Samuel Supalla and the ASL-phabet

SAMUEL SUPALLA AND THE ASL-PHABET

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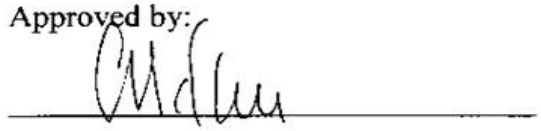

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Abstract

Research has shown that Deaf children routinely fall behind their hearing peers in their levels of literacy. In this thesis, I analyze Samuel Supalla's ASL-phabet, which is a tool that can help improve these literacy levels. I analyze this writing system from a linguistic viewpoint to see how the phonemic information of American Sign Language is encoded in the graphemes of the system. This thesis will also discuss a few critiques of the ASL-phabet, as well as how it is different from other writing systems for American Sign Language.

1 Introduction

This thesis concerns Dr. Samuel J. Supalla and his alphabet for American Sign Language (ASL). He calls this writing system the ASL-phabet. Supalla is a professor at the University of Arizona in the Department of Disability and Psychoeducational Studies, where he teaches ASL and Deaf Studies classes. He is both a deaf man and a Deaf man. While this may seem redundant, it is a very important distinction. Being deaf simply means you cannot hear. Being Deaf means you use a signed language to communicate and are active in the Deaf community and in Deaf culture. Supalla has written a book describing the process of giving ASL name signs, which is an important piece of Deaf culture (Supalla 1992). In the classes that Supalla teaches at the University of Arizona, he incorporates Deaf culture into his curriculum to help hearing students learn more about his community. In 1996, Supalla founded Laurent Clerc Elementary School in Tucson, Arizona. This was a bilingual charter school that used both ASL and English to teach Deaf and hearing students in the same classroom. Supalla is also a well-known story teller and has been performing around the country for years. He has published a book on ASL literature co-authored with Ben Bahan in the ASL Literature Series entitled *Bird of a Different Feather and For a Decent Living* (1995).

Supalla received a BA in History from California State University Northridge and later attended the University of Illinois where he received both a Master's and a Ph.D. in Educational Policy Studies with an emphasis in Bilingual/Multicultural Education. Both before and since he came to the University of Arizona, Supalla did research on Deaf education and literacy among Deaf children. He has written several papers on Deaf education including ones that discuss bilingual education methods and issues with Deaf literacy. For example, Supalla, Wix, and McKee (2001) addresses the use of different tools in an English and ASL bilingual school to help

both Deaf and hearing children learn the two languages simultaneously. (The school here was Laurent Clerc Elementary School mentioned above.) Supalla and Blackburn (2003) puts forth a reading program that works around the Deaf child's inability to hear the target language, which in this case is English. Supalla's ASL-phabet is one part of a method that can help improve the literacy skills of Deaf children and their poor performance using written English.

To learn more about Supalla's ASL-phabet, I interviewed him twice (S. Supalla, personal communication, February 22, and April 25, 2012). Supalla reported that this system for writing ASL was created out of his own research and experiences. His student and colleague Tina Wix, also the head teacher of Laurent Clerc Elementary School, provided a lot of insight for the project. With Wix's help, along with that of many Deaf students and their parents, the ASL-phabet became a tool to help Deaf children acquire better literacy skills in English (S. Supalla, personal communication, February 22, 2012). Laurent Clerc Elementary School was among of the first of its kind. The charter school movement was just getting underway across the nation, and the state of Arizona was one of the movement's leading participants. This particular charter school had 20-30 hearing and Deaf students enrolled in its classes. The teachers were also hearing and Deaf, and they used both English and ASL in the classrooms as the school was focused on creating a bilingual education program.

Much of the work that went into creating the ASL-phabet was done during the existence of this school and with the help of its teachers and students. The system itself was created before the founding of the school, but it was changed and improved upon as students came across issues with it while they used the ASL-phabet in their studies. Supalla created a program where the ASl-phabet was used along with printed sign illustrations and glossing as a way to ease the students into English literacy. The printed illustrations were similar to those found in sign

language dictionaries and those shown later in (2). These illustrations were used so that the children could begin associating ASL signs with their English equivalents (Supalla et al. 2001). The ASL-phabet was used to create a dictionary that let the students look up English words and find their ASL counterparts by using the ASL-phabet graphemes to look them up. The ASL-phabet was used to write individual words, but by the time the children were learning to read sentences, they moved on to glossing and into English. Glossing is a term that refers to "a 'hybridization' of ASL and English" (Supalla et al. 2001, p. 185). Words are written in English and use the syntax and morphological markers of ASL to write sentences. An example of this is shown in (1),[1] which was taken from Supalla et al (2001).

(1) ____t___
Glossed: YESTERDAY FATHER BOX GIVE-IX-3 BOY

Written: Father gave the boy a box yesterday.

English reading primers were glossed to ease the students into reading complete English (S. Supalla, personal communication, February 22, 2012). In summary, the Supalla's literacy program involved the students progressing from associating illustrations of signs with their English equivalents to decoding words written in the ASL-phabet to reading sentences written in English as a gloss of ASL and finally into reading grammatical English. Because of this system, the children at Laurent Clerc Elementary were able to move to written English while learning the skills necessary to do so at a more accommodating pace. As head teacher, Wix would observe how the children in the school learned using Supalla's literacy program and would report back to him with her findings. In this way, Supalla adjusted both the ASL-phabet and the general curriculum to fit the needs of the children at Laurent Clerc Elementary

[1] When signs are written in English, they are written with all the letters capitalized to distinguish them from the surrounding English words. This is a crucial part of glossing a signed language.

