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Improving CSL Accessibility: A Bilingual, Interactive, Online Database for Chinese Sign Language

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Improving CSL Accessibility:
A Bilingual, Interactive, Online Database for Chinese Sign Language

Senior Project submitted to
The Division of Languages and Literature
of Bard College

by
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Annandale-on-Hudson, New York

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Introduction

Even in Chinese, there are very few resources for studying Chinese Sign Language and no online databases that I have found. By creating this bilingual database, I hope to make CSL more accessible to the general public and am structuring it accordingly. Currently, the site contains resources in English and Chinese on both the CSL fingerspelling alphabet and numbers as well as an interactive dictionary. In order to create a database for CSL grammar and vocabulary usage, I have designed the linguistic outline for a sentence database to be coded based on future development of the website. Sign entries are associated with a variety of attributes which, for the benefit of scholars, are grouped according to linguistic parameters; however, the goal of this classification system is to be as precise as possible while remaining simple enough for users of many educational backgrounds to utilize. Because Chinese Sign Language, like any other language, is constantly undergoing change, the greatest experts on the most natural and up-to-date CSL are the fluent signers who use the language in their everyday lives. In order to more accurately represent CSL, the website allows users to upload videos of themselves signing and choose the parameters that they feel best describe the signs. While I intend the website to be useful for academics, I do not want it to only be meaningful to researchers. My biggest hope is that this website or future versions of such can help bridge language gaps between readers of Chinese and English regardless of their hearing ability.

In the first chapter I discuss the information and linguistic parameters associated with sign entries in the dictionary portion of the website. The second chapter outlines possible grammatical attributes to be examined in a future sentence database and includes a sample set

of sentences to display these features. The structure and layout of the dictionary database is explained in the final chapter and supported with an appendix of the written code used.

Throughout the paper, signs are transcribed by taking the most common English translation and putting it in all uppercase letters. The English and Chinese words and phrases to which a sign or signed phrase refers will be put in quotations.

As of the spring of 2014, the website to which this project refers can be found at:

<http://sdubbs42.wix.com/csldatabase>

Chapter One:

Chinese Sign Language Online Database: Dictionary

User Information:

In order to better categorize signs and track signing patterns, users will be asked to list anywhere that they have lived or studied that might have impacted their signing starting with the places that have had the most influence. Because signing can have regional variety such as vocabulary and accent, it is important to know the background of a user uploading a sign in order to track how CSL differs according to location.

Users must also state whether their right or their left hand is dominant. This is important because just as people can be right-handed or left-handed when writing and performing other actions, there are also right-handed and left-handed signers. Right-handed signers are more common, and so the vast majority of sign language reference materials show examples with the right hand as dominant. Signers whose left hand is dominant will form signs that are opposite and appear to be a reflection of the standard examples in reference materials. Whereas signing with the left hand as dominant is acceptable, it is considered unnatural for signers to switch their dominant hand. An exception to this occurs with one-handed signs, which are normally signed with the dominant hand, when a signer's dominant hand is otherwise occupied¹.

¹ Most of my knowledge of Chinese Sign Language comes from studying the subject in Harbin and interacting with my teacher and the members of the Harbin Handicapped Persons' Art Group (哈尔滨市残疾人艺术团). The textbook that I used for this class was *中国手语日常会话: Chinese Sign Language Daily Conversation*, the full bibliographic information for which can be found in the works cited section.

Chinese Translation:

When creating a dictionary entry, users will need to enter the Chinese equivalent of the sign, and the characters entered in this category will be linked to a scroll-over dictionary that will show the English definitions of the Chinese. Multiple Chinese translations will be allowed per sign because CSL is not an exact equivalent of Chinese. It is common for a CSL sign to represent multiple Chinese words; for instance, “会” (will/be able to), “知道” (know), and “明白” (understand) all fall under one sign in CSL.

Articulation:

The articulation of signed languages is divided into five categories: location, movement, handshape, palm orientation, and non-manual markers². While variation among these groups leads to differentiation among signs, devising a system to describe the physicality of each sign is far more complicated. I attempted to create a tagging system that could completely and accurately describe each individual sign, but there are so many variable components involved in the physical execution of a sign that each model I thought of quickly became too complex to be useful to both signers and researchers alike. In the case of handshape, having names for each handshape as a whole was illogical because of the vast amount of different handshapes used in CSL, and establishing set tags for the individual positions of each finger became too complicated to be helpful. Movement posed a similar problem due to the infinite possibilities of movement pattern combined with movement direction. Likewise, location is problematic because it exists in a three-dimensional rather

² These categories are outlined by *Language Files: Materials for an Introduction to Language and Linguistics*, and were commonly referenced throughout a majority of the other materials that I read. See works cited for complete bibliographic information on *Language Files*.

than two-dimensional space. Palm orientation lost its simplicity when it was discovered that a sign can have the same palm orientation but a different amount and direction of rotation at the wrist. Furthermore, location, movement, handshape, and palm orientation frequently change over the course of a sign, and the fact that many signs are compounds multiplied these complications by the number of morphemes. Not only were there too many variables for me to accurately predict and create tags for, but the tags chosen by users had the potential to differ according to individual perception and interpretation. Instead of a tagging system, I decided to add an entry field in which users can write out their own explanations of how the signs are formed. This is both simpler for users and will enable researchers to observe the aspects of articulation that signers regard as important.

Non-manual Markers:

Non-manual markers are the only types of articulation that made sense to categorize in a tagging system and include any sort of movement other than that of the fingers, hands, and forearms that accompany the sign but do not modify it. Categories for non-manual markers include torso (waist, chest, and shoulders), head, and facial expression/facial movements. Because facial expressions can be added to slightly modify or exaggerate a sign, a facial expression is only counted as a non-manual marker when it occurs in the abstract form of the sign. Facial movement includes any movement of the facial features that does not convey an emotion or reaction and therefore might not be strictly considered an expression. For example, the sign for “糖” (candy) involves forming a round lump in the cheek with the tongue, whereas the sign for “吹风机” (hairdryer) includes a rounding of the lips in a blowing motion.

Iconic Devices:

The categories for iconic devices were decided upon based on both my previous CSL instruction in Harbin³ and some of the categories established by Marjorie K.M. Chan and Wang Xu in “Modality Effects Revisited: Iconicity in Chinese Sign Language.” I have sorted the iconic devices found in CSL into nine categories: direct presentation, number representation, shape representation, movement representation, size representation, part-for-whole representation, metonymic/metaphorical representation, sound representation, and Chinese character representation. It is possible for a sign to contain multiple iconic devices or to contain none at all. For instance, the sign for “coffee” (咖啡 kāfēi) involves sound representation because the handshape formed by the dominant hand is the same as the handshape for “k” in the CSL alphabet. It also involves both shape representation and movement representation because the non-dominant hand forms the shape of a cup while the outstretched middle finger made by the K of the dominant hand is moved in a stirring motion inside this “cup.” Conversely, the sign for Shanghai (both hands in fists with their pinkies hooked around each other so that one hand is above the other) is completely arbitrary and therefore has no iconic devices.

Direct Presentation:

Direct presentation involves pointing at an object in order to name the object. The signs for “eye” (眼睛) and “nose” (鼻子) are both examples of this and involve using an outstretched pointer finger to point at the eye or nose respectively. Similarly, an index finger pointed at the signer’s chest represents “I/me” (我) while an index finger pointed at the person to whom the signer is talking represents the singular form of “you” (你). If the

³ Most of the categories we discussed in class overlap with those mentioned in 聋人文化概论. See works cited for further bibliographic information.

referent is physically present, the signs for “he/him” (他), “she/her” (她), “it” (它), “this” (这), “that” (那), “here” (这儿/这里), and “there” (那儿/那里), also involve an index finger pointing at the intended person, place, or thing. However, if these referents are being discussed in the abstract, HE/HIM and SHE/HER are shown by an extended pointer finger pointing into the air next to the signer on the dominant side. Likewise, THIS and HERE involve the index finger pointing at the ground in front of the signer while THAT and THERE are shown by using the index finger to point at the ground next to the signer on the dominant side. The direction of these signs may also be altered if a conversation involves multiple abstract referents in the same category. For instance, if the signer is recounting an interaction between two people who are not present, one person might be identified by pointing to the dominant side while the other person will be referred to by pointing to the non-dominant side.

Number Representation:

Signs containing number representation use the sign for a number to shown the quantity of referents. The sign for “year” (年) is made by forming a fist with the non-dominant hand with the knuckles facing to the front; the outstretched pointer finger of the dominant hand is then run down the knuckles. The specific number of years, or a specific age (岁), can be shown by forming the sign for that number with the dominant hand and brushing it down the knuckles of the non-dominant hand. Signs for quantities of hundreds (百), thousands (千), ten thousands (万), and hundred millions (亿) can also be signed this way by using the handshape of the desired quantity to make the motion of the sign. For example, THREE HUNDRED (三百) can be signed by making the handshape for THREE (三) and moving it in the movement pattern of the sign for “one hundred” (an arc from the

non-dominant side to the dominant side). SEVEN THOUSAND (七千) can be signed by forming the handshape for SEVEN (七) and using it to write the character “千” (thousand) in the air.

Shape Representation:

In signs containing shape representation, the physical shape of the referent is mimicked by the shape of the sign. This is usually shown by the placement of the fingers, hands, and forearms such as in the signs for “money” (钱) and “umbrella” (伞). To sign MONEY the thumb and pointer finger of the dominant hand are pinched together to form a circle that imitates the shape of a coin. The sign for “umbrella” (index finger of the dominant hand extended and pointing upward and the non-dominant hand outstretched horizontally with the center of its palm resting on the finger tip of the dominant hand) depicts the shape of its referent by using the extended index finger to represent the umbrella handle and the outstretched non-dominant hand to show cover provided by the umbrella top.

Movement Representation:

Movement representation occurs when the movement of the referent is depicted by the movement of the fingers, hands, forearms, or body. In the sign for “airplane” (飞机) the thumb, index finger, and pinky of the dominant hand are extended to imitate the shape of a plane; the signer then moves this handshape up and away from the body to show the action of a plane taking off. Similarly, SNOW (雪/下雪) is signed in a way that mimics falling snow by having both hands drift from in front of the body at head level down to waist level while the fingers are outstretched and wiggling. In addition to objects, signs with movement representation can also imitate the movement of activities, such as the sign for “dance” (跳舞/舞蹈) in which both hands are curved slightly with the back on each hand resting on the

waist on its own respective side. While maintaining this position the signer alternates moving each shoulder forward and back to create the impression of someone dancing. It should also be noted that while signs involving movement representation have set paths of movement while referred to in the abstract, the movement of many such signs can change according to the movement of a specific referent. For instance, a plane that is landing is shown by using the same handshape as in the standard sign for “airplane,” but the movement of the sign would start from high up glide downward to end at the height of the abdomen.

Size Representation:

Signs containing size representation are those in which the size of the sign corresponds to the size of the referent. While signs such as LONG (长) and SHORT (短) have standard sizes when referring to length in general, the distances shown by these signs can change to reflect the length or comparative length of the objects being described. Other signs such as CARD/TICKET (卡/票) change in size, but not in handshape (both hands with thumb and forefinger outstretched and curved slightly with the fingertips of the thumbs facing each other and the fingertips of the forefingers facing each other to form the shape of a card or ticket), depending on the size of the item to which they refer. For instance, a train ticket is sized differently than an airline ticket, so the size of the sign for “ticket” changes to match the size of the corresponding ticket.

Part-for-whole Representation:

In part-for-whole representation the entirety of the referent is indicated by the sign imitating a single characteristic of said referent. For example, the sign for “car” (汽车) is shown by using two hands to mimic the motion of turning a steering wheel back and forth as would be done when driving a car. The sign for “cat” (猫) is shown by holding the middle

finger, ring finger, and pinky of the dominant hand outstretched horizontally and held apart; the fingertips of these three fingers are then brushed from the side of the mouth to just outside the cheek in a way that traces the shape of a cat's whiskers. Both of these signs contain part-for-whole representation because they use one well-recognized feature, a steering wheel and whiskers respectively, to signify the referent as a whole.

