1.3 Spatial verbs

Spatial verbs use topographic space, not syntactic space. Spatial verbs in TSL include RUN, JUMP, WALK-TO, and many others. These verbs are referred to as “verbs of motion and location” (Supalla 1982) or “spatial-locative predicates” (Smith 1989). In TSL, the sentence with a spatial verb such as RUN-ABOUT and a classifier morpheme is shown in (23), in which a handshape for a class of objects (i.e. ANIMAL, see 23c) is used to indicate a group of referents such as dogs, cats, frogs, bees, birds, scorpion, and the like. Such a handshape is a bound morpheme and cannot be used in isolation.
As shown above, the predicate RUN ABOUT contains information about the movement of the subject, and the classifier handshape ANIMAL is used for any animals with similar features. It is observed that the full sign (e.g., the DOG) is normally produced first, followed by the classifier morpheme (e.g., ANIMAL). The full sign is usually needed to identify the referent; otherwise, it is impossible to identify what the referent really is. As analyzed by Supalla (1982), spatial predicates have two parts— a movement morpheme and a classifier handshape morpheme.

In addition, spatial verbs may inflect to show manner and aspect, but they do not inflect for person or number. They can give information about the path, trajectory and speed of movement of the action described by the verb, and about the location of the action (Chang, Su and Tai 2005).

### 8.2 Auxiliaries and word order

One of the most interesting issues in sign language syntax is the general absence of auxiliaries in sign languages. TSL is the first sign language which has been demonstrated to have auxiliaries. Smith (1989, 1990) has identified three auxiliaries in TSL. They are Aux-1, Aux-2, and Aux-II. They are shown in (24).

\[\text{(24)}\]

According to Smith (1990: 216–217), “These signs have all the morphological properties of agreement verbs. They move from subject to object loci.” Their primary function is to convey the subject-object relationship. They occur before the main verb and carry the subject-object agreement for the main verb. However, they are not compulsory. All three types of verbs, i.e. plain verbs, agreement verbs, and spatial verbs, can be the main verb. When the main verb is an agreement verb, there is no need for agreement morphology anymore. Aux-1 is the most frequently used auxiliary. It uses the index figure to form the 1 handshape. To carry out the agreement, it begins with the tip of the 1 handshape either in contact with or just in front of the center of the trunk and moves along a straight path to a new location wherein the index figure is pointing at the object locus. Aux-2 uses a bent V handshape to face an object locus, while the back of the hand facing the subject locus. Aux-II is pro-
duced with both hands, with the strong hand acting on the weak hand. The strong hand is associated with the subject locus, while the stationary weak hand is associated with the object locus. The following pair of sentences in (25) and (26) illustrates how an auxiliary can be used to carry the agreement function for a plain verb.

(25)

(a) SISTER  
(b) FEAR  
(c) COCKROACH.

'My sister is afraid of cockroaches.'

(26)

(a) COCKROACH  
(b) SISTER  
(c) AUX-2  
(d) FEAR.

'My sister is afraid of cockroaches.'

Note that in (26), the word order is OSAuxV due to topicalization. The fact that auxiliaries must occur before the main verb argues for their status as auxiliaries and for some scholars for a piece evidence for SVO as the underlying order in TSL, even though OSV and SOV are most common surface word orders in this language.
8.3 Word Order and non-manual expressions for modals, negation, and question

While auxiliaries for agreement function are placed before the main verb. Modals (epistemic and deontic) are placed after the main verb, as for example in (27) and (28).

(27) HE FALL-DOWN WILL
     'He will fall down.'

(28) MOTHER REST MUST
     'My mother must rest.'

However, some modals 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 in the Examples (29) and (30).

(29) HE WILL COME
     'He will come.'

(30) HE CAN COME
     'He can come.'

