UNIT 9

Building New Signs

In part 2, we defined phonology as the study of the smallest *contrastive* parts of language. In American Sign Language, signs are made up of hold segments and movement segments. A hold segment has handshape, location, orientation, and nonmanual features, and likewise, a movement segment has handshape, location, orientation, and nonmanual features.

In comparing the signs LOUSY, AWKWARD, and PREACH with the signs THREE-WEEKS, THREE-DOLLARS, and NINE-MONTHS, we saw that the handshape in LOUSY, AWKWARD, and PREACH has no separate meaning. In those three signs, as in many others, the handshape, location, orientation and nonmanual information combine to produce one meaning. The separate parts can be identified, but they do not each have separate meaning. That is not the case, however, in THREE-WEEKS, THREE-DOLLARS, and NINE-MONTHS. In these three signs, the handshape does have a separate meaning—it indicates a specific quantity. To change the handshape in the sign THREE-DOLLARS immediately changes the meaning of the quantity of money being signed. To change the handshape in THREE-WEEKS or NINE-MONTHS changes the meaning of the number of weeks or months being talked about. (This process will be discussed more in unit 13, when we talk about numeral incorporation.)

Phonology is the study of the smallest contrastive parts of language. The parts of language that we study in phonology do not have meaning. So when we study phonology and we look at the sign THREE-WEEKS, we are simply interested in the fact that the sign has a handshape, a location, an orientation, and a movement. The fact that the handshape has the specific meaning of the quantity three is part of morphology.

Morphology

Morphology is the study of the smallest *meaningful* units in language and of how those meaningful units are used to build new words or signs. Put another way, morphology is the study of word formation, of how a language uses smaller units to build larger units.

The smallest meaningful unit in a language is a *morpheme*. Some morphemes can occur by themselves, as independent units. These are called *free* morphemes. The English words *cat* and *sit* are examples of free morphemes; the ASL signs CAT and LOUSY are examples of free morphemes. Some morphemes cannot occur as independent units; they must occur with other morphemes. These are called *bound* morphemes. The English plural *-s* (*cat*s) and third person *-s* (*sit*s) are examples of bound morphemes; the 3 handshape in the ASL signs THREE-WEEKS and THREE-MONTHS are examples of bound morphemes. And as we will see, while a morpheme is often an identifiable form, a morpheme may also be a process.

Languages have many ways to build new words or signs. Using the patterns of words or signs that already exist, they can create totally new forms. They can also make compound words or signs by combining two forms that already exist. They can borrow words or signs from other languages, and ASL can create new signs based on the writing system of English. We will discuss examples of all these processes in ASL.

As a language uses smaller units to build larger ones, two different processes are at work. Some of the larger units built from smaller units are the result of a *derivational* process, and some are the result of an *inflectional* process.

Derivational Morphology

Derivational morphology is the process of making new units for the language, in other words, deriving new units. An example of derivational morphology in English is the creation of nouns from verbs by the addition of the suffix *-er*. For example, when the suffix *-er* is added to the verbs *write*, *read*, and *sign*, the result is a noun with the meaning of "person who does the activity of the verb." The nouns *writer*, *reader*, and *signer* are derived from the verbs *write*, *read*, and *sign*. Another example from English is the derivation of verbs from adjectives by the addition of the suffix *-en*. For example, when *-en* is added to the adjectives *soft* and *hard*, the verbs *soften* and *harden* are derived.

In spoken languages, these pieces of added language are called *affixes*. Affixes are bound morphemes that attach to a free morpheme, also called a root or stem, to form a more complex multimorphemic word. English affixes can be *prefixes* or *suffixes*. Prefixes come before the root: *un-*, *in-*, *re-* as in **un**decided, **in**decent, and **re**charge. Suffixes come after the root: *-ness*, *-ing*, *-s*, as in red**ness**, try**ing**, and cat**s**. Some languages also have *infixes*. For example, in Tagalog, a language spoken in the Philippines, the infix *-um-* is added to the first syllable of a verb.

langoy 'swim'	lumangoy 'swam'
kain 'eat'	kumain 'ate'
taas 'be tall'	tumaas 'became tall'
bili 'buy'	bumili 'bought'

Tagalog has borrowed the English word *graduate* as a verb, so a speaker saying "I graduated" uses the derived form *gr**um**aduate*.

ASL also contains examples of derivational morphology. In these cases, small units of ASL are put together to create new larger units. As in English, ASL nouns can be derived from verbs (for example, CHAIR from SIT). Compounds are formed when individual signs combine to create a new sign with a new meaning (GIRL + SAME = SISTER). Fingerspelled words can take on the characteristics of a sign by dropping some of the letters (B-A-C-K becomes B-K, with a distinct movement of its own). ASL also allows for *numeral incorporation*, in which a handshape representing a specific number is incorporated into the segmental structure of a sign to convey an explicit period of time (THREE-WEEKS, FIVE-MONTHS). The agentive suffix can be added to existing signs to make nouns like TEACHER, LAWYER, and ACTOR. Finally, new signs are created via blending and depiction (see unit 19 for a full explanation).

Inflectional Morphology

Inflectional morphology is different from derivational morphology. While derivational morphology is about the creation of new units, inflectional morphology is the process of adding grammatical information to units that already exist. For example, when *-s* is added to nouns in English, the result is the meaning of plural—*cats*, *dogs*, *books*, and these units remain nouns. The *-s* is known as an *inflection*. Another example is the *-s* that is added to verbs with the meaning of "third person," as in *walks*, *writes*, or *signs*. This *-s* is also an inflection. The inflections add grammatical information to a unit; they do not result in the creation of a new unit.

Summary

Both derivational and inflectional processes in ASL may be fundamentally different from such processes in spoken languages. ASL does not tend to add on as spoken languages do. Instead, ASL tends to change the fundamental structure, as in the case of temporal aspect, or change one part of one segment, as in the case of indicating verbs (these will be explained in later units).