Supalla's literacy program provided a way for deaf children to learn a writing system that reflects their intuitive knowledge of their native language before moving on to literacy in a language that is both new to them and inaccessible in its spoken form. This is necessary because deaf children must be able to function in a world where the majority of people do not use sign language. It is probable that the deaf child's own parents do not use sign language since 90-95% of deaf children are born to hearing parents (Mitchell & Karchmer 2002), and this may delay their overall language acquisition in both a signed language and English. Success in academics and the professional world for them will depend greatly on their ability to use English and on their literacy skills. Unfortunately, the average deaf high school senior will graduate with a reading level equivalent to that of a fourth grade hearing student (*Hearing on the Commission on Education of the Deaf and Special Education Programs 1988)*. This fact has been known for some time among deaf educators. It was brought up in 1988 at a hearing held in Washington D.C. by academics from Gallaudet University to discuss the state of Deaf education and how it could be improved (*Hearing on the Commission on Education of the Deaf and Special Education Programs, 1988*). The situation has not changed much since then. Graduates in the 1990s were still reading at a fourth grade level (Erting 1992). In 2000, an analysis comparing the Stanford Achievement Test, 9th Edition scores of hearing students with deaf and hard-of-hearing students of the same ages showed that the latter group performed at a lower level than that of their hearing peers in reading comprehension (Traxler 2000). Educators have thus been aware for some time now that Deaf literacy is not at the level it should be, leading to the conclusion that a different system or tool must be used to help solve this problem and give Deaf children the literacy skills they need to use a language like English.

The English language is written with an alphabetic system. An alphabet is a relatively small set of graphemes that correspond to the phonemes of a language. Each grapheme can represent a different sound in the language similar to how the Spanish alphabet works; such alphabets exhibit what is called a shallow orthography. Another option is where a grapheme represents multiple phonemes and one phoneme can be represented by multiple graphemes. This is how the English alphabet works; such alphabets exhibit what is called a deep orthography (Seymour, Aro, & Erskine 2003). To illustrate, the letter A corresponds to different vowels in these words: *fat, father, cake, about*; the vowel sound in the word *bee* can be written with these letters and combinations of letters (hence the term "grapheme" rather than "letter"): *bee, key, eke, tea.* As Seymour et al. (2003) showed, a deep orthography is more difficult to master than a shallow orthography. This study, conducted in Europe where several languages use the Roman alphabet, compared the depth of each language's orthography and the literacy level of students after their first year of reading instruction. The study found that English, as well as other languages with a deep orthography, took longer to master than languages that had shallow orthographies such as Spanish or Finnish.

Once hearing children learn which sounds correspond to each letter of their alphabet, they can make inferences based on that and the words whose pronunciations they have already stored when they come across a new written word. Essentially, this means that hearing children can "sound out" a new written word. The associations between phonemes and graphemes are known as the grapheme-phoneme correspondence rules. These allow a reader to decode which phoneme belongs to each grapheme. Deaf children are not able to decode the English writing system in the same manner that hearing children can due to the fact that deaf children lack the advantage of knowing the pronunciation of many English words before they begin to read. Most do not

understand how an alphabet works (i.e., its symbols correspond to phonemes). Because of this, some students end up associating combinations of symbols with objects or ideas similar to the way Chinese logographic characters work. Chinese characters are, in simple terms, pictures that represent a whole word or idea. To understand them, a reader of Chinese does not break down the lines in the character into separate parts to gain meaning from it. Similarly, deaf children usually do not decode the symbols in English words. Instead they memorize each word as a whole unit and are not able to break down the phonemic information present in the word. In the ASL-phabet, like in the English alphabet, the different graphemes represent the different phonemes used in this signed language. This allows Deaf children to understand the principles of an alphabetic system for their native language, the idea that graphemes correspond to phonemes of a language, which should give them better skills to decode an alphabet for a second language.

2 Phonology of signed languages

In order to understand how the ASL-phabet works and why it is a unique and valuable system, we must look into the phonology of ASL. The terms *phonetics* and *phonology* usually refer to speech sounds or what linguists call *phones*. However, since languages come in two modalities, oral-aural and manual-visual, it is necessary to tweak the definitions of these terms to account for both language types.

Signed languages have phonemic systems that can be likened to those of spoken languages in interesting ways. They have phonemes like spoken languages do except in a different modality, and they have rules governing how those phonemes are put together to form words. This inventory of phonemes and rules make up the phonology of the language. Phonemes

are the smallest linguistic unit that can affect meaning. All phonemes are phones or individual speech sounds, but not all phones are phonemes in a given language. Linguists use tests like the one exemplified in (2) below with phonemic representations of the words *pat* and *bat* to determine which phones are phonemes in a language.[2] The words in (2) differ only in their initial consonants; the other sounds are the same. Because the shift from a [b] sound to a [p] sound changes the meaning of the string of sounds in this example, [b] and [p] are considered phonemes of English. In other words, *bat* and *pat* are different words. Two words that differ in only one phoneme in the same slot are referred to as a minimal pair. Using this and related linguistic tests, one can identify the inventory of phonemes in a language. English, for example, has over 40 such elements.[3]

(2) /pæt/ vs. /bæt/

Because *phonetics* and *phonology* represent two different parts of the 'sound' system of a language, they should be expressed differently when written. In order to fully describe the individual phonemes of a language, a transcription system is required. This kind of a system usually involves a larger number of characters than in a conventional alphabet because the transcription system must distinguish minute differences between phones. Spoken languages use the International Phonetic Alphabet (IPA) to achieve this purpose. The phonology of a language would be written using a writing system such as an alphabet or syllabary. The phonology of a language is made of the mental categories the phonemes are separated into. It is not necessary to

[2] The words in (2) use the International Phonetic Alphabet, which allows scholars to represent the individual speech sounds of any spoken language regardless of the alphabet it uses or even whether it has a writing system.
[3] According to Crystal (1997), phonemic inventories range from 11 phonemes (e.g., the Indo-Pacific language of Rotokas) to 141 (e.g., the Khosian language of !Xu). Further, the number of phonemes in any particular language varies across dialects. For example, English-speakers from Canada, Australia, and the United States will vary slightly in their phoneme sets.

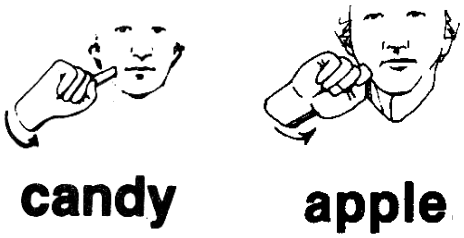
have the depth of detail when discussing phonology as you do with phonetics. This would allow the system to be written using fewer graphemes.