Metonymic/Metaphorical Representation:

Metonymic/metaphorical representation occurs when signs express abstract or complicated concepts by means of association. The sign for “black” (黑 hēi) contains metonymic/metaphorical representation because it involves forming an “h” and moving it down the hair at the side of the temple as an allusion to the fact that black is a common hair color in China. Similarly, THANK YOU (谢谢) is shown by extending a thumb upwards while the other four fingers are curled into a fist; the thumb is then bent downwards a few times to represent a person bowing in thanks. Metonymic/metaphorical representation can overlap slightly with part-for-whole representation such as in the sign for “female” (女). In this sign, the thumb and forefinger of the dominant hand pinch the earlobe on the dominant side to signify an earring. Because earrings are commonly associated with females, this sign demonstrates metonymical/metaphorical representation; it also shows part-for-whole representation because the entirety of the gender is being shown by a single characteristic, wearing earrings. However, signs such as CAR (汽车) and CAT (猫) contain only part-for-whole representation and not metonymical/metaphorical representation because they depict a concrete aspect of the objects that they represent instead of something linked to the object by association. Very few signs are completely arbitrary, and many signs that do not fit neatly into other categories involving iconic devices can fall under the category of

metonymic/metaphorical representation. One example of this is the sign for “buy” (买), which is made by holding both hands outstretched with the palms facing up and the fingertips pointing toward the opposite sides of the body. The dominant hand starts in front of the non-dominant hand and is then moved inward, slapping the palm of the non-dominant hand as it goes. Although this alludes to the movement of items transferring hands and being obtained by the buyer, it does not directly imitate the act of buying an item but rather represents the concept as a whole. Therefore, the sign for “buy” does not contain movement representation, but it does contain metonymic/metaphorical representation. Furthermore, signs can be classified as containing metonymic/metaphorical representation because they allude to another sign, such as the sign for “商” which is used in relation to commerce. In CSL the sign for “sell” (卖) is the opposite of the sign for “buy” in that the dominant hand moves from the inside outward, and the sign for “商” alludes to both the signs for “buy” and “sell” by keeping the same handshape and palm orientation but having both hands rotate around each other to show goods being bought and sold.

Sound Representation:

In signs with sound representation, at least part of the sign is related to the pronunciation of the Mandarin word it represents and usually involves the CSL signing alphabet which corresponds to the Pinyin romanization system. For example, the sign for the possessive particle “的” (de) is represented by the handshape for “d” in the CSL alphabet. Similarly, the signs for “残” (cán) and “疾” (jí) in “残疾人” (disabled person) are made by signing C and J respectively. In some cases, two words that have a similar pronunciation might be represented by the same sign. This is seen in the sign for “亲戚” (relatives) when “戚” (qī) is formed by making the sign for “seven” (qī). The “气” (qì) in the sign for “天气”

(weather) also utilizes the handshape for SEVEN but forms this handshape just below the nose.

Chinese Character Representation:

Chinese character representation occurs when the shape of the sign imitates the shape of the character that it represents. For example, the sign for “人” (person) uses two outstretched pointer fingers to create the shape of “人,” while the sign for “工” (work) uses the pointer and middle finger of the non-dominant hand to make the two horizontal lines of “工” with the pointer finger of the dominant hand resting against them to make the vertical line. The sign for “件” involves holding the thumb and pointer finger of one hand in the shape of the character’s radical (亻) while using the pointer finger of the other hand to write the second part of the character (牛) beside it.

Combined Verb and Object:

In signs that display a combined verb and object, a verb-object phrase is shown by using one sign in which the verb and corresponding object are not separated. For example, the CSL for “play (the) flute” (吹笛子) is a single sign in which the signer brings both hands to the side of the face while wiggling the fingers and blowing out to mimic playing a flute. Instead of first making the sign for “吹” (play; literally: blow) and then the sign for “笛子” (flute), both the verb and the object are represented in the one sign which is quicker and more convenient. In many signs containing a combined verb and object, the sign for the verb-object phrase is the same as the sign for the corresponding object; the separate sign for the verb can be considered dropped because it is already represented in the sign for the object and therefore the verb-object phrase.

Special Features of the CSL Lexicon:

One characteristic of the Chinese lexicon is the prevalence of compound words, particularly those formed by free-standing morphemes. As in Chinese, many CSL morphemes are not bound nor are they changed by their context, and as such, Chinese Sign Language also contains a large amount of compound words. Many of these words directly correspond to compound words in Mandarin; the sign for “天气” (weather) is formed by the sign for “天” (sky) followed by the sign for “气” (air). However, multiple compound signs in CSL are unrelated to their Chinese translation. While the Chinese word for “wife” (妻子) is formed by two characters denoting a wife and a person respectively, the CSL sign for “wife” is formed by first making the sign for “marriage” (结婚) followed by the sign for “female” (女性).

Although it is a separate language, Chinese Sign Language also shows aspects of Chinese in its vocabulary in signs that contain sound representation and character representation. This, in turn, helps to differentiate CSL from signed languages that are not influenced by either Mandarin or Chinese characters. Nonetheless, just as British and American Sign Language are not the same language, environments permeated with Chinese language do not produce identical signed languages. Such is the case with Chinese and Taiwanese Sign Language which, despite sharing a common written and spoken language, developed independently in two separate locations. Further differences can also be attributed to aspects of history and culture unique or more prevalent in either China or Taiwan; for instance Taiwanese Sign Language is more closely connected to Japanese Sign Language due

to Taiwan's past with Japan. Comparisons⁴ of the lexicons of CSL and TSL also reveal that while CSL uses character representation, fingerspelling, and letter initiation in its signing, TSL contains only character representation. This can be attributed to the fact that the Pinyin system of romanization has been heavily promoted in China and is now widely used, making fingerspelling and letter initiation a more natural choice for signers of CSL. Conversely, popular phonetic and character input systems used in Taiwan, such as Bopomofo, do not make use of a romanized alphabet.

Cultural and historical influences are responsible for creating other unique vocabulary in the CSL lexicon, predominantly in regards to signs containing iconic devices. In American Sign Language, the sign GIRL is made by using an outstretched thumb to trace along the jaw from the ear to the chin; this mimics the ties of a bonnet historically worn by American females such as the pilgrims and pioneers. While ASL signs relating to females tend to occur around the lower half of the face for this reason, the CSL sign for “女” (female) alludes to the wearing of earrings because in Chinese culture, an earring is more associated with females than a bonnet would be. Similarly, the sign for “dance” (跳舞, 舞蹈) in Chinese Sign Language mimics the hand position and movement more common in traditional Chinese dance than in western styles of dance. Conversely, CSL signs borrowed from other sign languages can lose any iconic devices that might have been significant in the original sign language. Names for countries tend to be the same across sign languages, and so in both American and Chinese Sign Language THE UNITED STATES OF AMERICA (美国) is signed by interweaving the outstretched fingers of both hands and turning them in a circle in

⁴ Wang Xu's thesis, “A Comparison of Chinese and Taiwan Sign Languages: Towards a New Model for Sign Language Comparison,” builds upon two other studies and uses a modified version of the Swadesh 100-word list for comparison. See works cited for full bibliographic information.

front of the torso. To an American signer, this symbolizes the idea of many people of different backgrounds coming together to create the United States, but for most Chinese signers, this sign is completely arbitrary because it has lost its deeper meaning by changing cultural context. Of course, just as in spoken languages, it can be hard to tell whether signs vary between signed languages out of arbitrariness or because of some other cause. For instance, since the CSL and ASL signs for “moon” (月) are only similar in that they portray the crescent shape of the moon, can an argument be made that provides a linguistic, historical, or cultural reason for why these two signs focus on the same aspect of the same referent and yet are formed so differently?

Chapter 2:

Chinese Sign Language Online Database: Sentences

Purpose and Structure:

A database for Chinese Sign Language sentences is important because most resources on CSL do not teach natural sentence structure. Because Chinese Sign Language is a different language than Mandarin, Literary CSL (文法手语) is used to sign books and other written documents whereas Natural CSL (自然手语) is used for daily conversation and communication. Therefore, the grammar of Literary CSL corresponds to Mandarin grammar while the grammar of Natural CSL is not tied to a written form of language. Although Natural CSL is most commonly used among signers, many CSL teaching materials are still based around Literary CSL. In order to create a resource that exhibits both natural grammar and vocabulary, I hope to add a separate database for sentences depending on future interest and demand. Like the dictionary database, this database will also allow users to upload entries; however, for content control and ease of translation, these sentences will be predetermined. I have identified grammatical features of Natural CSL that I would like to obtain more data about, and have come up with a series of sentences that will display these grammatical features while also being useful to those interested in learning CSL.

The current outline for this database involves a series of sentences that users can respond to by uploading videos of how they would sign these sentences. As with the dictionary database, users will need to provide information on their dominant hand and the places that have influenced their signing. In the future, I would also like to have sample

stories and dialogues that users can respond to in order to provide a more in depth resource for studying CSL grammar.

Exaggeration and Modification:

The carrying out of many signs is flexible in that the speed, size, direction, and location of the sign might be augmented to mimic a specific referent or to show relation to other referents. For instance, an airplane coming in for a bumpy landing would use the same handshape as the sign for “airplane” (飞机), however the movement pattern of the sign would differ from the basic sign for “airplane” in that it would mirror the movement of the landing plane. Similarly, the distance between hands when signing the size of a referent that is bigger than a previously mentioned referent would increase, thereby turning the signed adjective into a comparison. In this way, the big fish that I caught and the bigger fish that my sister caught would still both be described with the sign for “big” (大), but, like the fish, the sign referring to the fish that my sister caught would be bigger. Facial expression is another common way to signify exaggeration among adjectives; the intensity of the adjective can be indicated by the intensity of the facial expression. Therefore, the larger the smile and the more excited the general facial expression of the signer when signing HAPPY (高兴/快乐), the greater the level of happiness being conveyed. Verbs can also be modified to correspond to a specific situation; whereas the verb for “see/look” (看) is made by outstretching the pointer and middle finger and pointing them forwards at eye level, a signer might start with the fingertips pointing forward and move them, along with his or her gaze, in a different direction to show the act of looking in said direction.

Physical Relationship among Signs:

The location of signs can also be modified to show physical relationship within a sentence, story, or conversation⁵. One common example occurs when there are multiple persons who are not present being referred to in the third-person singular. Because all forms of the third-person singular are signed by using the index finger to point away from the side of the body, different locations will be assigned to the different referents and maintained throughout the train of thought. Similarly, the location of objects such as beds, chairs, people, etc. can be shown by forming the sign for the referent and placing in within the signing space in a way that corresponds to its actual location. In this way, signers can convey ideas about how these objects or multiples of these objects occur and relate to each other in the physical world. It should be noted that although the physical relationship between signs makes up a significant part of sign language grammar, there are still prepositions in Chinese Sign Language which are commonly used. Although this kind of sign location modification can be studied with sentences, longer data samples such as stories and dialogues would be more beneficial for studying such a complex and extended grammatical feature.

Physical Representation and Sign Change:

There is also a phenomenon in American Sign Language in which select signs have separate signs for when their location and movement is representing the location and movement of something in the physical world. For example, the sign for “car” is normally made by mirroring the driving of a car using the steering wheel, but when the movements and physical location of a car or similar sort of vehicle are being referred to, the car is

⁵ Leonard Talmy’s chapter, “The Representation of Spatial Structure in Spoken and Signed Language,” in *Perspectives on Classifier Constructions in Sign Language* delves further into the topic of how signs physically exist and interact with one another in space. Full bibliographic information can be found in the works cited section.

represented by a single hand with the thumb, pointer finger, and middle finger extended. Likewise, WALK/WALKING is made using both hands with fingers together and outstretched in front of the chest that mimic the action of steps being taken. However, when the preposition “to” is added to the walking, the sign changes to become one-handed with pointer and middle finger extended downwards and moved like the legs of a person walking. In both these instances, the signs are two-handed signs occurring in a set location that are changed in order to be able to convey the physical movement and relationships of their referents. Although I do not know if this phenomenon exists in Chinese Sign Language, the fact that the sign for “car” is the same in CSL leaves me hopeful that similar sign changes might occur.