Negation and other negative expressions are ordered after the main verb. The negation signs or signs with negation incorporated in them are accompanied with different kinds of facial expression and head movement. For example in (31), the negation sign is accompanied with narrowed eyes (en) and head shake (hs), while lips kept together and pushed out (mm). In (32), the negation sign is accompanied with narrowed eyes, head tilted back (ht<), and tongue protruded (th).  

(31) HE TALL NOT-HAVE
     'He is not tall.'

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

There seems to be no general rule of facial expression and head movement for negation signs in TSL. Different negation signs carry different facial expressions and head movements which express negation in conjunction with other emotions. See Tai et al. (in preparation) for a detailed description.
In Wh-questions, question words such as WHO, WHAT, WHERE, WHEN and others are placed at the end of the sentence. They are also accompanied by non-manual expressions. For example, in (33), the question word WHO is also accompanied by eyes opened (eo), brows knitted (^^), and head tilted slightly forward (ht>). In (34), the question word WHAT is accompanied by eyes narrowed, brows knitted, and head tilted slightly back.

\[ eo/^^/ht> \]
(33) LIKE HE WHO
    ‘Who likes him?’

\[ en/^^/ht< \]
(34) YOU THINK WHAT
    ‘What are you thinking about?’

Yes-No questions in TSL is 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 accompany the predicate. For example in (35), the non-manual expression consisting of opened eyes, head nod (hn), and raised brows (^) is used after the predicate ‘be drunk’. In (36), the same non-manual expression is used but co-occurring with the predicate rather than after.

\[ eo/hn/^ \]
(35) BROTHER DRUNK
    ‘Is your brother drunk?’

\[ eo/hn/^ \]
(36) FATHER WORK
    ‘Is your father working?’

9 Interesting or unusual features of the language

The most interesting features of TSL are character signs and blending of character signs and loan translations from Chinese as discussed in Section 6. The use of auxiliary verbs to indicate subject-object relationship for all three types of verbs is an unusual syntactic feature of TSL (Smith 1990).

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6 For tag questions and alternative questions, see Tai et al. (in preparation) for discussion.
10 Examples of words and sentences

10.1 Taiwan Sign Language Online Dictionary (TSL Browser)

The current edition (3rd edition) of Taiwan Sign Language Online Dictionary (Tsay et al. 2015) contains about 3,500 lexical items. Under each lexical item, there is a video of the signing with a text description in both Chinese and English. The website is http://tsl.ccu.edu.tw/web/browser.htm.

10.2 Examples of words

(37) Numbers

(a) ONE

(b) TWO

(c) FIVE_N

(d) FIVE_S

(e) TEN_N

(f) TEN_S
(38) Kinship terms

(a) FATHER

(b) MOTHER

(c) ELDER BROTHER

(d) ELDER SISTER
(39) Color terms

(a) BLACK

(b) WHITE

(c) RED_N

(d) RED_S

(e) GREEN

(40) Verbs

(a) DRINK

(b) SLEEP

(c) EAT
(41) Nouns

(a) BIRD

(b) DOG

(c) TREE
(42) Cultural terms

(a) LANGUAGE  
(b) SIGN-LANGUAGE

(c) DEAF  
(d) HEARING

(43) Personal names (family names)

(a) WANG  
(b) LI  
(c) LIN
10.3. Examples of sentences

(44) Sentence type: Declarative sentence with a transitive verb

(a) CAT Italics
(b) DOG Italics

c) BITE Italics
'The dog bit the cat.'

(45) Sentence type: Declarative sentence with an intransitive verb

(a) HE
(b) FALL-DOWN.

'He fell down.'
(46) Sentence type: Negation

(a) HE

(b) TALL

(c) NOT-HAVE.
'He is not tall.'