Turning to the phonology of signed languages, William Stokoe proposed that ASL was a true language in the same sense that English or any other spoken language was. His seminal work motivated scholarly discussion about signed languages and how their features are analogous to those of spoken languages and thus shifted the field of linguistics and how it treated the subject of phonology (Stokoe 1965). However, signed phonemic systems cannot be explained in exactly the same manner or using the exact same definitions as linguists apply to the analysis of spoken languages. The visual-manual modality of signed languages requires new descriptions. That is, explaining a signed language in spoken-language terms could potentially disregard certain parts of signed phonology (Brentari 2002). For one thing, spoken phonology cannot describe the fact that signed languages rely on the two hands, which are separate and distinct articulators that are in some ways identical to each other (Sandler 2003). At the same time, one hand is usually dominant. Neither is the spoken phonological system capable of describing where signs are articulated within the sign space. This area in which all signs are articulated stretches from just above the head to the waist, is slightly broader than the signer's shoulder width, and reaches about half an arm's length in front of the body. Such articulatory details force phonetic and phonological descriptions of a new sort that are not present in transcription or writing systems for spoken languages. While there are multiple signed languages around the world, the descriptions that follow are specific to American Sign Language.

Phonemes in a signed language can be categorized into hand shapes, locations of the sign, the hand's movement, and the orientation of the palm, and graphemes in the ASL-phabet correspond to first three of these categories. These formational features combine to make words

(or signs) just like individual speech segments combine to make spoken words in a language like English (Meier 2002). An example of this from Lawrence (1990) is shown in (3). The signs CANDY and APPLE have the same location and movement, but the hand shape is different for each. This makes them two separate signs. This minimal pair, like the English example in (2), is evidence that the hand shapes depicted below are phonemic.

(3)



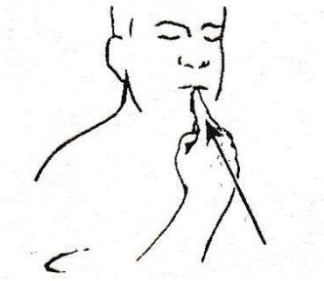
Another important aspect of signed phonology is that some signs are "simple," while others are complex. Simple signs are made with one hand and a single movement, and more complex signs are made with two hands with different movements for each hand. Battison (1978) categorizes signs into six different types depending on their movement and whether one or both hands are used. Type Ø signs involve only one hand and are articulated in the free space in front of the body without any point of bodily contact; see (4a) below (image from Lawrence 1990). Type X signs also involve only one hand, but they make contact with the body with the only point of exception being the other hand; see (4b) (Sternberg 1998). Type 1, 2, and 3 signs all involve the use of both hands. Type 1 signs require that both hands are active and are performing identical movements. This movement may be synchronous or alternating. The hands do not have to contact each other nor must they contact the body; see (4c) (Lawrence 1990). Type 2 signs require one hand to be active or moving while the other hand takes a passive role though both hands use the same hand shape. Passive in this case means that the hand is not moving within the sign space; see (4d) (Lawrence 1990).Type 3 signs also require one active

hand and one passive hand, but the hand shapes are different for these signs; see (4e) (image from Sternberg 1998). The final type, Type C, includes signs that form compounds from at least two of the other types (Battison 1978).

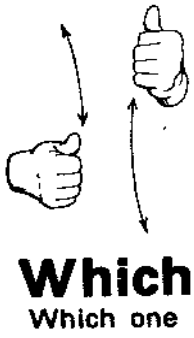
(4)

a. PREACH

b. SOUR

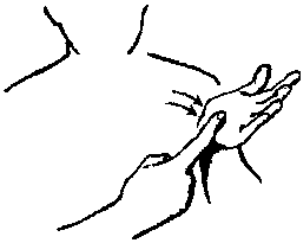


c. WHICH



d. NAME

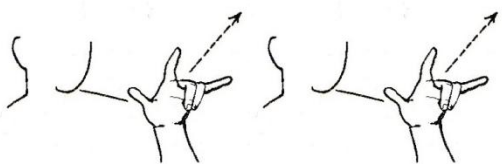
e. DISCUSS



Just as spoken languages have consonants and vowels, signed languages have different phonemes that correspond to these categories of sound. Consonants in spoken languages are more varied, while there are usually fewer vowels in a language. In signed languages, the hand shapes and locations are analogous to consonants. The movements can correspond to vowels. Brentari (2002) points out that, just as fluent speakers of English can decipher the meaning of a word written without vowels, a fluent signer can do much of the same thing in a sign depicted with no movement. This is why dictionaries for signed languages can work with pictures and simple descriptions of the necessary movements with arrows to indicate direction of movement, as shown in (3). Movements differ depending on if the sign is a noun or a verb. Verb signs move only once. Noun signs repeat the movement at least twice (e.g., SIT vs. CHAIR (5a), FLY vs. AIRPLANE (5b) (Sternberg 1998)). (Dictionaries depict such pairs as below, and knowledge of ASL morphology tells the reader to duplicate movement in one case.)

(5) a. SIT vs. CHAIR

b. FLY vs. AIRPLANE



In signed languages, the phonemes tend to overlap on each other to a greater degree than they do in spoken languages (Brentari 2002). A signer's interlocutor is processing more linguistic information at any one time than a listener of a spoken language will process in succession. Like spoken phonemes, signed phonemes will become clipped and pushed together in a way that would be distorted and unintelligible out of context, but the perceiver is still able to understand what is being conveyed (Meier 2002). There are also some researchers whose analysis of ASL shows that the phonemes happen in a sequence (Sandler 2003). This can be shown in the way that verb agreement occurs in ASL. There must be a definite beginning and end of some signs/movements in order for such grammatical distinctions to come out clearly.

Like the alphabetic writing systems of spoken languages, Supalla's ASL-phabet uses the different categories of phonemes (hand shape, location, movement, and palm orientation) to create different categories of graphemes in the writing system.