Dropping Words:

In order to sign more quickly, CSL signers often drop measure words and other words that have a grammatical function but no meaning. That is to say, if a word is not crucial to the meaning of the sentence, the grammar of CSL will allow it to be dropped without having an impact on the correctness of the sentence. Therefore, it is grammatically acceptable to sign noun phrases without measure words, such as “那水” (THAT WATER), in CSL more often than it is in Mandarin. However, if there are different types of containers of water and there might be some sort of confusion about which container of water was being referred to, a signer might add in a measure word to clarify whether they were talking about “那瓶水” (THAT BOTTLE WATER) or “那杯水” (THAT CUP WATER). Although classifiers are the most obvious example of words that occur in Mandarin but are omitted in CSL, there are other occasions of different words being dropped in Chinese Sign Language. For instance,

while CSL does have a sign for the possessive particle “的,” it is omitted more frequently in Chinese Sign Language than it is in Mandarin. Furthermore, CSL signers will often drop the verb “看” (see/watch/look) in the sentence “我看电影” (I watch a movie; literally: “I watch movie”) and instead sign “我电影” (I MOVIE) because under most circumstances seeing is what one does to a movie; it would be illogical to jump a movie or cook a movie. Therefore, “看” is seen as the default verb for a movie, and if the signer is performing another action such as directing or editing, this will be specified by adding in the sign for the corresponding verb. This phenomenon leads me to believe that it is common in CSL to drop words that add meaning to a sentence but are unnecessary or obvious in a given context, a theory that could perhaps gain more credit with a wider sampling of data.

Topicalization:

Topic-comment structure is a common feature of both American Sign Language and Mandarin, and occurs when a sentence or clause is started with the topic followed by a comment about the topic. In this way, the Chinese sentence “我喜欢这本书” (I like this book) can also be formed as “这本书，我喜欢” (As for this book, I like it; literally: “This book, I like”). Similarly, the ASL sentence I LIKE THIS BOOK can be signed as THIS BOOK, I LIKE without the extra words that would be necessary to make it grammatically correct in English. Like in Chinese and ASL, the topic or object is also frequently moved to the front of sentences and phrases in CSL, and this phenomenon could point to an overall topic-comment pattern of sentence structure for Chinese Sign Language.

Dislocation within Sentences:

Supporting the idea that CSL is a topic-prominent language, word dislocation within sentences is frequent in Chinese Sign Language and occurs among a variety of parts of speech. For example, a sentence such as “我去书店” (I’m going to the bookstore; literally: “I go bookstore”) becomes “书店我去” (BOOKSTORE, I GO) when signed in CSL. Such reversal can also occur within phrases; a noun phrase involving a noun and adjective such as “新洗衣机” (new washing machine) becomes “洗衣机新” (WASHING MACHINE, NEW), and the verb phrase “没有吃饭” (haven’t eaten) is signed as “吃饭没有” (EATEN, HAVEN’T). Word reversal within phrases is particularly interesting in comparison to Chinese clauses and phrase structure.

Ending Sentences with Subject:

It is common in an ASL sentence to end with the subject, something that occurs in a variety of instances and serves multiple purposes. In a yes/no question, the subject often may either be repeated at the end of the sentence, or dropped at the beginning and moved to the end so that a question such as, “Do you like broccoli?” becomes (YOU) LIKE BROCOLLI, YOU? This helps to differentiate the question from a statement and also gives the signer a place to raise up their eyebrows, a facial movement that is grammatically necessary for the forming of a yes/no question in ASL. The subject might also be repeated at the end of an ASL sentence as a means of emphasizing the subject or as a way to more clearly mark the ending of the sentence or what the signer intends to convey. In watching various videos of different CSL signers⁶, I noticed that there were multiple instances of the subject being

⁶ One video that demonstrates Chinese Sign Language while discussing terminology issues face by the Chinese Deaf community is Hu Xiaoshu’s “Deaf, Not Dumb: Chinese Sign Language=聋哑与聋人的区别?” Another video found on Hu Xiaoshu’s blog, “手语访谈记录影片：聋人的心声” involves multiple signers talking about

moved to or repeated at the end of the sentence. Although I am not yet clear on what causes this phenomenon in Chinese Sign Language, I do not think that ending a sentence with the subject is a grammatical feature of yes/no questions. This is because CSL has a sign for the Mandarin word “吗” which is put at the end of a statement to transform it into a yes/no question. Despite this, I believe that a sufficient amount of data could provide evidence of trends that could either be in some ways similar to those in American Sign Language or could be further evidence of an overarching theme of topic-prominence in CSL.

Questions:

Questions and their corresponding answers and statements are a large focus of the sample phrases created for signers to upload responses to because not only are they conversationally useful for learners of CSL, but they are also a good way for researchers to compare their structures and notice trends. Just as in spoken languages, questions in signed languages have their own grammatical markings and indicators. For instance, in order to form a grammatically correct yes/no question in American Sign Language, the eyebrows are raised with the eyes widening and the head and torso tilt slightly forwards. In many cases, the subject is also repeated at the end of the sentence or moved to the end of the sentence completely. However, in forming a grammatically correct wh-question (a question involving the words who, what, when, where, why, or how) the signer should lower the eyebrows and narrow the eyes. It is also common to put the question word at the end of the sentence and perform the aforementioned non-manual marker while signing this word. Therefore, a question such as, “Who eats pudding?” becomes EAT PUDDING, WHO? in ASL with the

issues faced by the deaf and hard of hearing in China as well as their own experiences. Both videos can be found as part of the other resources on my website, and further bibliographic information is included in the works cited section.

narrowing of the eyebrows and eyes occurring simultaneously with WHO. In Mandarin, there is no question word movement; a question word appears at the same place in the question sentence as its corresponding answer in the responding sentence. Therefore, although wh-question words can occur in at multiple places in a Chinese sentence and often are found at the end, there are instances in which a wh-question that would occur at a different position in the corresponding Chinese sentence is signed at the end of the CSL sentence. The Chinese question “为什么迟到” (Why did (you)⁷ arrive late?; literally: “Why late arrive?”) becomes “迟到为什么” (LATE ARRIVE, WHY?) in CSL. However, I am not sure if examples such as this are due to a general trend in topicalization in CSL or are indicators of a separate grammatical word order that applies to questions, and would need a greater pool of data to draw any conclusions.

Sample Sentences:

The following set of sample sentences revolves around the practical topic of food and, depending on participation, will ideally be joined by similar sets of sentences concerning other common topics. This set includes declarative sentences (C, F, G, and H) as well as yes/no questions (B and E) and wh-questions (A, D, and I). In addition to this, sentences F and G contain complex clauses (“the tea that I gave him” and “food made by my father”), while sentences D, E, F, G, and I involve some sense of time. By doing this, I hope to collect data that is demonstrative of a wider variety of grammatical structures that can be examined and used with other nouns, verbs, and adjectives to create meaningful conversation.

Although I have created sentences with adjectives such as “especially” and “very” that I hope

⁷ In this case, the subject of the sentence, “you,” is omitted in both Chinese and CSL because it is already implied in the context.

will prompt some sort of exaggeration, more complex forms of modification and relationship among signs would need a longer dialogue or thought process to be accurately displayed.

- A. 你吃什么? (What do you eat? *or* What are you eating?)
- B. 你喜欢吃水果吗? (Do you like to eat fruit?)
- C. 她特别喜欢吃冰淇淋。(She especially likes to eat ice cream.)
- D. 谁吃了这个蛋糕? (Who ate this cake?)
- E. 我的妹妹喝了那杯水吗? (Did my younger sister drink that cup of water?)
- F. 我的朋友已经喝了我给他的茶。(My friend already drank the tea that I gave him.)
- G. 他从来没吃过我爸爸做的菜。(He has never eaten food made by my father.)
- H. 这家饭馆儿的饺子非常难吃! (This restaurant's dumplings taste very bad!)
- I. 我们明天去哪儿吃晚饭? (Where are we going to eat dinner tomorrow?)

Chapter 3:

Chinese Sign Language Online Database: Website Design

Website Features:

Currently, the database is made up of three major parts; the CSL fingerspelling alphabet, CSL numbers, and an interactive dictionary. Both the alphabet and numbers sections contain images of the signs accompanied by a written description in English and in Chinese. In the case of numbers that can be signed in multiple ways, notes are made in the description for possible variations of hand position while separate entries are included for alternate handshapes. Bilingual directions for the formation of numbers not shown on the website are also included. The alphabet and numbers are finite sections that only exist on the host website and cannot be added to or changed by anyone but myself. In contrast, the interactive dictionary exists in a separate database that is shown on the host website by the insertion of HTML. The website also includes a homepage, links to relevant resources, and a contact form. Furthermore, a separately formatted version of the website will appear when it is accessed using a mobile phone or similar device which will make interacting with the site easier when using this kind of platform.

Dictionary and Database Structure:

The components of the dictionary are located on a separate site and displayed on the host website through HTML boxes that call upon their original URLs. The dictionary page of the host site contains two of these boxes, one which connects to an explanation of sign attributes and one that displays the dictionary database. Two individual pages make up the

section that provides explanations and examples for the different components of the signs, such as non-manual markers and iconic devices. One of these pages, DictionaryExplanationChinese.html (Appendix I), provides this information in Chinese. The other page, DictionaryExplanationEnglish.html (Appendix II), shows the same material in English. Both pages have links at the top that allow users to toggle back and forth between the two pages and therefore the two languages.

The database itself is composed of three tables: CSL_signs, CSL_words, and CSL_word_sign. Users are able to interact with these three tables through a series of PHP documents (Figure 1) that exist on a separate site and are displayed on the host website through the other HTML box. Every sign entry that is created is stored in CSL_signs and assigned a key with which to identify it. Because there can be numerous Chinese translations associated with a single sign, the translations are stored separately in CSL_words and also assigned their own keys. CSL_word_sign exists in order to link a sign entry with its corresponding translations.

Upon entering the dictionary page on the host site, users first see DictionaryEntryList.php (Appendix III) which shows a list of dictionary entries starting with the most recently added as indicated by their keys in CSL_word_sign. Each list item includes the Chinese translations requested from CSL_words, the related sign description requested from CSL_signs, and a link button that connects to the ShownSign.php (Appendix IV) that corresponds to the entry.

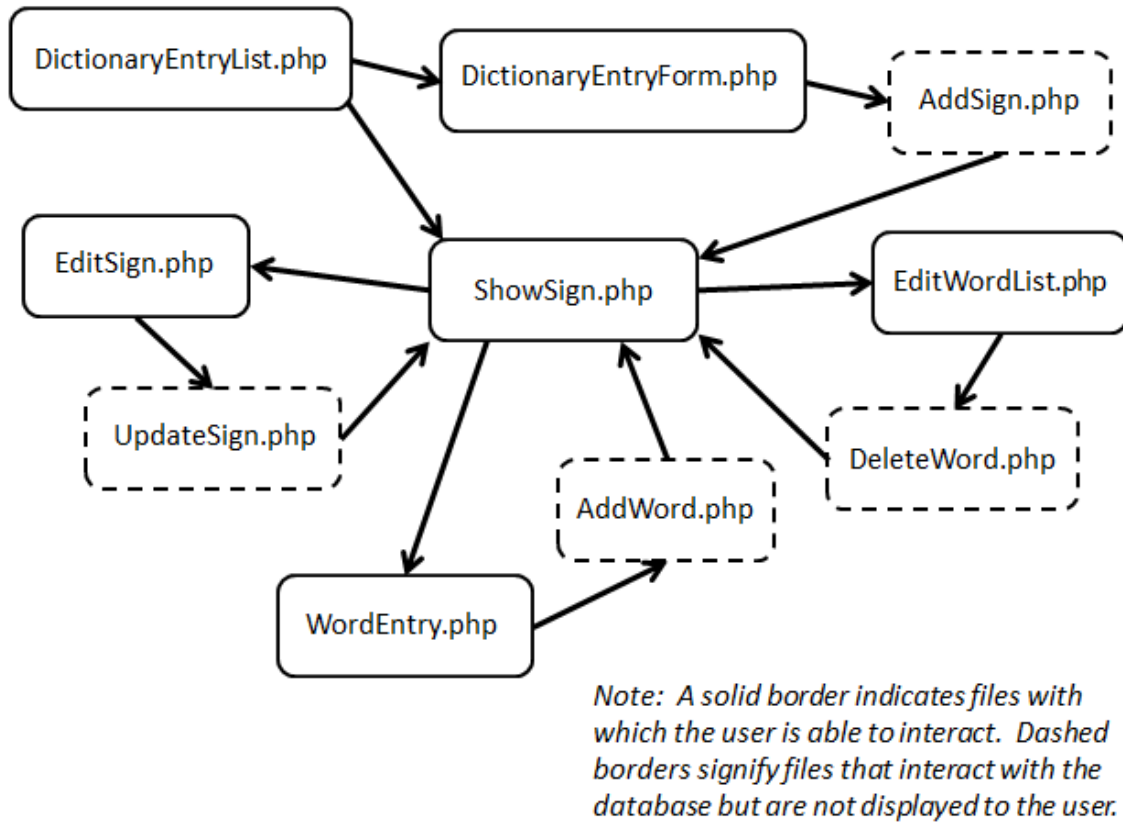


Figure 1

The ShowSign.php page queries all three databases and displays the appropriate sign entry and translation entries associated with the specific key as requested from CSL_word_sign. A sign entry can be edited by using the 编辑 (Edit Sign) button; this brings the user to EditSign.php (Appendix V) which is a form consisting of text input boxes for information such as username, places of signing, dominant hand, and sign description. The form also contains checkboxes for non-manual markers, iconic devices, and combined verb-and-object. Both the text boxes and checkboxes request the sign's key from CSL_signs and display the information corresponding to that key in the input boxes to either be kept or changed. Once changes are made in EditSign.php, the submit button puts this information into CSL_signs through UpdateSign.php (Appendix VI) and reroutes back to ShowSign.php.