(47) Sentence type: Question

(a) YOU

(b) THINK
11 History of research

Linguistics research on TSL began quite late. Wayne Smith and Jean Ann were the first to investigate the linguistic structure of TSL. Smith (1989) investigated morphological characteristics of verbs in TSL, whereas Ann (1993) studied the interaction between the physiology of the hand and ease of articulation. Since then, the linguistic studies on TSL has primarily been conducted by the Sign Language Research Group led by Prof. James H-Y. Tai of the Institute of Linguistics at National Chung Cheng University, Taiwan. This group has constructed an online dictionary of TSL (Tsay et al. 2015) with both Chinese and English descriptions, as introduced above. Two edited volumes on lexicon and grammar of TSL have been published (Myers and Tai 2005; Tai and Tsay 2009). Two volumes of TSL reference grammar (Tsay et al. in preparation; Tai et al. in preparation) are also in preparation. More than twenty works on various aspects of linguistic research of TSL have been published, notably, Chang (2011a, 2011b), Tai (2005, 2013), Tai and Su (2013), Zhang (2007). In addition, the Linguistics Institute of the National Chung Cheng University has produced three Ph.D. dissertations and 16 M.A. theses on TSL studies. All the above-mentioned works are accessible on the TSL Research Group website http://tsl.ccu.edu.tw/web/index.php.
Appendix I: Handshapes in Taiwan Sign Language

Handshape names adopt the American Sign Language handshape names in English alphabet and numeral digits with necessary variations. In parentheses are the handshapes names in Chinese characters used in the previous studies on TSL. Romanization in Mandarin Pinyin is provided along with the character names.
<table>
<thead>
<tr>
<th>Gesture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curved V</td>
<td>(二十 eishi)</td>
</tr>
<tr>
<td>W</td>
<td>(三十 sanshi)</td>
</tr>
<tr>
<td>Curved W</td>
<td>(三 tong)</td>
</tr>
<tr>
<td>Unspread W</td>
<td>(三十 sanshi)</td>
</tr>
<tr>
<td>X</td>
<td>(十 shi)</td>
</tr>
<tr>
<td>Y</td>
<td>(尺 min)</td>
</tr>
<tr>
<td>L-l</td>
<td>(手 shou)</td>
</tr>
<tr>
<td>X-l</td>
<td>(奶 nainal)</td>
</tr>
<tr>
<td>1-l</td>
<td>(语 yu)</td>
</tr>
<tr>
<td>Flat 1-l</td>
<td>(语 long)</td>
</tr>
<tr>
<td>1</td>
<td>(一 yi)</td>
</tr>
<tr>
<td>3</td>
<td>(七 qi)</td>
</tr>
<tr>
<td>Curved 3</td>
<td>(虎 hu)</td>
</tr>
<tr>
<td>4</td>
<td>(四 si)</td>
</tr>
<tr>
<td>Curved 4</td>
<td>(四十 sishi)</td>
</tr>
<tr>
<td>5</td>
<td>(五 wu)</td>
</tr>
<tr>
<td>Bent 5</td>
<td>(同 tong)</td>
</tr>
<tr>
<td>5-Curved Pinky</td>
<td>(八 ba)</td>
</tr>
<tr>
<td>Curved 5-Pinky</td>
<td>(六十 bashi)</td>
</tr>
<tr>
<td>Piled 5</td>
<td>(计 jiang)</td>
</tr>
<tr>
<td>8</td>
<td>(偕 jie)</td>
</tr>
<tr>
<td>Open 8</td>
<td>(菜 cae)</td>
</tr>
<tr>
<td>Crossed Thumb-Index</td>
<td>(爱 zhi)</td>
</tr>
<tr>
<td>Thumb-Middle-Pinky</td>
<td>(飞机 feiji)</td>
</tr>
<tr>
<td>Curved-Index</td>
<td>(翱 e)</td>
</tr>
<tr>
<td>Curved Middle</td>
<td>(排 bo)</td>
</tr>
<tr>
<td>Middle</td>
<td>(兄 xiong)</td>
</tr>
<tr>
<td>Curved-Index-Middle</td>
<td>(排 jie)</td>
</tr>
<tr>
<td>Ring</td>
<td>(阁 gao)</td>
</tr>
<tr>
<td>Ring-Pinky</td>
<td>(阁 bai)</td>
</tr>
<tr>
<td>Bent Curved-Index-Middle</td>
<td>(排 xi)</td>
</tr>
<tr>
<td>Thumb-Pinky</td>
<td>(阁 xi)</td>
</tr>
</tbody>
</table>
Appendix II: TSL notation conventions