3 ASL-phabet description

In this section, I will describe the ASL-phabet in detail, emphasizing its graphemes and how they are used as well as providing some written examples using the system. This will also include a short discussion in section 3.1 of the alphabet's transparency and how it can be likened to English. As it was already noted, the types of graphemes correspond to the types of phonemes described above. I will rely on several examples of minimal pairs using the ASL-phabet to exemplify how this writing system works.

3.1 Transparency of the ASL-phabet

The ASL-phabet has elements of both a shallow orthography and a deep orthography. As mentioned earlier, shallow orthographies are more likely to have a one-to-one relationship between phonemes and graphemes while deep orthographies exhibit many-to-one and/or one-to-many relationships. Some of the graphemes in the ASL-phabet only represent one phoneme. Others map to several different phonemes. This is similar to how the Roman alphabet works with English. There are many English phonemes that can be written using several different graphemes or groups of graphemes and several different graphemes that correspond to the same phoneme.[4] The ASL-phabet helps Deaf children learn the alphabetic principle (e.g. what grapheme-phoneme correspondence rules are) because it applies their native knowledge of ASL to the concept of a written grapheme representing a signed phoneme. The idea is that once they have learned these concepts as they apply to their native language, it will be easier to apply them to a second language.

3.2 Graphemes of the ASL-phabet

The ASL-phabet consists of 32 graphemes: 22 for hand shapes, 5 for location, and 5 for movement (see Appendix A for the complete list of graphemes). These graphemes can be considered somewhat iconic in that they are abstract depictions of the hand, location, or movement being used in the sign. In other words, some of the graphemes are abstract pictures of what they represent rather than being purely arbitrary representations. If the graphemes in the ASL-phabet were completely iconic, the system would be comprised small pictures of the hands

[4] In English, this is like the letter A, which corresponds to the vowel sounds in *fat, father, cake,* and *about*. Weak graphemes represent fewer sounds. A weak grapheme in English is the letter J, which only corresponds to the consonant sound beginning the word *jack*.

and body that could be clearly defined as such. In any one word, the graphemes are written in this order: hand shape graphemes, location grapheme, movement graphemes. It is possible for words written using the ASL-phabet to contain anywhere from three to six graphemes, as detailed in (6). At minimum, a word must include one hand shape grapheme, one location grapheme, and one movement grapheme. *Deaf* in (7) exemplifies such a sign (Lawrence 1990).

(6) Grapheme slots in an ASL-phabet word

H = hand shape grapheme
L = location grapheme
M = movement grapheme

H	H	L	M	M	M

(7) DEAF 

deaf

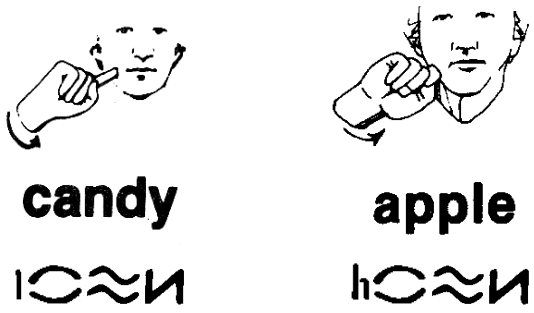
A word can have one or two hand shape graphemes, depending on the sign being written. Only one location grapheme is ever used in a single word written with the ASL-phabet. Up to three movement graphemes may be used, but this is will only occur when there is some type of internal movement of the fingers (≈) and repetition (ᴎ) as well as another larger movement. An example of a word written with three movement graphemes is the sign HAIRCUT in (8) (Sternberg 1998). Most words, however, will only use one or two movement graphemes.

(8) HAIRCUT

The 22 hand shape graphemes represent more than 22 different hand shapes. In this regard, the ASL-phabet shows some similarity to the deep orthography of written English. Thirteen of the hand shape graphemes have at least two hand shapes that correspond to them. Supalla explained that, on their own, each of these hand shapes would be too "weak" and therefore unnecessary (S. Supalla, personal communication, February 22, 2012). A "stronger" grapheme takes several "weak" graphemes into it to make the number of symbols smaller and easier to manage (see footnote 4 above for examples in English). Some hand shapes have separate graphemes because they would be too "strong" otherwise. For example, the 5 hand grapheme and the bent-5 grapheme (✳ and ✳ respectively) were separated after the children using the system at Laurent Clerc Elementary complained that there were too many signs that could be written using the original single 5 hand grapheme which created many homographs, and

these homographs made using the system confusing. I understand this distinction between weak and strong graphemes to resemble that between shallow and deep orthography in that strong graphemes represent several phonemes. This makes them less transparent. Separating frequently appearing hand shapes into different graphemes also made the system more manageable for the students writing with the ASL-phabet. It made words written using the ASL-phabet more transparent and therefore easier to decode even though it increased the number of symbols used. At 32, the number of graphemes in the ASL-phabet is truly nowhere near an unreasonable number, particularly when compared to other systems such as SignWriting's 500 different graphemes (Van der Hulst & Channon 2010). Havelock (1976) argued that the number of "letter shapes [in an alphabet] are to be restricted to between twenty and thirty" (p. 39).[5] The system was too difficult to use when many different words could be written using the exact same set of graphemes. An example of a minimal pair differing only in the hand shape graphemes are the signs for CANDY and APPLE shown again in (9) (Lawrence 1990). CANDY uses the grapheme for the hand shape that looks like the number 1, and APPLE uses the grapheme for a bent-1finger.[6]

(9)



[5] Havelock (1976) had three requirements of an ideal alphabet. The first was that all phonemes in a language are represented by graphemes. The second was that the number of graphemes should be limited to 20-30 different graphemes. And the third was that the separate graphemes not represent more than one phoneme.

[6] See Appendix B for more examples of minimal pairs written using the ASL-phabet, as well as examples of homophones and homographs. These show that the ASL-phabet has elements of a deep orthography.