Videos demonstrating how signs are formed are only shown in ShowSign.php because they are currently not a part of the database that users can modify. One of the reasons for this arrangement is that working with video files in HTML is difficult and not ideal. Furthermore, giving users the ability to upload video files to the database would also allow the introduction of viruses and other unwanted uploads. For now, videos are uploaded via an FTP client to a separate folder in my files on the site that hosts the database pages that I have coded. These videos are named by the key of the sign to which they correspond, and are displayed by part of the code in ShowSign.php that calls for the video with the same key as the sign being requested from the database.

Users can add translations by clicking on the 添加翻译 (Add Translation) button which sends them to WordEntry.php (Appendix VII). This is a form with a text box in which users can enter a Chinese translation to submit into the database through AddWord.php (Appendix VIII). Upon submitting a translation, the user is routed back to ShowSign.php which now contains the newly added translation.

In order to delete a translation, users can click on the 编辑翻译 (Edit Translations) button which takes them to EditWordList.php (Appendix IX), a page that queries CSL_words and displays the translations associated with the key along with a delete button beside each one. Upon clicking a delete button, the translation is deleted through DeleteWord.php (Appendix X), and the user is redirected to a version of EditWordList.php that no longer contains the deleted translation. Users can return to ShowSign.php by utilizing a link button underneath the list of translations.

If a user wishes to add an entry to the dictionary, there is a link at the top of DictionaryEntryList.php that leads to DictionaryEntryForm.php (Appendix XI).

DictionaryEntryForm.php is comprised of a form almost identical to that of EditSign.php; however, the form for adding an entry does not request any previously stored information from the database. Once all the required fields are filled out, users can click the submit button to enter the dictionary entry into CSL_signs through AddSign.php (Appendix XII) and will be directed to a version of ShowSign.php that queries the sign key from CSL_signs to display the sign that has just been added.

It should be noted that while users can currently add and edit signs and their associated translations without regulation, the only way to delete a sign entry is through an account with the database server. Until privacy and user settings are implemented, this acts as a safeguard to ensure that an accidental click or less kindly intentions do not permanently remove entries from the database.

The dictionary database also utilizes a source code at the bottom of DictionaryEntryList.php and ShowSign.php that links to the Chinese dictionary at MandarinSpot.com and results in English definitions appearing when Chinese characters are scrolled over. This feature is applied to all characters on the page in which the source code exists which can make navigating these pages a bit cumbersome and crowded for readers of Chinese. Until the source code can be applied to specific regions of text, it is being used as sparingly as possible to provide a less complicated interaction for Chinese readers. DictionaryEntryForm.php, EditSign.php, EditWordList.php, and WordEntry.php do not include this source code because the likelihood of a user who is knowledgeable about Chinese Sign Language and does not read Chinese but does read English is slim.

Closing Reflection

In the future, I hope to improve and expand the website depending on resources, user involvement, and demand. My first goals will be to implement a search feature that will most likely consist of a search box that pulls up identical words found in the entries and possibly a system that searches through the tags associated with the entries. Another priority is to create a way for users to upload and display any sort of video file. I would also like to establish a username and password system which will not only help to deter internet trolls but will also allow users to edit or delete their own entries at any time. If possible, I would like to create an arrangement which enables users to view all of their uploaded entries in one place and bookmark other entries for future reference. Once I have a solid number of examples, or once users can upload various types of video files, creating a separate database for sentences and stories is also a major priority in order to better study CSL grammar and vocabulary usage.

Upon embarking on this project, my motive was to use existing information to create a new resource for a subject on which exists a relatively small amount of data. I was quickly immersed in a succession of information supply and demand; in order to establish the foundations for a quality resource, I needed better reference materials, and in order to have better reference materials, there needed to be more quality resources. Although my work on this complex subject is far from complete, I am hopeful that these efforts might help to break out of the cycle of information deficiency surrounding Chinese Sign Language and encourage others to do the same.

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Appendix I: DictionaryExplanationChinese.html

<http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryExplanationChinese.html>

```
<!DOCTYPE html SYSTEM "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head><title>Dictionary Explanation Chinese</title></head>
  <style type="text/css">
    <!--
      .ToggleButton { margin: 10px; color: #4A4A4A; font-size: 20px;
font-weight: bold; text-decoration: none; }
      .ButtonPosition { text-align: right; }
      .CategoryHead { border:3px solid; border-color: #D6D6D6; margin-
left: 10px; padding: 10px; background-color: #FFFFFF; color: #4A4A4A; font-
size: 25px; font-weight: bold; text-align:center;}
      .CategorySubHead { margin-left: 10px; color: #4A4A4A; font-size:
20px; font-weight: bold; text-align:left; }
      .Clarification { margin-left: 10px; color: #4A4A4A; font-size:
15px; font-weight: normal; text-align:left; }
      .SubClarification { margin-left: 25px; margin-bottom: 5px; color:
#4A4A4A; font-size: 15px; font-weight: normal; text-align:left; }

    -->
  </style>
  <body>
    <div class="CategoryHead" id="NonmanualMarkers">
      <div class="ButtonPosition"><a
href="http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryExplanationEn
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874;#35874;#8221;#30340;#25171;#27861;#30475;#36215;#26469;#20687;#
19968;#20010;#23458;#27668;#30340;#20154;#65292;#19968;#25163;#202
80;#25287;#25351;#24367;#21160;#20004;#19979;#65292;#35937;#24449;#
19968;#20010;#20154;#38816;#36524;#12290;#8220;#40657;#8221;#30340
;#25163;#21183;#26159;#25171;#25163;#25351;#23383;#27597;#8220;h#8
221;#30340;#25351;#24335;#65292;#24182;#22312;#22836;#21457;#19978;
#25720;#19968;#19979;#12290;</div></td></tr>
<tr><td><div
class="CategorySubHead">#34920;#38899;#24335;</div></td></tr>
<tr><td><div
class="SubClarification">#29992;#27721;#23383;#35835;#38899;#25163;#2
1183;#21160;#20316;#26469;#35937;#24449;#35835;#38899;#30456;#21516
;#30340;#35789;#12290;#26377;#30340;#26102;#20505;#20960;#20010;#1
9981;#21516;#30340;#23383;#21482;#26377;#19968;#20010;#25163;#35821
;#30340;#25171;#27861;#22240;#20026;#23427;#20204;#30340;#21457;#3
8899;#21548;#36215;#26469;#19968;#26679;#12290;#36824;#26377;#35789
;#30340;#38899;#21548;#36215;#26469;#20687;#25340;#38899;#23383;#2
7597;#19968;#26679;#65292;#25152;#20197;#26377;#30340;#26102;#20505;
#36825;#26679;#30340;#35789;#30340;#25171;#27861;#23601;#26159;#36
319;#25163;#25351;#23383;#27597;#30340;#25171;#27861;#19968;#26679;
#12290;#20363;#22914;:
#20146;#25114;#30340;#25114;#29992;#30340;#38899;#23601;#20511;#82
20;#19971;#8221;#30340;#25163;#21183;#21160;#20316;#34920;#31034;#
12290;#8220;#30340;#8221;#30340;#25171;#27861;#36319;#25163;#25351;
#23383;#27597;#30340;#8220;d#8221;#30340;#25171;#27861;#19968;#266
79;#65292;#32780;#27531;#30142;#20154;#30340;#30142;#30340;#25171;#
27861;#36319;#25163;#25351;#23383;#27597;#30340;#8220;j#8221;#1996
8;#26679;#12290;</div></td></tr>
<tr><td><div
class="CategorySubHead">#20223;#23383;#24418;</div></td></tr>
<tr><td><div class="SubClarification">#30475;
#36215;#26469;#20687;#27721;#23383;#19968;#26679;#30340;#25163;#21
183;#12290;#36825;#26679;#30340;#25163;#21183;#21160;#20316;#29992;
#21452;#25163;#25720;#25311;#27721;#23383;#23383;#24418;#25110;#32
773;#20070;#31354;#12290;#20363;#22914;#65306;#8220;#20154;#8221;#
30340;#25171;#27861;#26159;#29992;#21452;#25163;#30340;#39135;#2535

```

```

1; &#25645; &#25104; &#8220; &#20154; &#8221; &#23383; &#24418; &#65292; &#32780; &#82
20; &#24037; &#8221; &#30340; &#25171; &#27861; &#26159; &#24038; &#25163; &#27178; &#
20280; &#39135; &#25351; &#21644; &#20013;
&#25351; &#65292; &#21491; &#25163; &#20280; &#20986; &#39135; &#25351; &#65292; &#28
982; &#21518; &#22312; &#24038; &#25163; &#20004; &#25351; &#25645; &#25104; &#8220; &
#24037; &#8221; &#23383; &#24418; &#12290; &#8220; &#20214; &#8221; &#20063; &#26159;
&#20223; &#23383; &#24418; &#65292; &#23427; &#30340; &#25171; &#27861; &#26159; &#29
992; &#24038; &#25163; &#30340; &#25287; &#25351; &#21644; &#39135; &#25351; &#25104;
&#21333; &#31435; &#20154; &#24418; &#65292; &#21516; &#26102; &#29992; &#21491; &#25
163; &#30340; &#39135; &#25351; &#22312; &#24038; &#25163; &#30340; &#26049; &#36793;
&#20070; &#31354; &#8220; &#29275; &#8221;
&#23383; &#65292; &#20223; &#8220; &#20214; &#8221; &#23383; &#24418; &#12290; </div>
</td></tr>
</table>
<br/>
<table>
  <tr><td>&#21160; &#23486; &#19981; &#20998; </td></tr>
  <tr><td><div
class="Clarification">&#21517; &#35789; &#19982; &#30456; &#24212; &#30340; &#2116
0; &#35789; &#30340; &#32452; &#25104; &#30340; &#21160; &#23486; &#35789; &#32452; &#
29992; &#21516; &#19968; &#20010; &#25163; &#21183; &#34920; &#31034; &#12290; &#2036
3; &#22914; &#65306; &#8220; &#24377; &#38050; &#29748; &#8221;
&#12289; &#8220; &#21561; &#31515; &#23376; &#8221; &#12289; &#8220; &#25171; &#31726
; &#29699; &#8221; &#12289; &#8220; &#36386; &#36275; &#29699; &#8221; &#12289; &#8220
; &#21809; &#27468; &#8221; &#12290; </div></td></tr>
</table>
</div>
</body>
</html>