The same part of a language can be affected by both derivational and inflectional processes. For example, the ASL verb SIT can be used to derive the noun CHAIR, and it can be inflected to mean SIT-FOR-A-LONG-TIME. The ASL verb TALK can combine with the sign NAME to create the compound MENTION, which is a derivational process. The same ASL verb TALK also can be inflected to mean TALK-FOR-A-LONG-TIME.

Some components of ASL become part of the language through a derivational process and then participate in inflectional processes. For example, the formation of the lexicalized fingerspelled sign #NO is a derivational process. It is the creation of a new unit in ASL. That same lexicalized sign can then be used as a verb, as in *He says no to me* or *I say no to him*.

Supplemental Readings

Files 5.1, 5.3, and 5.4 from *Language Files: Materials for an Introduction to Language and Linguistics* (2004); pp. 332–347

Homework Assignment 6

Refer to File 5.1 in the Supplemental Readings to help with this assignment.

1. List two or more examples of bound inflectional morphemes in English or another spoken language that you know and explain why they are inflectional.

2. List two or more examples of bound derivational morphemes in English or another spoken language that you know and explain why they are derivational.

UNIT 10

Deriving Nouns from Verbs

In unit 9, we said that morphology is the study of word formation, of how a language uses meaningful units to build new words or signs. One example of a morphological process is the way that a language uses verbs to derive nouns. That is, the verbs that are already in the language are used to create nouns. English has a group of verbs from which nouns have been made. In each of these cases, the difference between the verbs and nouns is found in the stress placed on different syllables. From the examples in Table 2, we can see two regular patterns emerge.

1. The verbs tend to be stressed on the second syllable (some verbs can receive stress on either syllable, such as *import* or *contrast*), and the nouns tend to be stressed on the first syllable. Stress means that a particular sound in a word, usually a vowel, is more prominent; that is, it is said with more emphasis.
2. Because of the difference in stress between a noun and a verb, the vowels in the two words sound different. This means, for example, that the vowel sounds in the first syllable of the verb *convert* and in the noun *convert* sound different.

Table 2. Nouns Derived from Verbs in English

Verbs	Nouns
convíct	cónvict
segmént	ségment
subjéct	súbject
presént	présent
impáct	ímpact
impórt	ímport
incréase	íncrease
contrást	cóntrast
insúlt	ínsult
insért	ínsert
protést	prótest
convért	cónvert
projéct	próject
rebél	rébel
conflíct	cónflict

Note: The stress is indicated by the slash mark over the vowel.

This is just one of the regular patterns in the relationship between verbs and nouns. Another example in English occurs when the suffix *-er* is added to verbs, which transforms the verbs into nouns. For example, adding *-er* to the English verbs *write*, *dance*, *walk*, and *think* results in the nouns *writer*, *dancer*, *walker*, and *thinker*. Again, there is a regular pattern in the relationship between verbs and nouns. These patterns illustrate an earlier point—morphology is about the creation of new units, and one way to create new units is to take a form that already exists in the language and change it in some way.

These two examples from English morphology illustrate the difference between a morpheme that is a *form* and a morpheme that is a *process*. In the case of adding *-er* to a verb in order to form a noun (*walk/walker*), *-er* is a form that consists of two sounds; it is a form that is added on to other forms to create a new word. Since it cannot occur by itself, it is a bound morpheme. However, in the case of the verb *subjéct* and the noun *súbject*, we can't identify a specific form that is added to the verb to derive the noun; in other words, we can't see a morpheme. We can see that the stress on the verbs is consistently different from the stress on the nouns. On the verbs, it is generally on the second syllable, while on the nouns, it is on the first syllable (for example, contést/cóntest, progréss/prógress). The process of moving the stress to the first syllable results in the creation of a noun related to the verb. This concept of the morpheme as a process is important in understanding ASL morphology.

ASL also has verbs and nouns that show a regular pattern. Some examples of verbs and nouns that are related in ASL are listed in Table 3.

Table 3. Related Verbs and Nouns in ASL

Verbs	Nouns
FLY	AIRPLANE
GO-BY-BOAT	BOAT
GO-BY-SKIS	SKIS
CALL	NAME
SELL	STORE
OPEN-BOOK	BOOK
SIT	CHAIR
PUT-GAS-IN	GAS
OPEN-DOOR	DOOR
CLOSE-WINDOW	WINDOW
PUT-ON-CLOTHES	CLOTHES
PUT-ON-HEARING-AID	HEARING-AID
PUT-ON-PERFUME	PERFUME
LICK-ICE-CREAM	ICE-CREAM
COMB-HAIR	COMB
USE-BROOM	BROOM
USE-SHOVEL	SHOVEL
PAINT	PAINT
IRON-CLOTHES	IRON
ICE-SKATE	ICE-SKATES
ROLLER-SKATE	ROLLER-SKATES
PRINT	NEWSPAPER

These noun-verb pairs were first analyzed by Ted Supalla and Elissa Newport, two researchers who published their findings in 1978. Supalla and Newport noticed that there are pairs of verbs and nouns in ASL that differ from each other only in the movement of the sign. For example, in the pair SIT and CHAIR, the handshape, location, and orientation of the two signs are the same, but the movement is different. It is the movement that creates the difference in meaning between the two signs. In the same way, the handshape, location, and orientation of FLY and AIRPLANE are the same, but the movement is different.

Supalla and Newport focused on movement and described the differences between verb movement and noun movement in great detail. By looking at pairs of verbs and nouns within the Liddell and Johnson framework for describing signs, we can say that related verbs and nouns may have the same handshape, location, and orientation, and that the noun simply repeats or *reduplicates* the segmental structure of the verb (see Figure 26). The segmental structure is the movements and holds of a sign. So, for example, the basic structure of the verb SIT is hold-movement-hold, and the basic structure of the noun CHAIR is a hold-movement-hold repeated. A diagram of the structure of the two signs is as follows:

SIT	CHAIR
H M H	H M X M X M H

Notice the movement after the first hold in CHAIR. This is an example of movement epenthesis (see p. 47), which happens when nouns are derived from verbs in ASL. The basic structure of the verb is repeated, so when the last segment of the verb is a hold, a movement is added before the first segment of the verb is repeated. The result of reduplicating the verb structure is H M H M H M H. Verbs have different segmental structure. Look through the list of verbs and nouns in Table 3 and