The five location graphemes represent the forehead, the mouth/chin area, the chest, a stationary arm location, and the area in front of the body.[7].In the stationary arm location, this simply means that the base hand does not move. It stays still in front of the body while the dominant hand moves around it in some way. These five graphemes have a one-to-one grapheme-phoneme correspondence. An example of a minimal pair focusing on the location graphemes can be seen with the sign for BIRD and the number TWENTY in (10) (Lawrence 1990). The location grapheme in BIRD represents the mouth area while the grapheme in TWENTY represents the area in front of the body.

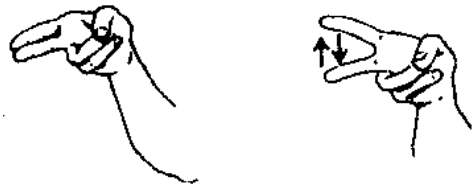
(10)

The five movement graphemes in the ASL-phabet represent movement toward/away from the body, up/down and left/right movement, circular movement, internal movement, and repeated movement. While most of the movement graphemes are straightforward, internal movement may at first need some explanation. This means that the hand itself is not necessarily moving, but the fingers are. The sign for SCISSORS in (11) (Sternberg 1998) is a good example of this type of movement. In SCISSORS, the fingers are simply opening and closing, but internal movement can also mean that the whole hand is closing, the fingers go from straight to bent, or a

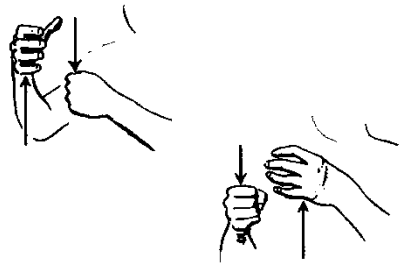
[7] To understand how locations in signed languages are phonemic, it might help to compare them to consonants in spoken languages. Consonants can be grouped together by their place of articulation such as the bilabial sounds [m] as in *mat*, [p] as in *pat*, and [b] as in *bat*. All are articulated using both lips. It is the way they are articulated that changes the sound just like location can change the meaning of signs that are produced with the same hand shape.

fist could open and close as in the sign MILK (12) (Sternberg 1998). An example of a minimal pair focusing on the movement graphemes involves the signs for HAPPY and PLEASE in (13) (Lawrence 1990) (Sternberg 1998). HAPPY uses the grapheme for motion toward and/or away from the body, while PLEASE uses the grapheme for circular motion.

(11) SCISSORS



(12) MILK



(13)

HAPPY

Please

The ASL-phabet is a featural system; in other words, its symbols represent the phonemic features of the language rather than phones per se. Again, the phonemic features of ASL involve its hand shapes, locations, and movements. The ASL-phabet represents these with graphemes. Like English, the ASL-phabet is read from left to right, but written words start with the shape graphemes. This writing system contains some diacritic markings, such as the extra marking next to the 5 hand shape grapheme to denote either clawed or bent fingers as opposed to them being kept straight ( vs.  or). The graphemes used in the ASL-phabet are borrowed from a system call Sign Font. Supalla, as well as most of the other people involved in the creation of this alphabet, agreed that these particular symbols were "beautiful" and well suited to the desired task (S. Supalla, personal communication, February 22, 2012). The new graphemes were created specifically for ASL and so represented the language well.[8] Supalla did not want to use the Roman alphabet because it is not designed to work with signed languages. The hearing students at Laurent Clerc Elementary also liked using graphemes that were not part of the Roman alphabet. It was less confusing for them to use two separate systems for English and ASL rather than the Roman alphabet for both languages. The hearing students already had pre-existing ideas about what the Roman letters represented, and it was harder for them to understand that the same symbol meant very different things in the two languages.

[8] This contrasts with references to ASL words in this essay, which is written in English. As footnote 3 explains, translations of signed words are written in capital letters to mark that the reference is to signed rather than spoken words. As is always the case when comparing two languages, this approach will only work where the languages share words; where they do not, this approach fails. In comparing English words and ASL signs, we cannot simply write the borrowed word with the Roman alphabet (e.g., as we can with *schadenfreude*).

4 Selected articles on writing systems for signed languages

Though the ASL-phabet was one of the tools used at Laurent Clerc Elementary School while it was open, the system has yet to be extensively evaluated (but see Supalla & Cripps, 2011, and references therein). As a way to begin addressing this issue, I will comment on two papers that discuss the ASL-phabet as well as other writing systems developed for sign languages. Van der Hulst and Channon (2010) outline some pros and cons of various writing systems for signed languages, including Supalla's ASL-phabet. While they make some good points about writing systems for deaf readers, the authors seem to miss some keys points about the ASL-phabet. Hopkins (2008) discusses requirements for a writing system for a signed language. While he does not mention Supalla's system explicitly, his insights about what a sign language writing system needs to accomplish are interesting and relevant here. But, like Van der Hulst and Channon (2010), Hopkins (2008) also presents some information that needs to be clarified.

One point that Van der Hulst and Channon (2010) makes is that "[Supalla's ASL-phabet] is a much simpler writing system with far few graphic units, which appear to be similar to Stokoe's set (Stokoe, Casterline & Croneberg 1965) or HamNoSys" (p.6). The authors do not state what they mean when they say the ASL-phabet is a "much simpler writing system" in comparison with SignWriting. If they mean that it is 'simpler' because it has fewer graphemes, this is problematic. A smaller set of graphemes makes the system 'easier' to memorize, but it also complicates the system in important ways. The grapheme-phoneme correspondence in the ASL-phabet is not always one-to-one, and this follows directly from the number of graphemes in the system. Several hand-shape and movement graphemes in the ASL-phabet map to more than one hand-shape or movement. This makes the system more opaque and more complex. A

transparent system would have one grapheme for every sound used in a spoken language or, in the case of signed languages, one grapheme for every movement, hand-shape, and location phoneme.