```

Appendix II: DictionaryExplanationEnglish.html

<http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryExplanationEnglish.html>

```
<!DOCTYPE html SYSTEM "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head><title>Dictionary Explanation English</title></head>
  <style type="text/css">
    <!--
      .ToggleButton { margin: 10px; color: #4A4A4A; font-size: 25px;
font-weight: bold; text-decoration: none; }
      .ButtonPosition { text-align: right; }
      .CategoryHead { border:3px solid; border-color: #D6D6D6; margin-
left: 10px; padding: 10px; background-color: #FFFFFF; color: #4A4A4A; font-
size: 25px; font-weight: bold; text-align:center;}
      .CategorySubHead { margin-left: 10px; color: #4A4A4A; font-size:
20px; font-weight: bold; text-align:left; }
      .Clarification { margin-left: 10px; color: #4A4A4A; font-size:
15px; font-weight: normal; text-align:left; }
      .SubClarification { margin-left: 25px; margin-bottom: 5px; color:
#4A4A4A; font-size: 15px; font-weight: normal; text-align:left; }
    -->
  </style>
  <body>
    <div class="CategoryHead" id="NonmanualMarkers">
      <div class="ButtonPosition"><a
href="http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryExplanationCh
inese.html" class="ToggleButton">#20013;#25991;</a></div>
      <br/>
      <table>
        <tr><td>Place of Sign Language Use</td></tr>
        <tr><td><div class="Clarification">Users are asked to list
anywhere that they have lived or studied that might have an impact on their
signing starting with the places that have had the most influence. Because
signing can have regional variety such as vocabulary and accent, it is
important to know the background of a user uploading a sign in order to
track how CSL differs according to location.</div></td></tr>
      </table>
      <br/>
      <table>
        <tr><td>Dominant Hand</td></tr>
        <tr><td><div class="Clarification">Just as people can be
right-handed or left-handed when writing and performing other actions, there
are also right-handed and left-handed signers. Right-handed signers are
more common, and so the vast majority of sign language reference materials
show examples with the right hand as dominant. Signers whose left hand is
dominant will form signs that are opposite and appear to be a reflection of
the standard examples in reference materials. Whereas signing with the left
hand as dominant is acceptable, it is considered unnatural for signers to
switch their dominant hand. An exception to this occurs with one-handed
signs, which are normally signed with the dominant hand, when a
signer's dominant hand is otherwise occupied.</div></td></tr>
```



```

</table>
<br/>
<table>
  <tr><td>Non-manual Markers</td></tr>
  <tr><td><div class="Clarification">Non-manual markers refer
to any sort of movement other than that of the fingers, hands, and forearms
that accompany the sign but do not modify it.</div></td></tr>
</table>
<br/>
<table>
  <tr><td>Iconic Devices</td></tr>
  <tr><td><div class="CategorySubHead">Direct
Presentation</div></td></tr>
  <tr><td><div class="SubClarification">Pointing to an object
in order to name the object. Examples: &#8220;you,&#8221;
&#8220;I/me,&#8221; &#8220;he/him,&#8221; &#8220;she/her,&#8221;
&#8220;this,&#8221; &#8220;that,&#8221; &#8220;nose,&#8221;
&#8220;eye&#8221;</div></td></tr>
  <tr><td><div class="CategorySubHead">Number
Representation</div></td></tr>
  <tr><td><div class="SubClarification">Number of referents
directly indicated by number of fingers. Examples: &#8220;# years,&#8221;
&#8220;# days,&#8221; &#8220;# years old&#8221;</div></td></tr>
  <tr><td><div class="CategorySubHead">Shape
Representation</div></td></tr>
  <tr><td><div class="SubClarification">Shape of referent
depicted by hand and forearm shape. Examples: &#8220;airplane,&#8221;
&#8220;umbrella&#8221;</div></td></tr>
  <tr><td><div class="CategorySubHead">Movement
Representation</div></td></tr>
  <tr><td><div class="SubClarification">Movement of referent
depicted by movement of fingers, hand, forearm, and/or body. Examples:
&#8220;train,&#8221; &#8220;subway,&#8221; &#8220;airplane,&#8221;
&#8220;wind,&#8221; &#8220;rain&#8221;</div></td></tr>
  <tr><td><div class="CategorySubHead">Size
Representation</div></td></tr>
  <tr><td><div class="SubClarification">Size of referent
represented by size of sign. Examples: &#8220;long,&#8221;
&#8220;short.&#8221; The sign for &#8220;ticket/card&#8221; changes in size
depending on the size of the object to which it refers</div></td></tr>
  <tr><td><div class="CategorySubHead">Part-for-whole
Representation</div></td></tr>
  <tr><td><div class="SubClarification">Referent is
represented as a whole by a characteristic part. Examples: The sign for
&#8220;car&#8221; is represented by mimicking the action of driving a car
using its steering wheel. The sign for &#8220;cat&#8221; is shown by using
three fingers to mimic the shape of the cat's whiskers</div></td></tr>
  <tr><td><div class="CategorySubHead">Metonymic/Metaphorical
Representation</div></td></tr>
  <tr><td><div class="SubClarification">Abstract concepts are
expressed by means of association. Examples: The sign for &#8220;thank
you&#8221; using a thumb bending up and down to mimic a person bowing in
thanks. The sign for &#8220;black&#8221; (h&#275;i) is represented by
forming an &#8220;h&#8221; and moving it down the hair at the side of the
temple because black is a common hair color in China</div></td></tr>

```

```

        <tr><td><div class="CategorySubHead">Sound
Representation</div></td></tr>
        <tr><td><div class="SubClarification">At least part of the
sign is related to the pronunciation for the word it represents and usually
involves the alphabet that corresponds to pinyin. In some cases, two words
that have a similar pronunciation may be represented by the same sign.
Examples: The hand shape for the sign for &#8220;&#25114;&#8221; (qi) in
&#8220;&#20146;&#25114;&#8221; is the same as the hand shape for
&#8220;seven&#8221; (q&#299;). &#8220;&#30340;&#8221; (de) is represented
by the hand shape for &#8220;d&#8221; in the CSL alphabet</div></td></tr>
        <tr><td><div class="CategorySubHead">Chinese Character
Representation</div></td></tr>
        <tr><td><div class="SubClarification">The shape of the sign
imitates the shape of the character that it represents. Examples: The sign
for &#8220;&#20154;&#8221; (person) uses two outstretched pointer fingers
and the sign for &#8220;&#24037;&#8221; (work) uses the pointer and middle
finger of the non-dominant hand with the pointer finger of the other hand to
create the shapes of these characters. The sign for &#8220;&#20214;&#8221;
involves holding the thumb and pointer finger of one hand in the shape of
the character's radical while using the pointer finger of the other hand to
write the second part of the character (&#29275;) beside it</div></td></tr>
    </table>
    <br/>
    <table>
        <tr><td>Combined Verb and Object</td></tr>
        <tr><td><div class="Clarification">One sign in which the
verb and corresponding object are not separated. Examples: &#8220;play
piano,&#8221; &#8220;play (the) flute,&#8221; &#8220;play basketball,&#8221;
&#8220;play football,&#8221; &#8220;sing (a) song&#8221; (Note that in these
examples the verb &#8220;play&#8221; is represented by four different verbs
in Chinese)</div></td></tr>
    </table>
</div>
</body>
</html>

```


Appendix III: DictionaryEntryList.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryEntryList.php>

```
<!DOCTYPE html SYSTEM "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head><title>Dictionary Entry List</title></head>
  <style type="text/css">
    <!--
      .ListBox { border:3px solid; border-color: #D6D6D6; margin-left:
10px; padding: 10px; background-color: #FFFFFF; color: #4A4A4A; font-size:
25px; font-weight: bold; }
      .AddBox { background: #D6D6D6; padding: 5px; color: #4A4A4A;
font-size: 20px; font-weight: bold; text-decoration: none; }
      .Descriptions { margin-left: 10px; color: #4A4A4A; font-size:
15px; font-weight: normal; text-align:left; }
      .EntryLink { background: #D6D6D6; padding: 5px; color: #4A4A4A;
font-size: 15px; font-weight: bold; text-decoration: none; }
    -->
  </style>
  <body>
    <div class="ListBox">
      <?php
        echo "<a
href=\"http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryEntryForm.ph
p\" class=\"AddBox\">&#26032;&#22686;&#25163;&#21183; Add a Sign</a>\n";

$db=mysqli_connect('localhost','mcgrail_CSL','zh0nggu0sh0uU','mcgrail_CSL');
if ($db) {
  $query = "SELECT * FROM `CSL_signs`";
  $response = mysqli_query($db,$query);
  if ($response) {
    $SignNum = mysqli_num_rows ($response);
    echo "<table><p>\n";
    for ($i = 0; $i < $SignNum; $i++) {
      $record = mysqli_fetch_assoc ($response);
      $Description = $record['Description'];
      $key = $record['key'];
      $query2 = "SELECT `CSL_words`.`word` FROM
`CSL_words`, `CSL_word_sign` WHERE `CSL_word_sign`.`sign` = '$key' AND
`CSL_word_sign`.`word` = `CSL_words`.`key`;";
      $response2 = mysqli_query($db,$query2);
      if ($response2) {
        echo "<tr><td>\n";
        $WordNum = mysqli_num_rows ($response2);
        for ($j = 0; $j < $WordNum; $j++) {
          $record2 = mysqli_fetch_assoc
($response2);

          $Word = $record2['word'];
          echo "$Word";
          if ($j < $WordNum - 1) {
            echo ", ";
          }
        }
      }
    }
  }
}
```

```

        }
    }
    echo "</td></tr>\n";
} else {
    echo "Bad word query.";
}
echo "<tr><td><div
class=\"Descriptions\">${Description}</div>\n";
echo "<tr><td><a
href=\"http://asclab.org/semweb/Fall2011/sw6617/sproj/ShowSign.php?key=${key}\
\" class=\"EntryLink\">#20869;#23481; View Sign</a></td></tr>";
echo "<tr><td><br/></td></tr>";
}
echo "</p></table>\n";
echo "<script
src=\"http://static.mandarinspot.com/static/mandarinspot.min.js\"
charset=\"UTF-8\"></script><script>mandarinspot.annotate();</script>\n";
    } else {
        echo "Bad query.";
    }
} else {
    echo "No database connection.";
}
?>
</div>
</body>
</html>

