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When Is a Classifier No Longer a Classifier?¹

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American Sign Language (ASL) is a predicate classifier language (see McDonald (1982) for arguments, see Allan (1977) for general discussion of types of classifier languages). Each verb in the language is inherently motion/location (M/L) based and has associated with it a classifier. This classifier indicates the object which moves or is located with respect to the relation specified by the verb. For example, in the verb GO the motion string is "TO+AT"² (motion of the hand to proximity with a specific location). The moving element or "lexical theme" of this verb is "vertical g-CL" (the fist with index finger extended) which indicates long thin objects and in the vertical orientation is most frequently taken to refer to human beings. The same M/L string occurs in the verb DRIVE-TO, but the classifier in this case is "3-CL" (index, middle finger and thumb extended) which indicates vehicles. WALK-TO is identical except for a "vertical v-CL" classifier (index and middle finger spread apart in an upside down V shape) indicating person by legs.³ Notice in all three examples the classifier marks the moving element.

All of the above examples involve literal M/L verbs. The relation of the classifier to the interpretation of such verbs tends to be transparent. This transparency becomes less and less obvious the further a given lexical item is extended from the basic M/L class to other semantic classes such as cognition, emotion, perception, etc..⁴ In fact, in many instances, classifiers hold no obvious relation to the verbs with which they co-occur. This is to be expected with any grammaticized system of classification. Anyone familiar with gender systems (which might be considered less robust and diversified variants of classifier systems) will recognize that, although there may be "core" or "prototypical" uses of a given gender marking, there are many peripheral or even unexplainable members of every gender class.

Despite our inability to assign a consistent meaning to certain classifiers, they can continue to function as morphemes in the sense of Aronoff (1976), which rejects the traditional notion of morphemes as "minimal meaningful elements of language" in favor of a less meaning-based characterization. For Aronoff (1976:15) what is essential about a morpheme is "not that it mean, but rather that we be able to recognize it. A morpheme is a phonetic string which can be connected to a linguistic entity outside that string." That linguistic entity could be a constant meaning, the triggering of a phonological rule (as is the case with the latinate stem =mit which triggers softening (t => s: remit-remissory) where the non-latinat "mit" at the end of vomit does not), a phonological rule itself (see Harris (1951) for an

argument that the ablaut rule is a morpheme), or a constant form which consistently serves the same grammatical function (e.g., ASL classifiers which consistently serve as "lexical themes").

When is a classifier no longer a classifier? Or, when does it lose its morpheme status? This is a question which has drawn much attention in the literature on ASL linguistics in the last few years. The general consensus, with which we disagree, is that a classifier only retains this status in so far as it can be tied to a constant form and meaning. This position follows from traditional non-Aronovian assumptions concerning the definition of a morpheme. The claim is that when a classifier's relation to a sign is no longer transparent, when it occurs in a frozen lexical item which has undergone some semantic shift, or when it begins to exhibit some allo-morphic variation; then, a classifier is no longer a classifier but rather simply another phoneme of the language. Newport (1982:465) states the disputed claim as follows:

a limited number of discretely different morphemes can be used in 'mimetic depiction,' each with its own consistent meaning. The handshape of a sign within 'mimetic depiction,' then, is itself a morpheme. (This is not generally the case within the frozen lexicon; for frozen signs, handshape is a phonological parameter with no associated meaning.)

Much attention has been given in the ASL literature to this distinction between a frozen and a productive lexicon (Supalla 1982, Newport 1982, Liddell 1984, Johnson and Liddell 1984, Liddell 1983, Padden 1983). The ASL lexicon is supposedly split into two parts--a productively formed set of M/L verbs (Supalla 1978), and the "frozen" lexicon, consisting of what Newport (1982) characterizes as "single-morpheme signs well standardized among signers, typically listed in standard dictionaries of ASL, learned by adults and children acquiring ASL, borrowed for use in Signed English." The productive portion of the lexicon has been referred to by some as "mimetic depiction" and opinions differ as to whether it is considered to be part of ASL proper. We accept Supalla (1978,1982) which argues that the M/L component of the ASL lexicon is part of ASL proper, with discrete formative elements and systematic word formation rules. However, we will diverge from Supalla's analysis (and the other analyses cited above) in several respects.