Van der Hulstand Channon (2010) also note that the graphemes in the ASL-phabet are "less iconic" (p. 6) than those of SignWriting. That may be one reason that Supalla borrowed from Sign Font. The more iconic a symbol is, the more it will resemble the thing it represents. SignWriting, for example, uses a small picture of the face and body to show where signs are located. This makes that system very iconic, at least in the representation of location. One of the reasons this system is so iconic is that it acts as choreography for sign. The creator of SignWriting developed it after working on a similar system, called DanceWriting that functioned as a way to write down dance choreography (Ager 2012). The graphemes in the ASL-phabet are much more abstract and therefore more like letters in a conventional alphabet such as the one I am using now to write this sentence. At first glance, the graphemes in the ASL-phabet do not look exactly like the movements or shapes that they represent. This works well for what Supalla intended the ASL-phabet to be used for. SignWriting was designed as a transcription system for the world's sign languages. The ASL-phabet is meant as a bridge to help deaf children learn to read using English. It was not designed to be a regular writing system. I believe Supalla intended the abstractness of some the symbols in his system to prepare children for the arbitrariness of an alphabetic system such as the one English uses. The letter 'A' does not look like the sound [a] or [æ], but it maps to those sounds. The hand shape grapheme of () does look like one of the hand shapes it maps to ('V' shape as in the sign *see* in (14) (Lawrence 1990)). However, it also maps to a hand shape that consists of a 'bent' V shape (in the sign *blind* in (15) (Lawrence 1990)). Another example of the abstract arbitrariness is in the '8' hand shape (). When a

reader first looks at the grapheme, it does not appear to represent a hand shape with four of the five fingers spread out with the middle finger bent down and possibly touching the thumb (see Appendix A). The grapheme itself consists of a small semi-circle above a tiny vertical line in the middle of the figure. If a person is not familiar with the hand shapes of ASL, it would be easy to see this shape as completely arbitrary.

(14)

see

(15)

blind

At one point, Van der Hulst and Channon seem clear on the intention behind the ASL-phabet: "[t]his system…acknowledges (rightly, we believe) that a written representation of a word does not need to be a recipe to produce it, but only to be sufficiently unique to act as a trigger to activate the relevant words in the reader's mind" (p.6). This sums up Supalla's intention very nicely. The written word is sufficient to trigger its representation in your mental lexicon. The ASL-phabet works with ASL in much the same way as English does with the Roman alphabet. English words written with the Roman alphabet do not explicitly indicate how they should be pronounced. They do not provide instructions on how to move the vocal tract to

produce every sound. If we wish to describe speech sounds very precisely, we use the International Phonetic Alphabet, which is also not iconic. The IPA though has only one-to-one mapping between each symbol and the speech sound it represents. Again, the ASL-phabet is meant to help children become accustomed to using a small amount of information to access a word in their lexicon.

This being said, Van der Hulst and Channon (2010) also articulate an important misunderstanding of Supalla's ASL-phabet:

> "Furthermore, partly by design and partly because of the phonological similarity of sign languages, the symbol set [of 500 graphemes in SignWriting] is sufficient to cover all sign languages, as amply demonstrated on the SignWriting web site. This makes SignWriting (and Supalla's ASL-phabet) a potential transcription system." (p. 25).

The authors incorrectly lump the ASL-phabet together with SignWriting in this instance. It is true that the 500 SignWriting graphemes should make it sufficient to transcribe sign languages around the world. A large number of symbols should allow a writer to transcribe exactly how a person creates a sign. Crucially, the ASL-phabet does not have that same potential. But Supalla was not trying to create a phonetic transcription system. His intention was to create a system that would function in a similar manner to written English. The small set of graphemes (32 in total) is not sufficient to cover all the possible phonetic components in sign languages nor was that its purpose. The authors understand that words written using the ASL-phabet are meant to serve as triggers for your mental lexicon, but they do not seem to distinguish between using a writing system as a transcription system and using it to learn to read written words. However, the

difference between a transcription system and a writing system can be confusing, and this article is not the only one to occasionally use these ideas interchangeably when they should not be.

Hopkins (2008) discusses writing systems for sign languages without focusing on any particular system. Like Van der Hulst and Channon (2010), this article sometimes conflates an alphabetic writing system with a transcription system. Hopkins uses the term 'writing system' to describe the systems currently available and used by scholars to document signed languages. Systems such as SignWriting or HamNoSys, use large amounts of symbols to accurately describe the phonemes that make up a particular sign.[9] The level of detail in these transcription systems make them excellent tools for research and documentation, but make them poor examples of a writing system that is meant to be used for everyday communication needs. Hopkins does not seem to fully grasp this point. He notes that a large symbol set can make a system difficult to use (p. 11), but he still argues that having a great deal of detail is important for a writing system (p. 3, 7). Detail is important because a writing system that is too opaque will be more difficult to learn and to use (Seymour et al. 2003). On the other hand, having hundreds of symbols renders a system almost useless if the goal is to create an effective bridging system to teach students the alphabetic principle. This is why Supalla's system uses only 32 symbols with just enough detail about the phonemes of ASL to prevent confusion.

This article does make a point about writing systems that is important to Supalla's ASL-phabet. Hopkins (2008) comments briefly on the actual symbols used in the writing systems of signed languages. He points out that when the dominant spoken language (DSL) and the signed writing system share the same symbols, it can cause confusion in the both the writer and the

[9]SignWriting website: http://www.signwriting.org/
HamNoSys website: http://www.sign-lang.uni-hamburg.de/projects/hamnosys.html, http://www.sign-lang.uni-hamburg.de/dgs-korpus/index.php/hamnosys-97.html

reader (p. 8). A similar alphabet could lead the user to try to apply previous knowledge of the DSL onto the signed language. The aural and visual modalities of spoken and signed languages are so different that even if the two writing systems used the same symbol, it would have to have two separate meanings. Supalla realized this would make learning a writing system difficult, especially for young children. This influenced him to choose symbols for the ASL-phabet that could not be tied to another language. This would make learning the system easier on the children in the bilingual school where the ASL-phabet was developed.

Hopkins is very much in favor of the Deaf community having a writing system of their own to document their language and their literature. He continually brings up the point that the Deaf community needs a way to write their language, noting for example that there is only a small corpus of literature written in a signed language (p.10). Hopkins is a member of Wycliffe Bible Translators, so his priority makes sense. His main concern is how a person can communicate complex ideas effectively in a written form. However, as he also points out, writing in a signed language does not have a high priority in the Deaf community. Deaf people tend not to put much emphasis on literacy. The Deaf community is largely an oral culture meaning they pass on their knowledge and history through their signed stories rather than through written language.