```

Appendix IV: ShowSign.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/ShownSign.php>

```
<?php
    $key=$_REQUEST['key'];

$db=mysqli_connect("localhost","mcgrail_CSL","zh0nggu0sh0uU","mcgrail_CSL");
if ($db) {
    $query="SELECT * FROM `CSL_signs` WHERE `key` = '$key'";
    if ($query) {
        $records=mysqli_query($db,$query);
        $record=mysqli_fetch_assoc($records);
        $Username=$record['Username'];
        $PlaceOfSigning=$record['PlaceOfSigning'];
        $DominantHand=$record['DominantHand'];
        $Description=$record['Description'];
        $Torso=$record['Torso'];
        $Head=$record['Head'];
        $Face=$record['Face'];
        $DirectPresentation=$record['DirectPresentation'];
        $NumberRepresentation=$record['NumberRepresentation'];
        $ShapeRepresentation=$record['ShapeRepresentation'];
        $MovementRepresentation=$record['MovementRepresentation'];
        $SizeRepresentation=$record['SizeRepresentation'];

        $PartForWholeRepresentation=$record['PartForWholeRepresentation'];
        $MetaphoricalRepresentation
    = $record['MetaphoricalRepresentation'];
        $SoundRepresentation=$record['SoundRepresentation'];

        $ChineseCharacterRepresentation=$record['ChineseCharacterRepresentation'];
        $CombinedVerbAndObject=$record['CombinedVerbAndObject'];
        echo "<head><title>Show Sign</title></head>\n";
        echo "<style type=\"text/css\">
            <!--
                .Heading {margin: 10px; padding: 10px; color:
black; font-size: 17px; font-weight: bold; text-align:left; }
                .BackLink { border:3px solid; border-color:
#FFFFFF; background: #D6D6D6; margin: 10px; padding: 7px; color: #4A4A4A;
font-size: 20px; font-weight: bold; text-decoration: none; }
                .ChineseWords { border:3px solid; border-color:
#D6D6D6; margin: 10px; padding-top: 20px; background-color: #FFFFFF; color:
#4A4A4A; font-size: 30px; font-weight: bold; text-align:center; }
                .ButtonLink { background: #D6D6D6; padding: 5px;
color: #4A4A4A; font-size: 17px; font-weight: bold; text-decoration: none; }
                .Description { border:3px solid; border-color:
#D6D6D6; margin: 10px; padding: 10px; background-color: #FFFFFF; color:
#4A4A4A; font-size: 20px; text-align:center; }
                .Information { border:3px solid; border-color:
#D6D6D6; margin: 10px; padding: 10px; background-color: #FFFFFF; color:
#4A4A4A; }
```

```

        .InformationHead {font-size: 23px; text-align:center; }

        .InformationList {font-size: 15px; }
        .TableList {font-weight: bold; color: #4A4A4A; }
        .TableInformation {font-weight: normal; color:
#4A4A4A; }

        .VideoFile { margin: 10px; }
        .Button { text-align: center;}
    -->
    </style>\n";
    echo "<body>\n";
    echo "<p><a
href=\"http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryEntryList.ph
p\" class=\"BackLink\">&#22238;&#35789;&#20856;&#30446;&#24405; Back to
Dictionary Entry List</a></p>\n";
    echo "<div class=\"ChineseWords\">\n";
    $query2 = "SELECT `CSL_words`.`word`, `CSL_words`.`key` FROM
`CSL_words`,`CSL_word_sign` WHERE `CSL_words`.`key` = `CSL_word_sign`.`word`
AND `CSL_word_sign`.`sign` = '$key'";
    $response2 = mysqli_query ($db,$query2);
    if ($response2) {
        $WordNum = mysqli_num_rows ($response2);
        for ($i = 0; $i < $WordNum; $i++) {
            $record2 = mysqli_fetch_assoc ($response2);
            $ChineseWord = $record2['word'];
            $WordKey = $record2['key'];
            echo "$ChineseWord";
            if ($i < $WordNum -1) {
                echo ",\n";
            } else {
                echo "\n";
            }
        }
        echo "<br/><a href=\"WordEntry.php?key=$key\"
class=\"ButtonLink\">&#28155;&#21152;&#32763;&#35793;</a>&nbsp;";
        if ($WordNum > 0) {
            echo "<a href=\"EditWordList.php?key=$key\"
class=\"ButtonLink\">&#32534;&#36753;&#32763;&#35793;</a><br/>&nbsp;\n";
        } else {
            echo
"<p>&#35831;&#36755;&#20837;&#25163;&#21183;&#30340;&#20013;&#25991;&#32763;
&#35793;&#12290;</p>";
        }
    } else {
        echo "Bad word query.";
    }
    echo "</div>\n";
    echo "<div class=\"VideoFile\" >
        <video width=\"500\" height=\"400\" controls>
            <source src=\"Videos/$key.mp4\"
type=\"video/mp4\"/>
        </video>
    </div>\n";
    if ($Description) {
        echo " <div class=\"Description\">$Description</div>\n";
    }

```

```

    }
    if ($Torso OR $Head OR $Face) {
        echo "<div class=\"Information\"
id=\"NonmanualMarkers\">\n";
        echo "<div class=\"InformationHead\"
id=\"NonmanualMarkers\">#38750;#25163;#21183;#21160;#20316; Non-manual
Markers</div>\n";
        echo "<div class=\"InformationList\">\n";
        if ($Torso) {
            echo
            "<p>#19978;#21322;#36523;#65288;#33136;#37096;#65292;#33016;#37096;
            &#65292;#32937;#33152;#65289; Torso (waist, chest, and/or shoulders)</p>";
        }
        if ($Head) {
            echo "<p>#22836; Head</p>";
        }
        if ($Face) {
            echo
            "<p>#34920;#24773;#25110;#33080;#37096;#21160;#20316; Facial
            Expression and/or Facial Movement</p>";
        }
        echo "</div>\n";
        echo "</div>\n";
    }
    echo "<div class=\"Information\" id=\"IconicDevices\"> \n";
    echo "<div class=\"InformationHead\" id=\"Iconic
Devices\">#20855;#35937;#34920;#31034; Iconic Devices</div>\n";
    echo "<div class=\"InformationList\">\n";
    if ($DirectPresentation) {
        echo "<p>#25351;#20107;#24335; Direct
Presentation</p>";
    }
    if ($NumberRepresentation) {
        echo "<p>#25968;#23383;#26631;#31034; Number
Representation</p>";
    }
    if ($ShapeRepresentation) {
        echo "<p>#35937;#24418;#24335; Shape
Representation</p>";
    }
    if ($MovementRepresentation) {
        echo "<p>#31227;#21160;#26631;#31034; Movement
Representation</p>";
    }
    if ($SizeRepresentation) {
        echo "<p>#23610;#23544;#26631;#31034; Size
Representation</p>";
    }
    if ($PartForWholeRepresentation) {
        echo
        "<p>#20197;#23616;#37096;#26631;#31034;#20840;#37096; Part-for-Whole
Representation</p>";
    }
    if ($MetaphoricalRepresentation) {
        echo "<p>#20250;#24847;#24335; Metaphorical

```



```

Representation</p>";
    }
    if ($SoundRepresentation) {
        echo "<p>&#34920;&#38899;&#24335; Sound
Representation</p>";
    }
    if ($ChineseCharacterRepresentation) {
        echo "<p>&#20223;&#23383;&#24418; Character
Representation</p>";
    }
    if ($CombinedVerbAndObject) {
        echo "<p>&#21160;&#23486;&#19981;&#20998; Combined
Verb and Object</p>";
    }
    echo "</div>\n";
    echo "</div>\n";
    echo "<div class=\"Information\" id=\"SignerInformation\"> \n";
    echo "<div class=\"InformationHead\"
id=\"UserInformation\">&#36164;&#26009;&#26469;&#28304; Signer
Information</div>\n";
    echo "<div class=\"InformationList\">\n";
    echo "<p><table>\n";
    echo "<tr><td><div
class=\"TableList\">&#24080;&#21495;</div></td></tr>\n";
    echo "<tr><td><div
class=\"TableList\">Username:</div></td></tr>\n";
    echo "<tr><td><div
class=\"TableInformation\">$Username</div></td></tr>\n";
    echo "</table></p>\n";
    echo "<p><table>\n";
    echo "<tr><td><div
class=\"TableList\">&#22312;&#20160;&#20040;&#22478;&#24066;&#20351;&#29992;
&#25163;&#35821;</div></td></tr>\n";
    echo "<tr><td><div class=\"TableList\">Place(s) of
Sign Language Use:</div></td></tr>\n";
    echo "<tr><td><div
class=\"TableInformation\">$PlaceOfSigning</div></td></tr>\n";
    echo "</table></p>\n";
    echo "<p><table>\n";
    echo "<tr><td><div
class=\"TableList\">&#20027;&#35201;&#25163;</div></td></tr>\n";
    echo "<tr><td><div class=\"TableList\">Dominant
Hand:</div></td></tr>\n";
    echo "<tr><td><div
class=\"TableInformation\">$DominantHand</div></td></tr>\n";
    echo "</table></p>\n";
    echo "</div>\n";
    echo "</div>\n";
    echo "<form action=\"EditSign.php\" method=\"get\">\n";
    echo "<input type=\"hidden\" name=\"key\"
value=\"$key\"/>\n";
    echo "<div class=\"Button\"><input type=\"submit\"
name=\"Edit\" value=\"&#32534;&#36753; Edit Sign\"></input></div>\n";
    echo "</form>\n";
    echo "<script

```

```
src=\"http://static.mandarinspot.com/static/mandarinspot.min.js\"
charset=\"UTF-8\"></script><script>mandarinspot.annotate();</script>\n\";
    } else {
        echo \"Bad query.\";
    }
    mysqli_close($db);
} else {
    echo \"No database connection.\";
}
?>
```


Appendix V: EditSign.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/EditSign.php>

```
<?php
    $key=$_REQUEST['key'];

$db=mysqli_connect("localhost","mcgrail_CSL","zh0nggu0sh0uU","mcgrail_CSL");
if ($db) {
    $query="SELECT * FROM `CSL_signs` WHERE `key` = '$key'";
    $response=mysqli_query($db,$query);
    if ($response) {
        $record=mysqli_fetch_assoc($response);
        $Username = $record['Username'];
        $PlaceOfSigning = $record['PlaceOfSigning'];
        $DominantHand = $record['DominantHand'];
        $Description = $record['Description'];
        $Torso = $record['Torso'];
        $Head = $record['Head'];
        $Face = $record['Face'];
        $DirectPresentation = $record['DirectPresentation'];
        $NumberRepresentation = $record['NumberRepresentation'];
        $ShapeRepresentation = $record['ShapeRepresentation'];
        $MovementRepresentation = $record['MovementRepresentation'];
        $SizeRepresentation = $record['SizeRepresentation'];
        $PartForWholeRepresentation =
$record['PartForWholeRepresentation'];
        $MetaphoricalRepresentation =
$record['MetaphoricalRepresentation'];
        $SoundRepresentation = $record['SoundRepresentation'];
        $ChineseCharacterRepresentation =
$record['ChineseCharacterRepresentation'];
        $CombinedVerbAndObject = $record['CombinedVerbAndObject'];
        if ($Torso) {
            $TorsoChecked = "checked";
        } else {
            $TorsoChecked = "";
        }
        if ($Head) {
            $HeadChecked = "checked";
        } else {
            $HeadChecked = "";
        }
        if ($Face) {
            $FaceChecked = "checked";
        } else {
            $FaceChecked = "";
        }
        if ($DirectPresentation) {
            $DirectPresentationChecked = "checked";
        } else {
            $DirectPresentationChecked = "";
        }
    }
}
```

```

}
if ($NumberRepresentation) {
    $NumberRepresentationChecked = "checked";
} else {
    $NumberRepresentationChecked = "";
}
if ($ShapeRepresentation) {
    $ShapeRepresentationChecked = "checked";
} else {
    $ShapeRepresentationChecked = "";
}
if ($MovementRepresentation) {
    $MovementRepresentationChecked = "checked";
} else {
    $MovementRepresentationChecked = "";
}
if ($SizeRepresentation) {
    $SizeRepresentationChecked = "checked";
} else {
    $SizeRepresentationChecked = "";
}
if ($PartForWholeRepresentation) {
    $PartForWholeRepresentationChecked = "checked";
} else {
    $PartForWholeRepresentationChecked = "";
}
if ($MetaphoricalRepresentation) {
    $MetaphoricalRepresentationChecked = "checked";
} else {
    $MetaphoricalRepresentationChecked = "";
}
if ($SoundRepresentation) {
    $SoundRepresentationChecked = "checked";
} else {
    $SoundRepresentationChecked = "";
}
if ($ChineseCharacterRepresentation) {
    $ChineseCharacterRepresentationChecked = "checked";
} else {
    $ChineseCharacterRepresentationChecked = "";
}
if ($CombinedVerbAndObject) {
    $CombinedVerbAndObjectChecked = "checked";
} else {
    $CombinedVerbAndObjectChecked = "";
}
}
echo "<head><title>Edit Sign</title></head>
<style type=\"text/css\">
    <!--
        .ChineseWords { border:3px solid; border-color:
#D6D6D6; margin: 10px; padding: 10px; background-color: #FFFFFF; color:
#4A4A4A; font-size: 25px; font-weight: bold; text-align:center; }
        .TableList { margin: 10px; font-weight: bold; color:
#4A4A4A; text-align:left; }
        .CategoryHead { border:3px solid; border-color:

```

```

#D6D6D6; margin: 10px; padding: 10px; background-color: #FFFFFF; color:
#4A4A4A; font-size: 25px; text-align:center;}
        .InputBox { margin: 10px; }
        .Clarification { margin: 10px; color: #4A4A4A; font-
size: 12px; font-weight: normal; text-align:center; }
        .ButtonLabel { color: #4A4A4A; font-size: 15px;
font-weight: normal; text-align: left; }
        .Submit { text-align: center;}
    -->
</style>
<body>
    <form action="UpdateSign.php" method="get">
        <input type="hidden" name="key"
value="\$key"/><n";
        echo "<div class=\"ChineseWords\"><n";
            $query2 = "SELECT `CSL_words`.`word`,
`CSL_words`.`key` FROM `CSL_words`,`CSL_word_sign` WHERE `CSL_words`.`key` =
`CSL_word_sign`.`word` AND `CSL_word_sign`.`sign` = '$key'";
            $response2 = mysqli_query ($db,$query2);
            if ($response2) {
                $WordNum = mysqli_num_rows ($response2);
                if ($WordNum == 0) {
                    echo "Please add words.";
                }
                for ($i = 0; $i < $WordNum; $i++) {
                    $record2 = mysqli_fetch_assoc
($response2);

                    $ChineseWord = $record2['word'];
                    $WordKey = $record2['key'];
                    echo "$ChineseWord";
                    if ($i < $WordNum -1) {
                        echo ",\n";
                    } else {
                        echo "\n";
                    }
                }
            } else {
                echo "Bad word query.";
            }
            echo "</div><n";
            echo "<div class=\"CategoryHead\"
id=\"SignerInformation\">#36164;#26009;#26469;#28304;
                <table>
                    <tr><td><div
class=\"TableList\">#24080;#21495;</div></td><td><div
class=\"InputBox\"><input type=\"text\" name=\"Username\"
value=\"$Username\" required
title=\"&#35831;#22635;#20889;#24080;#25143;\"></input></div></td></tr>
                    <tr><td><div
class=\"TableList\">#22312;#20160;#20040;#22478;#24066;<br>#20351;#2
9992;#25163;#35821;</div></td><td><div class=\"InputBox\"><input
type=\"text\" name=\"PlaceOfSigning\" value=\"$PlaceOfSigning\" required
title=\"&#35831;#22635;#20889;#22312;#20160;#20040;#22478;#24066;#20
351;#29992;#25163;#35821;\"></input></div></td></tr>
                    <tr><td><div

```

```

class="TableList">&#20027;&#35201;&#25163;</div><td><div
class="InputBox"><input type="text" name="DominantHand"
value="$DominantHand" required
title="&#35831;&#22635;&#20889;&#20027;&#35201;&#25163;"></input></div></td></tr>
</table>
</div>
<div class="CategoryHead"
id="Description">&#25551;&#36848;</div>
<div class="InputBox"><TEXTAREA
name="Description" required>$Description</TEXTAREA></div>
<div class="CategoryHead"
id="NonmanualMarkers">&#38750;&#25163;&#21183;&#21160;&#20316;<br/>
<div
class="Clarification">&#35831;&#36873;&#25152;&#26377;&#31526;&#21512;&#30
340;&#36873;&#39033;</div>
<table>
<tr><th><div
class="ButtonLabel"><input type="checkbox" name="Torso"
value="$Torso"
$TorsoChecked></input>&#19978;&#21322;&#36523;&#65288;&#33136;&#37096;&#6529
2;&#33016;&#37096;&#65292;&#32937;&#33152;&#65289;</div></th></tr>
<tr><th><div
class="ButtonLabel"><input type="checkbox" name="Head" value="$Head"
$HeadChecked></input>&#22836;</div></th></tr>
<tr><th><div
class="ButtonLabel"><input type="checkbox" name="Face" value="$Face"
$FaceChecked></input>&#34920;&#24773;&#25110;&#33080;&#37096;&#21160;&#20316
</div></th></tr>
</table>
</div>
<div class="CategoryHead"
id="IconicDevices">&#20855;&#35937;&#34920;&#31034;<br/>
<div
class="Clarification">&#35831;&#36873;&#25152;&#26377;&#31526;&#21512;&#30
340;&#36873;&#39033;</div>
<table>
<tr><th><div
class="ButtonLabel"><input type="checkbox" name="DirectPresentation"
value="$DirectPresenation"
$DirectPresentationChecked></input>&#25351;&#20107;&#24335;</div></th></tr>
<tr><th><div
class="ButtonLabel"><input type="checkbox" name="NumberRepresentation"
value="$NumberRepresentation"
$NumberRepresentationChecked></input>&#25968;&#23383;&#26631;&#31034;</div><
/th></tr>
<tr><th><div
class="ButtonLabel"><input type="checkbox" name="ShapeRepresentation"
value="$ShapeRepresentation"
$ShapeRepresentationChecked></input>&#35937;&#24418;&#24335;</div></th></tr>
<tr><th><div
class="ButtonLabel"><input type="checkbox"
name="MovementRepresentation" value="$MovementRepresentation"
$MovementRepresentationChecked></input>&#31227;&#21160;&#26631;&#31034;</div>
</th></tr>

```

```

<tr><th><div
class=\"ButtonLabel\"><input type=\"checkbox\" name=\"SizeRepresentation\"
value=\"\$SizeRepresentation\"
$SizeRepresentationChecked></input>&#23610;&#23544;&#26631;&#31034;</div></th></tr>

<tr><th><div
class=\"ButtonLabel\"><input type=\"checkbox\"
name=\"PartForWholeRepresentation\" value=\"\$PartForWholeRepresentation\"
$PartForWholeRepresentationChecked></input>&#20197;&#23616;&#37096;&#26631;&
#31034;&#20840;&#37096;</div></th></tr>

<tr><th><div
class=\"ButtonLabel\"><input type=\"checkbox\"
name=\"MetaphoricalRepresentation\" value=\"\$MetaphoricalRepresentation\"
$MetaphoricalRepresentationChecked></input>&#20250;&#24847;&#24335;</div></th></tr>

<tr><th><div
class=\"ButtonLabel\"><input type=\"checkbox\" name=\"SoundRepresentation\"
value=\"\$SoundRepresentation\"
$SoundRepresentationChecked></input>&#34920;&#38899;&#24335;</div></th></tr>

<tr><th><div
class=\"ButtonLabel\"><input type=\"checkbox\"
name=\"ChineseCharacterRepresentation\"
value=\"\$ChineseCharacterRepresentation\"
$ChineseCharacterRepresentationChecked></input>&#20223;&#23383;&#24418;</div>
></th></tr>

<tr><th><div
class=\"ButtonLabel\"><input type=\"checkbox\"
name=\"CombinedVerbAndObject\" value=\"\$CombinedVerbAndObject\"
$CombinedVerbAndObjectChecked></input>&#21160;&#23486;&#19981;&#20998;</div>
</th></tr>

</table>
</div>
<p><div class=\"Submit\"><input
type=\"submit\" name=\"Submit\" value=\"&#36882;&#20132;\"></input></div></p>
</form>
</body>\n";
    } else {
        echo "Bad query.";
    }
    } else {
        echo "No database connection.";
    }
}
?>

```


Appendix VI: UpdateSign.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/UpdateSign.php>

```
<?php
    $key = $_REQUEST['key'];
    $Username = $_REQUEST['Username'];
    $PlaceOfSigning = $_REQUEST['PlaceOfSigning'];
    $DominantHand = $_REQUEST['DominantHand'];
    $Description = $_REQUEST['Description'];
    $Torso = array_key_exists('Torso', $_REQUEST) ? 1 : 0;
    $Head = array_key_exists('Head', $_REQUEST) ? 1 : 0;
    $Face = array_key_exists('Face', $_REQUEST) ? 1 : 0;
    $DirectPresentation =
array_key_exists('DirectPresentation', $_REQUEST) ? 1 : 0;
    $NumberRepresentation =
array_key_exists('NumberRepresentation', $_REQUEST) ? 1 : 0;
    $ShapeRepresentation =
array_key_exists('ShapeRepresentation', $_REQUEST) ? 1 : 0;
    $MovementRepresentation =
array_key_exists('MovementRepresentation', $_REQUEST) ? 1 : 0;
    $SizeRepresentation =
array_key_exists('SizeRepresentation', $_REQUEST) ? 1 : 0;
    $PartForWholeRepresentation =
array_key_exists('PartForWholeRepresentation', $_REQUEST) ? 1 : 0;
    $MetaphoricalRepresentation =
array_key_exists('MetaphoricalRepresentation', $_REQUEST) ? 1 : 0;
    $SoundRepresentation =
array_key_exists('SoundRepresentation', $_REQUEST) ? 1 : 0;
    $ChineseCharacterRepresentation =
array_key_exists('ChineseCharacterRepresentation', $_REQUEST) ? 1 : 0;
    $CombinedVerbAndObject =
array_key_exists('CombinedVerbAndObject', $_REQUEST) ? 1 : 0;

    $db=mysqli_connect('localhost','mcgrail_CSL','zh0nggu0sh0uU','mcgrail_CSL');
    if ($db){
        $query="UPDATE CSL_signs SET    `Username`='$Username',
                                       `PlaceOfSigning`='$PlaceOfSigning',
                                       `DominantHand`='$DominantHand',
                                       `Description`='$Description',
                                       `Torso`='$Torso',
                                       `Head`='$Head',
                                       `Face`='$Face',

`DirectPresentation`='$DirectPresentation',

`NumberRepresentation`='$NumberRepresentation',

`ShapeRepresentation`='$ShapeRepresentation',

`MovementRepresentation`='$MovementRepresentation',
```

```

`SizeRepresentation`='$SizeRepresentation',

`PartForWholeRepresentation`='$PartForWholeRepresentation',

`MetaphoricalRepresentation`='$MetaphoricalRepresentation',

`SoundRepresentation`='$SoundRepresentation',

`ChineseCharacterRepresentation`='$ChineseCharacterRepresentation',

`CombinedVerbAndObject`='$CombinedVerbAndObject'
        WHERE `key`='$key';
        $response = mysqli_query($db,$query);
        if ($response) {
            header ("Location:
http://asclab.org/semweb/Fall2011/sw6617/sproj/ShowSign.php?key=$key");
        } else {
            echo "Bad query.";
        }
    } else {
        echo "NO CONNECTION!";
    }
    mysqli_close($db);
?>

```

Appendix VII: WordEntry.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/WordEntry.php>

```
<?php
    echo "<head><title>Word Entry</title></head>\n";
    echo "<style type=\"text/css\">
        <!--
            .CategoryHead { border:3px solid; border-color: #D6D6D6;
margin: 10px; padding: 10px; background-color: #FFFFFF; color: #4A4A4A;
font-size: 25px; text-align:center;}
            .InputBox { margin: 10px; }
            .Submit { text-align: center;}
        -->
    </style>\n";
    echo "<body>\n";
    echo "<form action=\"AddWord.php\" method=\"get\">\n";
        echo "<input type=\"hidden\" name=\"key\" value=\"\$key\"/>\n";
        echo "<div class=\"CategoryHead\"
id=\"ChineseWord\">#20013;#25991;#32763;#35793;</div>\n";
        echo "<div class=\"InputBox\"><input type=\"text\"
name=\"ChineseWord\"
placeholder=\"#25163;#21183;#30340;#27721;#35821;#32763;#35793;\"
title=\"#35831;#21153;#24517;#22635;#20889;#20197;#19979;#39033;#30
446;\"></input></div>\n";
        echo "<p><div class=\"Submit\"><input type=\"submit\"
name=\"Submit\" value=\"#36882;#20132;\"></input></div></p>\n";
        echo "</form>\n";
    echo "</body>\n";
?>
```


Appendix VIII: AddWord.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/AddWord.php>

```
<?php
    $SignKey = $_REQUEST['key'];
    $ChineseWord = $_REQUEST['ChineseWord'];

    $db=mysqli_connect('localhost','mcgrail_CSL','zh0nggu0sh0uU','mcgrail_CSL');
    if ($db){
        $query="INSERT INTO CSL_words (`key`,`word`)
            VALUES (NULL, '$ChineseWord')";
        $response = mysqli_query($db,$query);
        if ($response) {
            $query1="SELECT MAX(`key`) AS `key` FROM `CSL_words`";
            $response1 = mysqli_query ($db, $query1);
            if ($response1) {
                $record = mysqli_fetch_assoc ($response1);
                $key = $record['key'];
                $query2 = "INSERT INTO `CSL_word_sign` (`sign`,
`word`)
                    VALUES ('$SignKey', '$key')";
                $response2 = mysqli_query ($db,$query2);
                if ($response2) {
                    header ("Location:
http://asclab.org/semweb/Fall2011/sw6617/sproj/ShowSign.php?key=$SignKey");
                } else {
                    echo "$query2";
                }
            } else {
                echo "Record not found!!!";
            }
        } else {
            echo "Record not added!!!";
        }
    } else {
        echo "NO CONNECTION!";
    }
    mysqli_close($db);
?>
```


Appendix IX: EditWordList.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/EditWordList.php>