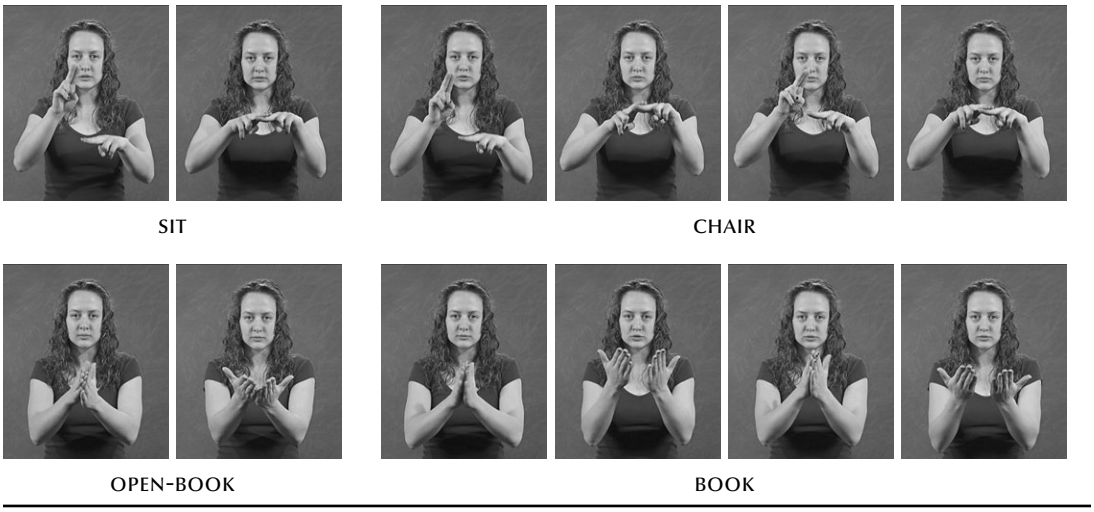


Figure 26. Noun and verb pairs that differ in movement.

describe the basic structure of the verbs; note how that basic structure is repeated to form the noun.

This process of repetition is called *reduplication*. Similar to the derivation of nouns from verbs in English, the morpheme in ASL is the process of reduplication. We do not add a form to the ASL morpheme SIT to derive the noun CHAIR; we repeat the morpheme SIT.

We see reduplication in spoken languages also. The Indonesian word for "mother" is *ibu*; the plural, "mothers," is *ibuibu*. In Tagalog, the future tense is formed with reduplication, so that the future of *sulat*, "write," is *susulat* and the future of *basa*, "read," is *babasa*.

Reference

Supalla, T., and Newport, E. 1978. How many seats in a chair? The derivation of nouns and verbs in American Sign Language. In *Understanding language through sign language research*, ed. P. Siple, 91–132. New York: Academic Press.

Homework Assignment 7

1. On the DVD, "The Snowmobile" (Val Dively) and "Applause for Eyes to See" (Bernard Bragg) both have examples of nouns that have related verbs in ASL and verbs that have related nouns. Find one example of each, as follows:

a. Noun in a story:

b. Related ASL verb (may not be on the DVD):

c. Verb in a story:

d. Related ASL noun (may not be on the DVD):

2. List three examples of noun-verb pairs not included in this unit.

a.

b.

c.

3. Which of the following sets are noun-verb pairs in ASL and which have unrelated signs for the noun and the verb?

a.	PUT-IN-JAIL	JAIL
b.	PUT-ON-EARRING	EARRING
c.	SHOOT-GUN	GUN
d.	MAIL-LETTER	LETTER
e.	DRIVE-CAR	CAR

UNIT 11

Compounds

Compounds in ASL

In unit 10, we saw that one way that ASL can create new signs is by deriving nouns from verbs. In this unit, we will look at another way that ASL can create new signs. Sometimes a language creates new words by taking two words (free morphemes) that it already has and putting them together. This process is called *compounding*. Both English and ASL have many compounds. We will first look at some examples from English.

In English, the word *green* is combined with the word *house* to make the word *greenhouse*. The word *black* is combined with the word *board* to make the word *blackboard*. Some other examples of English compounds are *hatrack*, *railroad*, *bookcase*, *blackberry*, *showroom*, and *homework*.

When nouns are derived from verbs in English or in ASL, a regular pattern can be described. A pattern can also be described for the formation of compounds. In English, when two words come together to form a compound, two fairly predictable changes take place.

1. The stress (that is, the emphasis) is usually on the first word of the compound, and the stress on the second word is usually reduced or lost. When the word *green* and the word *house* come together to form the compound *greenhouse*, the stress is on the word *green: gréenhouse*.
2. A new meaning is created when two words come together to form a compound. For example, greenhouse does not mean a house that is green; it has the specific meaning of a place where plants are grown. Blackboard does not mean a board that is black; it means a board that is used for instructional purposes, which may be black, green, or brown.

The research done by Supalla and Newport on nouns and verbs in ASL has already been mentioned. Another researcher, Scott Liddell, has done a great deal of research on compounds in ASL (see Table 4 for examples of ASL compounds). He noticed that when two signs come together to form a compound, predictable

Table 4. ASL Compounds

ASL Compound	English Translation
GIRL⌒SAME	"sister"
BOY⌒SAME	"brother"
MOTHER⌒FATHER	"parents"
BLUE⌒SPOT	"bruise"
THINK⌒MARRY	"believe"
THINK⌒SAME	"it's like"; "for example"
THINK⌒TOUCH	"be obsessed with"
TALK⌒NAME	"mention"
FACE⌒NEW	"stranger"
GOOD⌒ENOUGH	"just barely adequate"
JESUS⌒BOOK	"Bible"
LOOK⌒STRONG	"resemble"

Note: The symbol between the two glosses indicates that the sign is a compound.

changes take place as the result of rule application, just as they do in English-compound formation. There are two kinds of rules that cause the changes—morphological and phonological.