Hopkins (2008) recognizes the lack of motivation to find a writing system for signed languages among members of the Deaf community. He feels there is not a satisfactory answer to the question "Why bother?" in regards to this endeavor (p. 13). Hopkins feels people question if there really is a need for such a system. A more appropriate question, which ties into Supalla's ideas, might be "Why bother with literacy?" The answer to this question is the same whether you are in a Deaf or hearing community. Literacy and education provide those who pursue them with

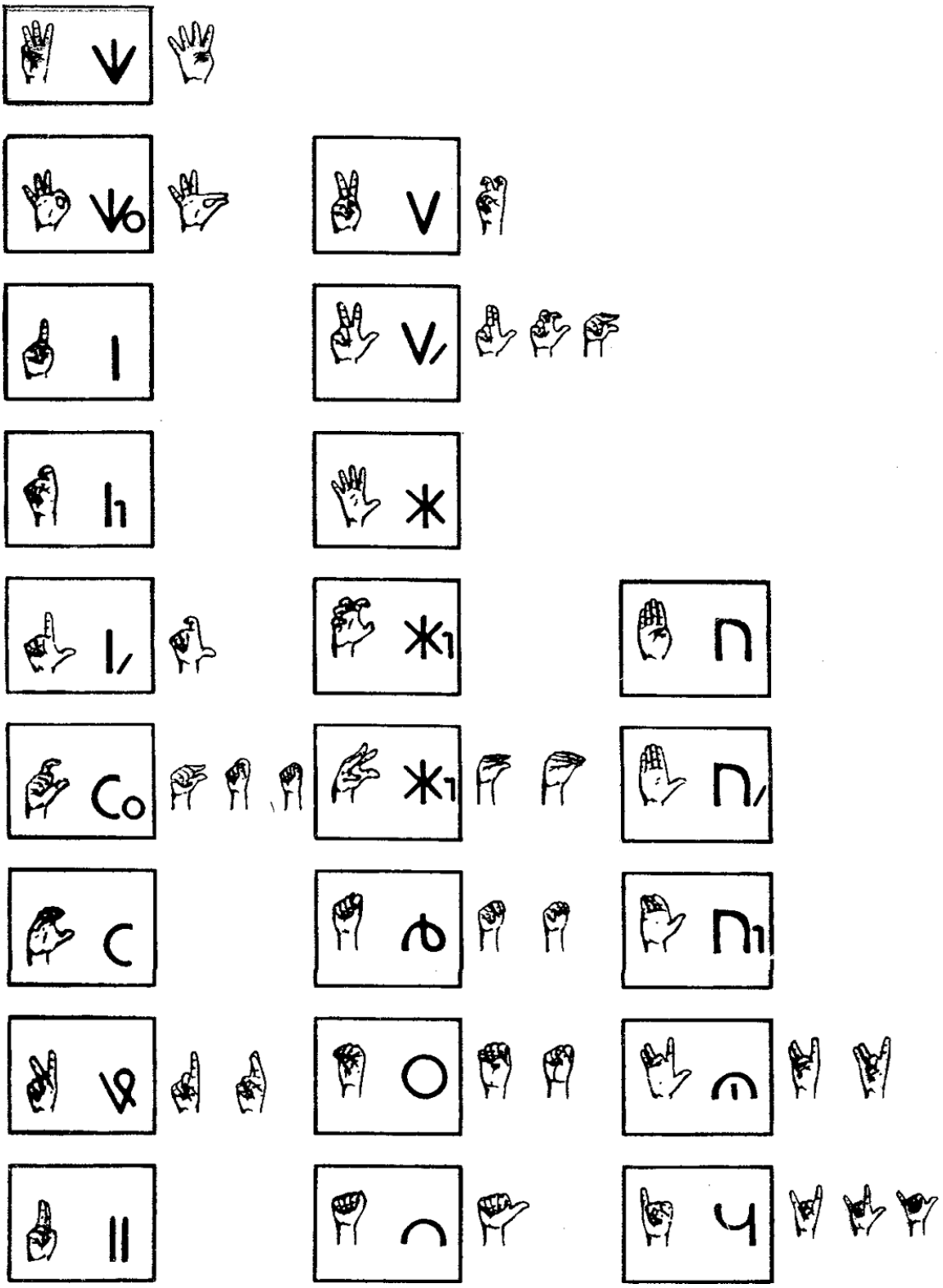
greater skills and greater success in their career path (Holder, Jones, Robinson, & Krass 2006). Deaf and hearing people alike benefit from the ability to read and write well. If the Deaf community desires to create their own writing system for their language, they have the right and ability to do so. However, choosing to focus on a writing system created as a matter of pride rather than practicality could potentially hold members of the Deaf community back in a world focused on the use of English. Supalla's ASL-phabet is a tool designed to help the Deaf community learn English and help lay the foundation for their success in the hearing world.

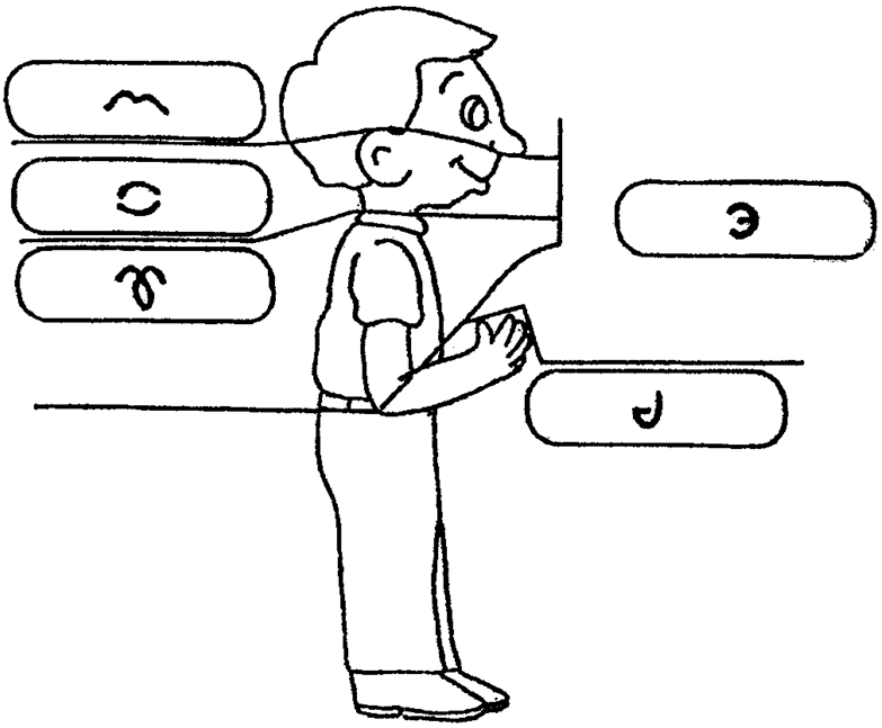
5 Importance of this scholar and his work and closing remarks