Instead of treating the productive and frozen portions of the lexicon as structurally distinct, with independent word formation rules and separate phonologies, we argue that a single set of formational rules characterizes both the M/L forms and the remainder of the lexicon. While the literal M/L forms may be novelly produced by a set of word formation rules, items in the frozen lexicon are related by a parallel set of lexical redundanc

rules.⁵

Frozen lexical items in ASL have been claimed to be monomorphemic, but are better seen as multi-morphemic and non-decomposable. Individual sub-lexical formational units may have morphemic status (much like the latinate stem -mit in remit, commit and emit) without systematically contributing to the meaning of the word as a whole. This is comparable to the behavior of members of a lexical compound, or to the individual words which comprise a syntactic idiom. In fact, the parallel between sub-lexical sign structure and syntactic idioms (phrasal units which in reality behave as a single lexical item: let the cat out of the bag, kick the bucket, keep tabs on, take advantage of, make headway) is striking. Although the individual components of an English idiom like kick the bucket may have individual interpretations, they do not contribute to the meaning of the word as a whole. ASL signs consist of a potentially infinite set of M/L strings (sentential verbs) embedded within M/L strings. These embedded strings, while retaining a recognizable sub-lexical structure, behave as lexical islands which can become restricted in meaning or can stray from their initial literal interpretation to yield a more idiosyncratic and idiomatic interpretation, one which may have no compositional relation to its parts.

Our study focusses on the status of classifiers embedded within frozen signs. We will argue that sublexical "classifiers" inside frozen lexical items do not change their status from "morpheme" to "phoneme." Instead, they continue to function as morphemes (in the sense of Aronoff 1976; a characterization which does not make "consistent meaning" a prerequisite for morphemehood). Much like the words in the English idioms mentioned above, classifiers can often be associated with an interpretation which is plausible internal to the embedded M/L string with which they occur, but which has no relation to the interpretation of the word/sign as a whole. And, even when the relation of a classifier to an embedded M/L string is not transparent, we find evidence of its morphemehood in the fact that it consistently fills the same lexical theme slot with respect to embedded strings and that it patterns with other verbs where the classifier is more obviously serving a classifier role.

We will focus upon a comparison of two signs: cl-CL#PUT-SMALL-OBJECT-INTO-A-CONTAINER and VOTE.⁶ They are representative of the morphological relatedness rampant in the ASL lexicon. Although the glosses of these two signs are dissimilar, the signs themselves prove to be morphologically related. In fact, as we will eventually demonstrate, the first actually appears as an embedded subcomponent of the second. Our focus will be on the function(s) of the classifiers/phonemic handshapes which these two signs share and on the idiomatizing effect of embeddedness.

First, we will evaluate each sign according to Newport's criteria for membership in the frozen lexicon. We will begin with

VOTE which is a prototypical frozen sign. Since our disagreement concerns morpheme status, we will leave aside for the moment what in Newport's terms constitutes a single sign and simply state that she would consider this a single-morpheme sign. Except for the normal amount of regional variation, this sign is well standardized among signers. It appears in standard ASL dictionaries (Stokoe, Casterline and Croneberg (1976 [1965]:266), is learned by both children and adults acquiring ASL, and is borrowed for use in Signed English (See the illustration below from Riekehof (1978:192), a Signed English dictionary. This illustration is identical to the form used by ASL signers and appearing in ASL dictionaries.)

(1) VOTE:



The o-handshape in this ASL sign is identical to the handshape of the classifier indicating containers (o-CL). The configuration of the right hand is identical to the handling classifier indicating the handling of a small thin object (handling th/g-CL). However, these notions of "handling" and "containers" play no literal role in the meaning or use of the sign. For example, one can vote by placing a ballot (handling) in a box (container), but one can also vote by pulling a lever, raising one's hand, or any other number of methods. The sign VOTE can be used for any of these.

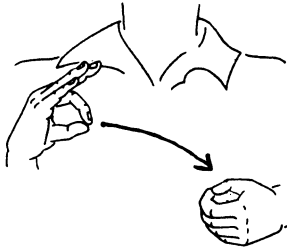
Now consider cl-CL#PUT-SMALL-OBJECT-INTO-CONTAINER. This is a typical candidate for membership in the productive portion of the lexicon. This sign is never listed in standard ASL dictionaries, nor is it borrowed for use in Signed English. Children acquire the rules which allow them to produce such signs but don't seem to master the fine nuances of when to use it and how to inflect it until around nine years of age (Kantor (1977,1982)). Adults learning ASL as a second language frequently mis-use or never acquire this sign. It is clearly not "well standardized among signers." In fact, not even its gloss can be easily agreed upon.