Morphological rules are applied specifically to create new meaningful units (in this case, compounds). Three morphological rules are used to create compounds in ASL: (1) the first contact hold rule, (2) the single sequence rule, and (3) the weak hand anticipation rule.

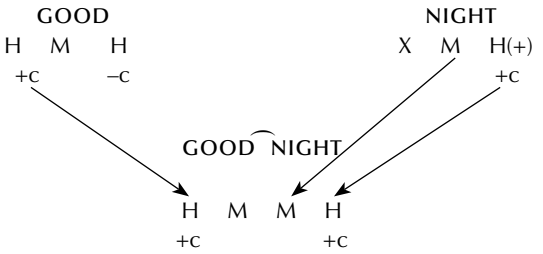
1. Sometimes the hold segment of a sign includes contact on the body or the other hand (+c). In compounding, the first or only contact hold is kept. This means that if two signs come together to form a compound and the first sign has a contact hold in it, that hold will stay. A preceding movement may be deleted, as may noncontact (–c) holds. If the first sign does not have a contact hold but the second sign does, that contact hold will stay. It is important to notice that while the hold may appear in the compound, the actual contact may not. For example, the sign GOOD has the structure

   H M H
   +contact –contact

   The sign NIGHT has the structure:

   X M H(+)
   +contact

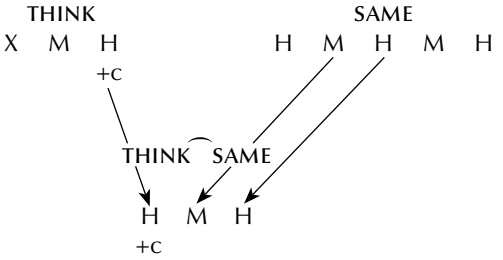
   The (+) following the H in NIGHT means that the sequence X M H is repeated. When the sign GOOD and the sign NIGHT come together to form the compound GOOD⌒NIGHT, the first contact hold of GOOD is kept, and one movement-hold sequence of NIGHT is kept. The transition to the compound is as follows:



It happens that both GOOD and NIGHT have contact holds. But in the compound THINK⌒SAME, only THINK has a contact hold. The structure of THINK is

X M H
+c

The structure of SAME is H M H M H; it does not have contact holds. When THINK and SAME come together to form a compound, the contact hold in THINK is kept, and one hold-movement-hold sequence of SAME is dropped. The structure of THINK⌒SAME results from these changes (see Figure 27).



Notice that in the compound GOOD⌒NIGHT, an M is added after the final H in GOOD. This is an epenthetic M, which we will discuss shortly.

2. When compounds are made in ASL, internal movement or the repetition of movement is eliminated. This is called the single sequence rule. We saw in the sign NIGHT that the M H sequence is repeated. Other signs that show repetition include GIRL, WORK, and NAME. Signs that have internal movement include MOTHER and FATHER. The internal movement occurs while the hand is in the hold segment. In MOTHER and FATHER, the wiggling of the fingers is the internal movement. When these signs come together with other signs to form compounds, the repetition or internal movement is eliminated. For example, the following compounds don't show any repetition:

GIRL⌒SAME "sister"

TALK⌒NAME "mention"

And in the sign for "parents," the fingers do not wiggle as they do in the individual signs MOTHER and FATHER.

3. When two signs are combined to form a compound, it often happens that the signer's weak hand anticipates the second sign in the compound. For example, in the compound SISTER (GIRL⌒SAME), the weak hand appears in the space in front of the signer with the 1 handshape of the sign SAME *at the same time* that the active hand is producing the sign GIRL (see Figure 27). This can also be seen in the

Figure 27. Examples of ASL compound signs.

compound BELIEVE (THINK⌒MARRY) in which the weak hand appears with the C handshape of the sign MARRY while the active hand produces the sign THINK.

Phonological rules may be applied whenever signs are produced in sequence and do not result in any changes in meaning. We see at least three different phonological rules occurring with compounding: (1) movement epenthesis, (2) hold reduction, and (3) assimilation.

1. We described movement epenthesis in the unit on phonological processes. It involves adding a movement segment between the last segment of one sign and the first segment of the next sign. An example of movement epenthesis in compounding can be seen in the compound THINK⌒SAME, where a movement segment is added between the final hold of THINK and the first movement of SAME. It should be noted that in the final production of a compound, the epenthetic movement may assimilate to a following movement. For example, in the sign SISTER, an epenthetic movement occurs between the final hold of the first sign, GIRL, and the initial movement of the second sign, SAME, producing the structure H M M H. However, the structure of the compound in actual production is H M H.
2. A second phonological rule that applies when two signs come together to form a compound is that noncontact holds between movements are shortened. This is an example of the process of hold reduction that was discussed in unit 7. We saw this happen to the sign GOOD in the compound GOOD⌒NIGHT. We also see it in the compound LOOK⌒STRONG. The structure of the sign LOOK is M H, and the structure of the sign STRONG is H M H. None of the holds in these two signs have contact with the body or with the other hand. When these two signs come together to form a compound, they look like this:

LOOK			STRONG		
M	H	M	H	M	H

An epenthetic M occurs between the two signs. The holds between the movements are shortened and the result is

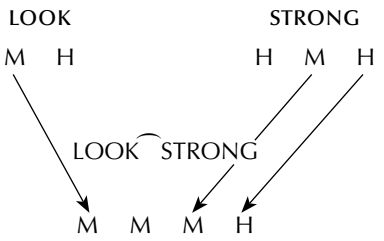


Figure 28. One- and two-handed versions of the compound LOOK⌒STRONG.

Notice that this is the structure of the compound when it is first formed. Another version of the compound consists of H M H, with the index finger touching the nose on the first hold.

3. As we said in the unit on phonological processes, assimilation means that a segment takes on the characteristics of another segment near it, usually the one just before it or after it. Assimilation occurs frequently in ASL compounds. In the compound BELIEVE, the handshape of the sign THINK may change to look more like the handshape of the sign MARRY; in RESEMBLE (LOOK⌒STRONG), the location of the sign STRONG may be closer to the location of the sign LOOK (see Figure 28).