<table>
<thead>
<tr>
<th>TSL notation conventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGN</td>
</tr>
<tr>
<td>SIGN-SIGN</td>
</tr>
<tr>
<td>SIGN++</td>
</tr>
<tr>
<td>^</td>
</tr>
<tr>
<td>+</td>
</tr>
<tr>
<td>U</td>
</tr>
<tr>
<td>Gpro+Fpro-move</td>
</tr>
</tbody>
</table>

Appendix III

TSL classifiers with their categorization based on physical and semantic features

1. Whole entity classifiers for animate entities A – cannot exist as lexical items independently

| Human beings, animals |
| Human beings, animals |
| Human beings, animals |
2. Whole entity classifiers for animate entities B – also occur as partial or whole lexical items

- Fish
- Shrimp
- Frog
- Worm

3. Whole entity classifiers for inanimate entities A – cannot exist as lexical items independently

- 3-dimensional objects (ball, stone, apple)
- 2-dimensional round objects (CD, biscuit, bicycle)
- 3-dimensional small objects (small-size fruits)
- 2-dimensional round small objects (coin, button)
- 2-dimensional flat objects (paper, leaf, surface of objects)
- 0-dimensional small objects (raindrop, dew, bean)
- 1-dimensional vertical objects (electric pole, flag pole)
- 1-dimensional horizontal objects (river, road, rope, branch, pen)
4. Whole entity classifiers for inanimate entities B - also occur as partial or whole lexical items

<table>
<thead>
<tr>
<th>Airplane</th>
<th>Boat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>Train/truck</td>
</tr>
</tbody>
</table>

5. Whole entity classifiers for instrument

<table>
<thead>
<tr>
<th>Toothbrush</th>
<th>Comb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scissors</td>
<td>Knife</td>
</tr>
</tbody>
</table>

6. Limb classifiers

<table>
<thead>
<tr>
<th>For walking, standing, and swimming</th>
<th>For kneeling down</th>
</tr>
</thead>
<tbody>
<tr>
<td>For jumping</td>
<td>Jumping on one leg</td>
</tr>
</tbody>
</table>
7. Part classifiers for animate entities

- Chicken
- Goose
- Dragon, giraffe

8. Part classifiers for inanimate entities

- Bicycle, motorcycle
- Telephone
- Spout (for filling the gasoline)
- Clothes hanger

9. Handling classifiers

- For grasping concrete or abstract entities
- For round or cylindrical objects (ball, mug)
- For objects with handlers (hammer, toothbrush, saw)
- For tiny objects (needle, thread)
10. Extension/surface classifiers

- For tracing a line or a surface
- For tracing length or height of cylindrical objects
- For tracing the width or height (space, volume)
- For tracing the shape of thin objects

References


Myers, James & James Tai. (eds). 2005. Special Issue: Taiwan Sign Language (Language & Linguistics 6(2)).


Tai, James & Jane Tsay (eds.). 2009. *Taiwan Sign Language and Beyond*. Taiwan: The Taiwan Institute for the Humanities, National Chung Cheng University.


Websites
Taiwan Sign Language Database for Place Names – http://signlanguage.ccu.edu.tw/placenames.php
Taiwan Sign Language Database for Family Names – http://signlanguage.ccu.edu.tw/familynames.php
Public Television for deaf people – http://www.pts.org.tw/see/
National Taichung School for the Deaf – http://www.ttdf.tc.edu.tw/
Association for the Hearing Impaired – http://www.soundhome.org.tw/