Deaf children need tools like the ASL-phabet to help them gain the skills necessary to function in a world where they are a linguistic minority. Supalla understands this intimately because he grew up experiencing the same challenges that Deaf children do today in schools all over the nation. He was born deaf in a deaf/Deaf family. So, while that made him a native user of ASL, his education had to proceed in English. For that, he had to learn to read and write in English even though he does not hear nor speak this language. The difficulty in this situation is dire. And once again, as this is new information to many people, most deaf children graduate high school with only a fourth-grade reading level (*Hearing on the Commission on Education of the Deaf and Special Education Programs, 1988*). In becoming a literate and well-respected scholar in a world that does not work in his favor, Supalla has shown that a poor level of literacy does not need to be the ultimate fate for a Deaf child. His ASL-phabet can help Deaf students bridge the gap between their native ASL knowledge and their new knowledge of English. The ASL-phabet has been created in such a way that it can help Deaf students understand how to

decode and pick apart English words to foster their literacy skills. It teaches them the alphabetic principle – namely that graphemes stand for a language's formational components – and it does so in a language that is accessible to Deaf children. Granted, there is still a great deal of work to be accomplished to validate the ASL-phabet as a complete writing system. Formal testing would go a long way in showing the world of academia that there are other methods of teaching our Deaf children how to read. However, it is obvious that the ASL-phabet is different from previous methods of teaching literacy in English. That could be the reason it would work to help Deaf children become successful Deaf adults in a hearing world.

Appendix A. ASL-phabet Graphemes





TOWARD/ AWAY FROM BODY	UP/DOWN LEFT/RIGHT	CIRCULAR	INTERNAL	REPEATED
BITE	ART	ALWAYS	BEGIN	AIRPLANE
CONTROL	COLD	BEAUTIFUL	FREEZE	BATHROOM
GIVE	FIND	CHOCOLATE	ASK	BOOK
GO	HEAVY	ISLAND	NO	CUP
TELL	MUCH	LIBRARY	FISH	WORK

Appendix B. Minimal pairs and more written examples of the ASL-phabet

ASL has minimal pairs as any spoken language does. These are signs that differ in only one part of the sign (hand shape, location, movement, or palm orientation). Because of the challenges of writing about signing, this appendix begins with reference to a website with video examples of all four types of minimal pairs in ASL. Video examples may help readers better understand what it means for two signs to have different movements or palm orientations. Because most people do not use ASL, they are not familiar with the terminology, and drawings and videos can give direct visual aid to help them understand.

http://www.linguistics.ucla.edu/people/schuh/lx001/Discussion/d07b_videos_ASL_min_pairs.html

CANDY vs. APPLE: These two signs differ in their hand shape graphemes.[10]

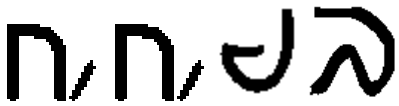
BIRD vs. TWENTY: These two signs differ in their location graphemes.

BETTER vs. FORGET: These two signs differ in their location graphemes as well. BETTER is signed at the mouth while FORGET is signed at the brow line.

[10] ASL has regional dialects, just like any spoken language. The signs that I refer to here are the 'pronunciations' that I have learned from different native signers, including Supalla from Oregon and Leslie Decker from Arizona. These two signers, for example, use the same hand shape and location for SALT but different movement patterns.

HAPPY vs. PLEASE: These two signs differ in their movement graphemes.

NICE vs. CLEAN: This pair represents homographs as well as homophones. They are written the same way and signed the same way. Facial expressions provide contextual clues as to which meaning is being used.



WATER vs. SPEAK/TALK: These two signs are homographs but not homophones. They are signed differently (WATER uses three fingers on the chin, TALK uses four), but written the same in the ASL-phabet. This is like the words *wind* (weather) and *wind* (as in winding up string) in English.

SALT vs. EITHER: This is another example like the previous one. SALT and EITHER are signed differently with the palms facing down for the former and palms facing each other with the fingers upright in the latter. Because the ASL-phabet does not denote changes in palm orientation, these two signs are homographs since they are written the same way, but not homophones since they are 'pronounced' differently.

Appendix C: Personal Comments

I first heard about the ASL-phabet when I took Supalla's beginning ASL course at the University of Arizona. I had been learning ASL for several years prior to this, but I hadn't seen someone use a writing system to help students understand the language. He incorporates the ASL-phabet into his courses for hearing college students. I was intrigued because his system was unlike anything I had seen before in my studies as linguistics major. As I have learned more about Supalla, ASL, and the ASL-phabet, it has become clear to me that this system can help a lot of children succeed in school and in life. My linguistics background enables me to understand the technical side of the ASL-phabet, and my experiences working with Supalla and learning about the ASL-phabet have shown me that there is more work to be done with ASL than just interpreting. In working with Supalla on my undergraduate honors thesis, I have realized how interesting ASL can be and that I would like to continue learning about the linguistics of signed languages in my graduate career. I know that this experience has helped me in my academic career in so many ways, and it would give me great pleasure to see the ASL-phabet used one day to help Deaf students all over the nation.

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