The result of compounding is that a new meaning is created. It may not be possible to predict the meaning of the new sign simply by looking at the two signs that form the compound. For example, the signs THINK and MARRY form the compound BELIEVE, but new signers cannot guess the meaning of the compound and many native signers are surprised to learn the origin of the compound. Likewise, the signs LOOK and STRONG come together to form the sign RESEMBLE, but the meaning of the compound is not obvious simply from the joining of the two signs. Similarly in English, simply knowing the meaning of the words *green* and *house* that form the compound *greenhouse* will not be sufficient to figure out the meaning of the compound.

We see that, as in English, compound formation in ASL is a rule-governed process. ASL has a way of creating new signs by putting together signs that already exist in the language, and when two signs come together to form a compound, predictable and describable changes happen. The following list summarizes the compounding process.

1. First Contact Hold Rule. If the initial sign in the compound has a hold that contacts the body, eliminate everything but that contact hold. For example, in GOOD⌒NIGHT and GOOD⌒ENOUGH, the initial sign (GOOD) has a contact hold at the chin. The rule says to keep that contact hold and eliminate the rest of the sign GOOD. The result is that the first half of the compound now consists of just a contact at the chin.
2. Single Sequence Rule. Do not repeat identical X M H sequences. This applies to the initial or final signs in a compound.

Initial Sign	Final Sign
GIRL in GIRL⌒BABY	ENOUGH in GOOD⌒ENOUGH
BLUE in BLUE⌒SPOT	NAME in SAY⌒NAME
NAME in NAME⌒SHINY	NIGHT in GOOD⌒NIGHT

Exceptions to the rule include TRUE⌒WORK and FORMAL⌒ROOM.

3. Weak Hand Anticipation Rule. If the first sign is one-handed and the second sign is two-handed, the entire sign becomes two-handed. The weak hand from the second sign is present from the very start. For example, in GOOD⌒ENOUGH, the weak hand S handshape of ENOUGH is already in place as GOOD is signed. In BLACK⌒NAME, the weak hand U handshape of NAME is already in place as BLACK is signed, and in THINK⌒MARRY, the weak hand cupped B handshape of MARRY is already in place as THINK is signed.
4. Ordering of Compound Formation Rules:

Example: **BROTHER**

	BOY							SAME						
Citation form	X	M	X	M	X	M	H	X	M	X	M	X	M	H
Application of Morphological Rules														
1. contacting hold rule	X	M	X	M	X	M	H	X	M	X	M	X	M	H
2. single sequence rule					X	M	H					X	M	H
3. weak hand anticipation rule	Add weak hand 1 handshape													

Example: **DISAGREE**

	THINK				OPPOSITE		
Citation form	X	M	H		X	M	H
Application of Morphological Rules							
1. contacting hold rule			H		X	M	H
2. single sequence rule			H		X	M	H
3. weak hand anticipation rule	Add weak hand 1 handshape						
Application of Phonological Rules							
1. movement epenthesis	H	M			X	M	H
2. hold reduction	X	M				M	H

REFERENCES

Liddell, S. K. 1984. THINK and BELIEVE: Sequentiality in American Sign Language signs. *Language* 60: 372–399.

Johnson, R. E., and Liddell, S. K. 2004. Aspects of American Sign Language phonology. Department of Linguistics, Gallaudet University. Typescript.

Homework Assignment 8

1. For each of the English translations of ASL compounds listed below, write down the two signs that come together to form the compound and describe the changes that happen when the two signs come together.

Example: "good night"

	GOOD	NIGHT
Citation form	H M H	X M H M X M H
Application of Morphological Rules		
1. contacting hold rule	H	X M H M X M H
2. single sequence rule	H	X M H
3. weak hand anticipation rule	Add weak hand	
Application of Phonological Rules		
1. movement epenthesis	H M	X M H
2. hold reduction	H M	M H
Result	H M M H	

a. "believe"

b. "wife"

c. "husband"

d. "home"

e. "Bible"

f. "resemble"

g. "mention"

2. List at least four other compounds in which the first sign is either THINK or MIND.

Example: THINK⌒OPPOSITE "to disagree with"

a.

b.

c.

d.

3. Watch "The Snowmobile" on the DVD. Find three compounds used in the story. Write down which two signs form each compound and its English translation.

a.

b.

c.

UNIT 12

Fingerspelling

Fingerspelling

ASL creates new signs in a third way—by representing the symbols of written English with ASL signs. This process is commonly referred to as fingerspelling. We will refer to these signs as fingerspelled signs.

Robbin Battison, an ASL linguist, did the first research on fingerspelling in ASL. He noticed, among many things, that when a written English word is represented with ASL signs, different changes may take place. It is important to notice that what have traditionally been called the "letters" of fingerspelling are ASL signs, each with a segmental structure and a handshape, location, and orientation. It is true that the handshapes of the signs may resemble the written symbol, and it is true that fingerspelling in ASL is the direct result of language contact with English. For example, the handshape of the sign C may look like the written English symbol C, but the sign is a sign and not a letter.

From a morphological perspective, these signs are free morphemes. A signer may produce each morpheme distinctly in what we will call full fingerspelling. This is represented with dashes, as in W-H-A-T. In actual production, however, changes often take place when fingerspelling morphemes are produced in sequence. A number of separate morphemes may begin to act like one single morpheme, like a single sign. This what we refer to as lexicalized fingerspelling, and we use the symbol # to mark it (see Table 5).

Lexicalized Fingerspelling

Many people have noticed that the separate signs of fingerspelling tend to blend together when they are produced in fingerspelled signs. That is, they tend to "become like individual signs." In linguistics, the word *lexicalized* means "like a word," or "word-like," that is, like an independent unit. Examples of lexicalization in English include compounds such as *greenhouse*, *breakfast*, and *Christmas*, which are formed by uniting two separate lexical items that function as one word with a unique meaning. Acronyms such as *NASA* (National Air and Space Administration) and

Table 5. Lexicalized Fingerspelled Signs in ASL

#BANK	#DO
#BACK	#SO
#OFF	#OK
#ON	#KO
#IF	#JOB
#SALE	#YES
#EARLY	#NO
#BUT	#DOG
#BUS	#TOY
#CAR	#FIX
#HA	#WHAT

scuba (self-contained underwater breathing apparatus) are also examples of lexicalization in English. In these cases, a new word is formed by using the first letter of each word in the phrase.