<?php

```
$db=mysqli_connect('localhost','mcgrail_CSL','zh0nggu0sh0uU','mcgrail_CSL');
if ($db){
    echo "<head><title>Edit Word List</title></head>
        <style type=\"text/css\">
            <!--
                .ChineseWords { border:3px solid; border-color: #D6D6D6;
background-color: #FFFFFF; }
                .TableWords { margin-left: 10px; margin-right: 10px; margin-
top: 5px; margin-bottom: 5px; color: #4A4A4A; font-size: 30px; font-weight:
bold; text-align:center; }
                .ButtonLink { background: #D6D6D6; padding: 5px; color:
#4A4A4A; font-size: 15px; font-weight: bold; text-decoration: none; }
                .BackLink { border:2px solid; border-color: #4A4A4A;
background: #D6D6D6; margin: 10px; padding: 7px; color: #4A4A4A; font-size:
20px; font-weight: bold; text-decoration: none; }
            -->
        </style>\n";
    echo "<body>
        <form action=\"UpdateSign.php\" method=\"get\">
        <input type=\"hidden\" name=\"key\" value=\"$key\"/>\n";
        echo "<div class=\"ChineseWords\">\n";
        $query2 = "SELECT `CSL_words`.`word`, `CSL_words`.`key`
FROM `CSL_words`, `CSL_word_sign` WHERE `CSL_words`.`key` =
`CSL_word_sign`.`word` AND `CSL_word_sign`.`sign` = '$key'";
        $response2 = mysqli_query ($db,$query2);
        if ($response2) {
            $WordNum = mysqli_num_rows ($response2);
            for ($i = 0; $i < $WordNum; $i++) {
                $record2 = mysqli_fetch_assoc ($response2);
                $ChineseWord = $record2['word'];
                $WordKey = $record2['key'];
                echo "<table>
                    <tr><td><div
class=\"TableWords\">$ChineseWord</div></td>
                    <td><a
href=\"DeleteWord.php?key=$key&WordKey=$WordKey\"
class=\"ButtonLink\">#21066;#38500;</a></td>
                    </tr>
                    </table>\n";
            }
            echo "<p><a
href=\"ShowSign.php?key=$key&WordKey=$WordKey\"
class=\"BackLink\">#22238;#35789;#20856;#26465;#30446;</a></p>\n";
        } else {
            echo "Bad word query.";
        }
    }
```



```
        echo "</div>\n";  
echo "</body>\n";  
} else {  
    echo "No database connection."  
}  
?  
?
```

Appendix X: DeleteWord.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/DeleteWord.php>

```
<?php
    $key = $_REQUEST['key'];
    $WordKey = $_REQUEST['WordKey'];

    $db=mysqli_connect('localhost','mcgrail_CSL','zh0nggu0sh0uU','mcgrail_CSL');
    if ($db){
        $query1 = "DELETE FROM `CSL_words` WHERE `key` = '$WordKey'";
        $response1 = mysqli_query($db,$query1);
        if ($response1) {
            $query2 = "DELETE FROM `CSL_word_sign` WHERE `sign` = '$key' AND
`word` = '$WordKey'";
            $response2 = mysqli_query($db,$query2);
            if ($response2) {
                header ("Location:
http://asclab.org/semweb/Fall2011/sw6617/sproj/EditWordList.php?key=$key");
            } else {
                echo "Cannot separate word from sign.";
            }
        } else {
            echo "Cannot delete word.";
        }
    } else {
        echo "No database connection.";
    }
?>
```


Appendix XI: DictionaryEntryForm.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/DictionaryEntryForm.php>

<?php

```

    echo "<head><title>Dictionary Entry Form</title></head>
        <style type=\"text/css\">
            <!--
                .TableList { margin: 10px; font-weight: bold; color: #4A4A4A;
text-align:left; }
                .CategoryHead { border:3px solid; border-color: #D6D6D6;
margin: 10px; padding: 10px; background-color: #FFFFFF; color: #4A4A4A;
font-size: 25px; text-align:center;}
                .InputBox { margin: 10px; }
                .Clarification { margin: 10px; color: #4A4A4A; font-size:
12px; font-weight: normal; text-align:center; }
                .ButtonLabel { color: #4A4A4A; font-size: 15px; font-weight:
normal; text-align: left; }
                .Submit { text-align: center;}
            -->
        </style>
        <body>
            <form action=\"AddSign.php\" method=\"get\">
                <div class=\"CategoryHead\"
id=\"SignerInformation\">&#36164;&#26009;&#26469;&#28304;
                    <table>
                        <tr><td><div
class=\"TableList\">&#24080;&#21495;</div></td><td><div
class=\"InputBox\"><input type=\"text\" name=\"Username\"
placeholder=\"&#35831;&#22635;&#20889;&#24080;&#21495;\"></input></div></td>
                        </tr>
                        <tr><td><div
class=\"TableList\">&#22312;&#20160;&#20040;&#22478;&#24066;</br>&#20351;&#2
9992;&#25163;&#35821;</div></td><td><div class=\"InputBox\"><input
type=\"text\" name=\"PlaceOfSigning\"
placeholder=\"&#35831;&#22635;&#20889;&#25152;&#26377;&#30340;&#31526;&#2151
2;&#39033;&#30446;\" required
title=\"&#35831;&#22635;&#20889;&#22312;&#20160;&#20040;&#22478;&#24066;&#20
351;&#29992;&#25163;&#35821;\"></input></div></td></tr>
                        <tr><td><div
class=\"TableList\">&#20027;&#35201;&#25163;</div></td><td><div
class=\"InputBox\"><input type=\"text\" name=\"DominantHand\"
placeholder=\"&#21491;&#25163;&#25110;&#32773;&#24038;&#25163;\" required
title=\"&#35831;&#22635;&#20889;&#20027;&#35201;&#25163;\"></input></div></td>
                        </tr>
                    </table></div>
                    <div class=\"CategoryHead\"
id=\"Description\">&#25551;&#36848;</div>
                    <div class=\"InputBox\"><TEXTAREA name=\"Description\"
placeholder=\"&#20171;&#32461;&#19968;&#19979;&#25163;&#21183;&#30340;&#2517
1;&#27861;\"required></TEXTAREA></div>
                    <div class=\"CategoryHead\"

```

```

id="\NonmanualMarkers\">#38750;#25163;#21183;#21160;#20316;<br/>
    <div
class="\Clarification\">#35831;#36873;#25152;#26377;#31526;#21512;#30
340;#36873;#39033;</div>
    <table>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\Torso\"
value="\1\"></input>#19978;#21322;#36523;#65288;#33136;#37096;#65292;
#33016;#37096;#65292;#32937;#33152;#65289;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\Head\" value="\2\"></input>#22836;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\Face\"
value="\3\"></input>#34920;#24773;#25110;#33080;#37096;#21160;#20316;
</div></th>
    </tr>
    </table></div>
    <div class="\CategoryHead\"
id="\IconicDevices\">#20855;#35937;#34920;#31034;<br/>
    <div
class="\Clarification\">#35831;#36873;#25152;#26377;#31526;#21512;#30
340;#36873;#39033;</div>
    <table>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\DirectPresentation\"
value="\1\"></input>#25351;#20107;#24335;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\NumberRepresentation\"
value="\2\"></input>#25968;#23383;#26631;#31034;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\ShapeRepresentation\"
value="\3\"></input>#35937;#24418;#24335;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\MovementRepresentation\"
value="\4\"></input>#31227;#21160;#26631;#31034;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input
type="\checkbox\" name="\SizeRepresentation\"
value="\5\"></input>#23610;#23544;#26631;#31034;</div></th>
    </tr>
    <tr>
        <th><div class="\ButtonLabel\"><input

```

```

type="checkbox" name="PartForWholeRepresentation"
value="6"></input>&#20197;&#23616;&#37096;&#26631;&#31034;&#20840;&#37096;
</div></th>
</tr>
<tr>
<th><div class="ButtonLabel"><input
type="checkbox" name="MetaphoricalRepresentation"
value="7"></input>&#20250;&#24847;&#24335;</div></th>
</tr>
<tr>
<th><div class="ButtonLabel"><input
type="checkbox" name="SoundRepresentation"
value="8"></input>&#34920;&#38899;&#24335;</div></th>
</tr>
<tr>
<th><div class="ButtonLabel"><input
type="checkbox" name="ChineseCharacterRepresentation"
value="9"></input>&#20223;&#23383;&#24418;</div></th>
</tr>
<tr>
<th><div class="ButtonLabel"><input
type="checkbox" name="CombinedVerbAndObject"
value="10"></input>&#21160;&#23486;&#19981;&#20998;</div></th>
</tr>
</table></div>
<p><div class="Submit"><input type="submit"
name="Submit" value="&#36882;&#20132;"></input></div></p>
</form>
</body>\n";
?>

```


Appendix XII: AddSign.php

<http://asclab.org/semweb/Fall2011/sw6617/sproj/AddSign.php>

<?php

```

    $Username = $_REQUEST['Username'];
    $PlaceOfSigning = $_REQUEST['PlaceOfSigning'];
    $DominantHand = $_REQUEST['DominantHand'];
    $Description = $_REQUEST['Description'];
    $Torso = array_key_exists('Torso', $_REQUEST) ? 1 : 0;
    $Head = array_key_exists('Head', $_REQUEST) ? 1 : 0;
    $Face = array_key_exists('Face', $_REQUEST) ? 1 : 0;
    $DirectPresentation =
array_key_exists('DirectPresentation', $_REQUEST) ? 1 : 0;
    $NumberRepresentation =
array_key_exists('NumberRepresentation', $_REQUEST) ? 1 : 0;
    $ShapeRepresentation =
array_key_exists('ShapeRepresentation', $_REQUEST) ? 1 : 0;
    $MovementRepresentation =
array_key_exists('MovementRepresentation', $_REQUEST) ? 1 : 0;
    $SizeRepresentation =
array_key_exists('SizeRepresentation', $_REQUEST) ? 1 : 0;
    $PartForWholeRepresentation =
array_key_exists('PartForWholeRepresentation', $_REQUEST) ? 1 : 0;
    $MetaphoricalRepresentation =
array_key_exists('MetaphoricalRepresentation', $_REQUEST) ? 1 : 0;
    $SoundRepresentation =
array_key_exists('SoundRepresentation', $_REQUEST) ? 1 : 0;
    $ChineseCharacterRepresentation =
array_key_exists('ChineseCharacterRepresentation', $_REQUEST) ? 1 : 0;
    $CombinedVerbAndObject =
array_key_exists('CombinedVerbAndObject', $_REQUEST) ? 1 : 0;

$db=mysqli_connect('localhost','mcgrail_CSL','zh0nggu0sh0uU','mcgrail_CSL');
if ($db){
    $query="INSERT INTO CSL_signs
(`key`,`Username`,`PlaceOfSigning`,`DominantHand`,`Description`,`Torso`,`Head`,`Face`,`DirectPresentation`,`NumberRepresentation`,`ShapeRepresentation`,`MovementRepresentation`,`SizeRepresentation`,`PartForWholeRepresentation`,`MetaphoricalRepresentation`,`SoundRepresentation`,`ChineseCharacterRepresentation`,`CombinedVerbAndObject`)

VALUES(NULL,'$Username','$PlaceOfSigning','$DominantHand','$Description','$Torso','$Head','$Face','$DirectPresentation','$NumberRepresentation','$ShapeRepresentation','$MovementRepresentation','$SizeRepresentation','$PartForWholeRepresentation','$MetaphoricalRepresentation','$SoundRepresentation','$ChineseCharacterRepresentation','$CombinedVerbAndObject');"

    $response = mysqli_query($db,$query);
    if ($response) {
        $query1="SELECT MAX(`key`) AS `key` FROM `CSL_signs`;";
        $response1 = mysqli_query ($db, $query1);
        if ($response1) {

```



```
        $record = mysqli_fetch_assoc ($response1);
        $key = $record['key'];
        header ("Location:
http://asclab.org/semweb/Fall2011/sw6617/sproj/ShowSign.php?key=$key");
    } else {
        echo "Record not found!!!";
    }
    } else {
        echo "Record not added!!!";
    }
    } else {
        echo "NO CONNECTION!";
    }
    mysqli_close($db);
?>
```