Lexicalization describes the process of fingerspelling because the separate signs do seem to become like one, to be used like other ASL signs, and to follow the rules of ASL signs. For example, Battison noticed that in general, no sign uses more than two handshapes. This means that a sign like #IF or #OR can preserve both signs and still follow the rules of ASL. However, signs like #BACK or #EARLY present problems because they are formed from four and five signs. The result is that while all of the signs are not immediately lost, there is a tendency to reduce the number of signs as they become more like other ASL signs.

There is a difference between full, formal fingerspelling and lexicalized fingerspelling (see Figure 29), but it is easy to see how quickly the process of lexicalization begins. Just think about how you would fingerspell someone's name if you were introducing them for the first time and then how the form of that fingerspelling would change if you used the name over and over again in a conversation. The changes that you observe are examples of lexicalization.

The Lexicalization Process

Eight of the changes that are part of the lexicalization process are described in this section. These changes were first described by Battison (1978).

Some of the Signs May Be Deleted

In the lexicalization of #YES, there is a sign Y and a sign S; there is no sign E. While there are signs in ASL with one handshape or two handshapes in sequence, there are very few signs with more than two handshapes in sequence. However, many fingerspelled signs start out with four or more handshapes (for example, #BACK, #RARE, #SURE, #WHAT, and #EARLY). It seems that fingerspelled signs undergo pressure to conform to the rules of ASL structure. One of these rules seems to be "no more

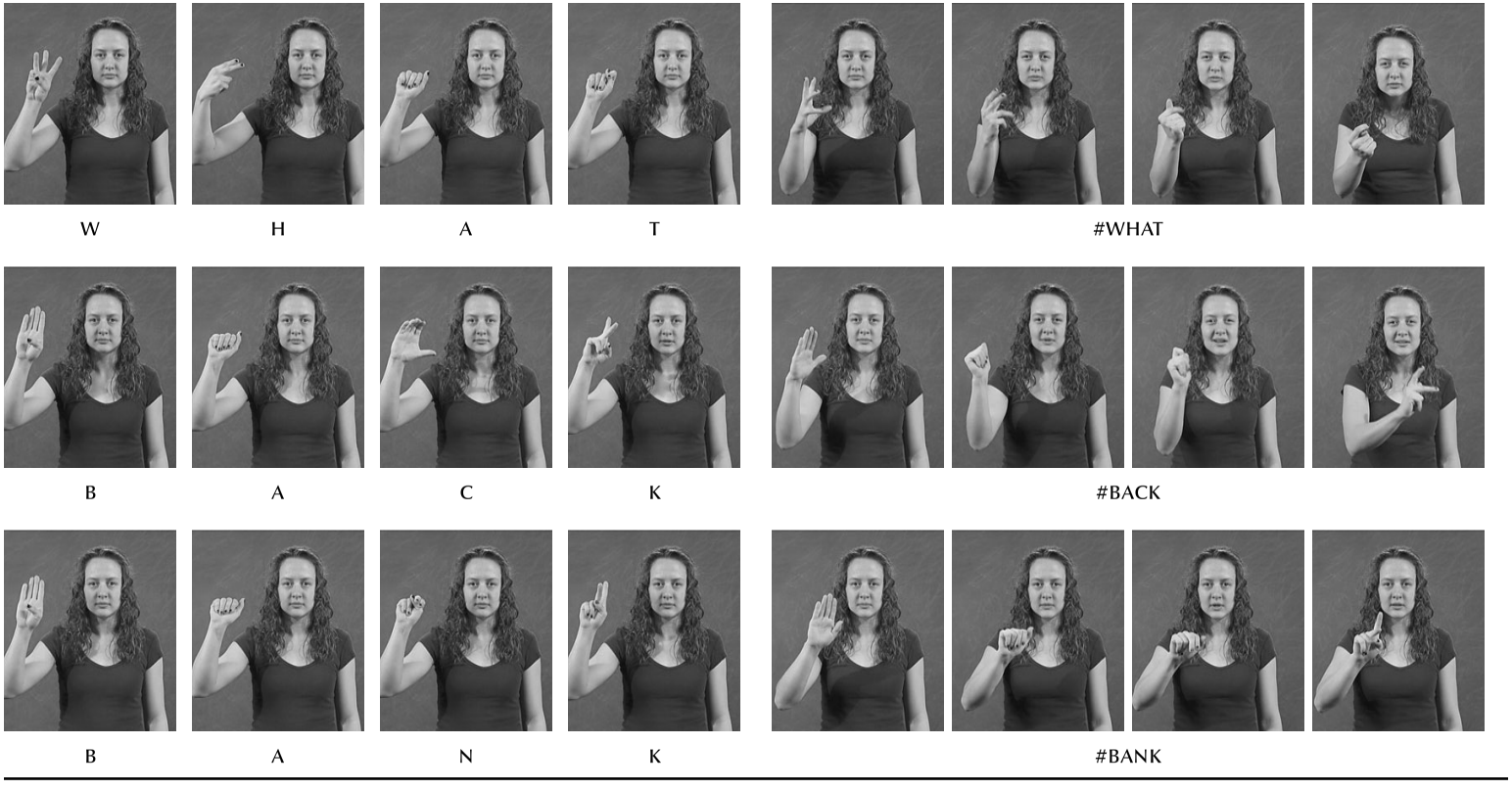


Figure 29. Examples of full and lexicalized fingerspelling.

than two handshapes are allowed in a sign." This may explain why some signs in fingerspelled signs are deleted, as in #BACK.

Another rule seems to govern the acceptable sequence of handshapes in a sign. That is, it seems that some handshapes can only be followed by certain other handshapes. For example, the sequence of handshapes in the sign CHICKEN is from an Open L-like handshape to a closed Flat O-like handshape. This sequence occurs naturally in ASL. A very similar sequence occurs in the lexicalized fingerspelled sign #NO. Compare the fingerspelled letter N in isolation with the initial handshape in the lexicalized fingerspelled sign #NO. The handshape sequence in #NO more closely fits the pattern for handshape sequences in ASL. But sometimes there are exceptions. The sequence of handshapes in the lexicalized fingerspelled sign #JOB is not typical for ASL signs.

The Location May Change

Battison described the usual place for fingerspelling to take place as an area just below and in front of the signer's dominant shoulder. In fact, when names or English words are fingerspelled for the first time, they are often fingerspelled in this area. However, fingerspelling is not restricted to this area; the location can change. For example, if someone is obsessed with food, people can talk about the person in a teasing way by signing #FOOD on the forehead. In addition, we will see many examples in which the location of a fingerspelled sign includes grammatical information concerning the subject or object of a verb.

Handshapes May Change

In the sign #CAR, the C handshape has the thumb extended and involves principally the index and middle fingers, and the R also has the thumb extended. The initial N handshape in the sign #NO has the thumb extended.

Movement May Be Added

Within the Liddell and Johnson framework, a fingerspelled sign begins as individual signs that are symbols for English orthographic symbols. Each sign is basically a hold with a handshape, location, and orientation, and these holds are produced in sequence. When a series of holds are produced in sequence, movements are naturally added in the transition between holds. This is an example of the process of movement epenthesis.

The basic structure of the fingerspelled sign B-A-C-K is as follows:

B-A-C-K

	H	H	H	H
Handshape	B	A	C	K
Location	sh	sh	sh	sh
Orientation	palm out	palm out	palm out	palm out

However, when a signer produces the holds in sequence, movement is naturally added between the holds. The final structure of the lexicalized fingerspelled sign could probably be described as H M H.

The addition of movement also may be accompanied by a change in location. For example, in the sign #YES, the movement includes a dip in the wrist followed by a pulling back of the S sign; the sign #SALE includes a counterclockwise circular movement; the sign #SURE involves a movement forward with the R sign and a movement backward with the E sign.

The Orientation May Change

The palm orientation of a sign may change in a lexicalized fingerspelled English word. For example, in the sign #JOB, the final orientation of the B sign is palm in, the opposite of what it would be if it were signed alone; in the sign #HA, the orientation of the A sign goes from palm out to palm up.

There May Be Reduplication of the Movement

If one were to fingerspell the written word *ha*, there would be a sign H and a sign A. However, there is a sign #HA in which the index and middle fingers move back and forth repeatedly. The repetition of the movement is called reduplication. Other examples include the signs #NO and #DO.

The Second Hand May Be Added

The sign #WHAT may be produced on both hands simultaneously, as may the sign #BACK. Sometimes this is done for stylistic reasons or to show emphasis. Other times it is because the left hand has different meaning from the right hand. This is discussed next.

Grammatical Information May Be Included

The location of the hands while fingerspelling can indicate the relationship between people or places. The location carries meaning and so is grammatical. For example, someone may be talking about a trip they took to a distant location. In the course of the conversation, they may have set up the location of that place in front of them to the right. When it comes time to talk about returning from that location, they may begin the sign #BACK in that location with the palm facing in, move the sign toward them, and complete it near their body. Similarly, a girlfriend and a boyfriend may have a history of breaking up and getting back together. Someone might describe this by signing #BACK simultaneously on the right hand and the left hand with the palms facing each other and the hands moving together, and by then signing #OFF with the hands moving away from each other. Another example is the

sign #NO, which can be signed away from the signer, meaning "I say no to you or to a third person." However, it can also be signed with the palm facing the signer, with the meaning of "You (or someone) say no to me." Here the location and the orientation provide grammatical information about who is the subject and who is the object of the verb. We will discuss this more in the section on verbs.

It is important to realize that lexicalization is a gradual process and that some signs may be more completely lexicalized than others. For example, #NO and #DO have undergone many changes and look like ASL signs, while signs like #BUSY and #EARLY are not as fully lexicalized. Similarly, the sign #MICH, which is a sign in terms of meaning and use (it is clearly used and understood as the name for the state of Michigan), is less lexicalized as it retains four handshapes in a sequence not found in natural ASL signs (see "The Snowmobile" on the DVD).

Acronyms in written language can also be fingerspelled, for example, FBI, CIA, and NAD. Spoken language representations of letters, such as "TV" in spoken English, can also be fingerspelled. Spoken English expressions such as "as soon as possible" or "asap" and "for your information" or "fyi" are signed in ASL, #ASAP and #FYI. And recently, expressions from written electronic communication such as LOL ("laughing out loud") and OMG ("Oh, my God") have entered ASL through fingerspelling.

Three final observations about these signs can be made.

1. Quite often, ASL has both a lexicalized fingerspelled sign and a sign for the same concept. For example, CAR and #CAR, BED and #BED, BUSY and #BUSY.
2. People often produce combinations of lexicalized fingerspelled signs and signs (such as LIFE#STYLE) or choose to fingerspell parts of sentences that could just as well be signed. Some very interesting research has been done on this by Arlene B. Kelly at Gallaudet University.
3. People often use both hands to fingerspell or they may sign with one hand and fingerspell with the other, either at the same time or alternately during a conversation. Again, research on this extremely interesting area is just beginning.

Researchers are also studying the two-handed fingerspelling used by British and Australian signers and the representation of writing systems used by deaf people who are in contact with written Chinese, written Arabic, written Hebrew, written Russian, written Amharic (a language spoken in Ethiopia), and many other written languages. All of these languages have written symbol systems that are very different from written English. Deaf people in contact with all of these written languages have manual ways of representing the written system, in the same way that American deaf people represent the alphabet with signs. For example, signers from countries whose written language contains accents, such as French, may add the accents manually when they fingerspell. In Taiwan Sign Language, deaf people produce signs that represent the characters of written Chinese (Ann, 1998). Like ASL, the structure of these character signs is somewhat different from that of regular Taiwan Sign Language signs.

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Homework Assignment 9

1. Look at the stories on the DVD entitled "A Little Bit at a Time," "Applause for Eyes to See," and "Spelling?" and find four examples of full fingerspelling. List them and explain why you think they occur. Remember that full fingerspelling is represented with dashes: C-A-T.

2. Look at the ASL PAH! stories on the DVD and find four examples of lexicalized fingerspelling. Explain what changes have taken place in terms of the eight changes discussed in this unit: deletion/addition, location, handshape, movement, orientation, reduplication, second hand, and grammatical information. Remember that lexicalized fingerspelling is represented with the pound sign (#): #BANK.

3. Fingerspell your first name and describe the changes that take place when it is fingerspelled over and over, in terms of the eight changes described in this unit.

UNIT 13

Numeral Incorporation

So far in our discussion of ASL morphology, we have looked at how whole signs that already exist are used to derive new signs. We have seen how verbs are used to derive nouns, such as SIT and CHAIR; what changes we expect when two signs come together to form a compound, such as BELIEVE or SISTER; how English orthographic symbols are represented by ASL fingerspelling signs, such as #BACK or #JOB; and how signs from other sign languages are borrowed into ASL, such as ITALY or CHINA. It is important to notice that while the parts of signs may change or disappear as a result of the morphological processes described, the starting point for the processes are free morphemes.

In this unit, we will look at how bound morphemes (that is, meaningful units that cannot occur alone) can combine to create new meanings. Signs are composed of movements and holds, and the information about handshape, location, orientation, and nonmanual signals is contained in bundles of articulatory features that are a part of the movements and holds. For example, the sign WEEK would be represented as follows:

WEEK

Strong Hand	H	M	H
Handshape	1		1
Location	base of hand		tip of fingers
Orientation	palm down		palm down
Nonmanual signal	—		—

However, we know that the concept of *two weeks* or *three weeks* can be expressed in ASL by changing the handshape of this sign. By changing the handshape from a 1 to a 2 or a 3, the number of weeks referred to changes. The location, orientation, and nonmanual signal remain the same. This process in ASL is known as *numeral incorporation* (see Figure 30), and it has been described by Scott Liddell and Robert E. Johnson. We can say that the sign TWO-WEEKS has two meaningful parts (morphemes). One is the part that includes the segmental structure—the holds and

ONE-WEEK TWO-WEEKS THREE-WEEKS

Figure 30. Numeral incorporation in ASL.

the movement—and the location, orientation, and nonmanual signal. It means WEEK. The other meaningful part is the handshape, which has the meaning of a specific number. When the two parts are produced together, the meaning of the sign is "specific number of weeks." A diagram of the two morphemes would look like this:

NUMBER OF WEEKS

	H	M	H
Handshape (varies)			
Location	Base of hand		Tip of hand
Orientation	Palm down		Palm down
Nonmanual signal	—		—

The morphemes in this example are *bound* morphemes, that is, morphemes that must occur with other morphemes. For example, the handshape cannot occur by itself. It must occur within a segmental structure, with a location, an orientation, and possibly a nonmanual signal. Bound morphemes are different from *free* morphemes, which may occur by themselves. For example, the sign LOUSY in ASL (along with many other lexical signs) is a free morpheme. Its individual parts—handshape, location, orientation—do not have independent meaning and are not morphemes, but when they are all put together, the result is one meaningful unit, one morpheme. It is interesting to see the difference between the lexical sign LOUSY and the sign THREE-WEEKS. In LOUSY, the individual parts do not have independent meaning and are not morphemes, but the whole sign is a morpheme. The sign THREE-WEEKS has the same handshape as LOUSY, but in THREE-WEEKS, the handshape does have independent meaning and is a bound morpheme. In other words, the sign THREE-WEEKS is made up of two morphemes. What is interesting is that two signs with the same handshape can have such different linguistic structure.

The process of numeral incorporation is very common in ASL. Usually there is a limit to how high the numbers can go. For example, for most native signers, the handshape for WEEK can be changed from 1 through 9; for numbers 10 and higher

the number is signed separately from the sign WEEK. The same is true for MONTHS, DAYS, DOLLARS, and so forth.

Numeral incorporation in ASL can occur with signs such as WEEK, MONTH, DAY, DOLLAR AMOUNT, PLACE IN A RACE, EXACT TIME, PERIOD OF TIME, and HEIGHT. It is important to notice that many of these signs have a characteristic movement, location, and orientation. For example, DOLLAR AMOUNT is generally signed in the area in front of the dominant shoulder, with a sharp twisting movement resulting in a change of orientation; EXACT TIME usually requires that the index finger of the dominant hand contact the passive wrist before moving outward from the wrist. What is important to understand is that the segmental structure (movements and holds) and the location, orientation, and nonmanual signal of each one does not change. All of those parts consist of one morpheme that communicates the main topic. The handshape does change to indicate the specific quantity being discussed.

Signs for age traditionally have been thought of as examples of numeral incorporation, especially for ages 1 through 9, in which the numeral handshape starts at the chin, with the palm out, and moves out. However, work by Scott Liddell has demonstrated that the sign OLD in these constructions functions more like a prefix and extends beyond ages 1 to 9 to include all ages (for example, OLD-22 and OLD-55). Thus, the handshape change that we see in ages 1 to 9, even though it resembles the numeral incorporation of WEEK or MONTH, is the result of phonological assimilation.

References

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Homework Assignment 10

1. Think about and briefly describe how you would sign the following signs.

Ex.: TIME: Touch passive wrist with active index finger, then move active hand back and forth in neutral space with handshape appropriate to time; 1–10, fine; seems to change for 11 and 12.

a. HEIGHT

b. FIRST, SECOND, THIRD PLACE

c. TV CHANNEL

d. PERIOD OF TIME (e.g., 6–9 p.m.)

e. DOLLAR AMOUNT (e.g., $1, $2)

f. NUMBERS ON A SHIRT

g. SPORTS SCORES (e.g., in racquetball, "I have 9 and you have 11")

2. "The Snowmobile" on the DVD contains three examples of signs involving numbers. Answer the following questions about these signs.

a. The three signs are:

b. What area do the signs refer to (for example, age, time, etc.)?

c. Are the signs examples of numeral incorporation?