The sign is also highly variable depending upon its use. The choice of the classifier articulated by the left hand is dependent upon properties of the container (its size, shape, etc.). The

choice of the handling classifier articulated by the right hand is dependent upon physical properties of the object being handled-- handling a small object vs. handling a flat non-flexible object vs. handling a cylindrical object, etc.. The proclitic (cl-CL, signed by the left hand) attached to the beginning of the sign indicates that this verb requires the presence of an argument in the syntax which functions as an object of the verb and receives the thematic role Goal. Furthermore, its presence forces the NP in object position to be dislocated to sentence initial position. The proclitic must be co-indexed with (articulated at the same point in space as) its NP antecedent (see Kegl in press a). The sign is productively formed and yet all this information must be available to the user. This explains why even if some version of the sign is learned as a "frozen" sign by a child or adult, it will not be mastered in all of its forms until the ASL syntax and classifier system have been mastered.

Below is an illustration of cl-CL#PUT-SMALL-OBJECT-INTO-A-CONTAINER. As mentioned above, many variations are possible depending upon the context and upon the referents of the classifiers, but for purposes of comparison we have chosen one form of the sign which utilizes the same handshapes as the sign VOTE above.

(2) cl-CL#PUT-SMALL-OBJECT-INTO-CONTAINER:



Contrary to (1), where voting can have little to do with containers or handling, (2) cannot stray in meaning with respect to the interpretation of the classifiers involved. There must be an argument in the sentence which serves as a container. There must be literal handling involved. It is this requirement for literal interpretation that is the hallmark of items in the productive lexicon.

There is no doubt that there are both frozen and productively formed signs in ASL. Furthermore, it is of no surprise that those signs which are most productive come from the class of M/L verbs. But, should we assume from this that there are two (or more) distinct lexicons in the language, with separate word formation rules and separate phonologies? Should what looks like exactly

the same form serve as a morpheme (a classifier) in one lexicon and only as a phoneme (a handshape) in the other? What if, like in the case of the English idioms, these formatives in the "frozen" lexicon have a plausible interpretation or a morphological function internal to the sign which is irrelevant to its meaning as a whole. For example, VOTE seems to have in its sublexical structure the complete sign cl-CL#PUT-SMALL-OBJECT-INTO-CONTAINER. This is a generalization which would be missed if we assume the handshapes and movements internal to VOTE to be nothing more than phonemes. The sign VOTE can be transliterated as "at some person a dropping of a ballot in a box occurred." Furthermore, "dropping a ballot in a box" functions as an idiom for voting. To understand this last point and the argumentation related to it, we need to introduce a notation that reflects the actual sub-lexical structure of these signs rather than relying on mnemonic glosses.

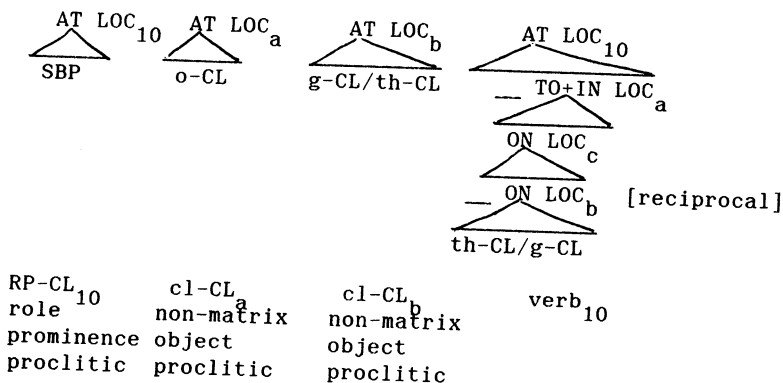
Gee and Kegl (1982a,b) propose a notational system which is referred to as "MOV-LOC notation." This system is revised and explicated in detail in Shepard-Kegl (1985). We will not attempt to introduce the entire system here, but will explain only as much as we need. Basically, this notation represents the ASL sign in terms of movements (FROM, TO), termination relations (AT, IN, ON, WARD), a terminal anchor point (LOC), overt referential indices (i, j, k, ...n) and classifiers (g-CL, o-CL, etc.). Signs have the following set of possible combinations of M/L relations, LOCs, indices and classifiers⁹ (which appear in the lexical theme slot):

LEX.

THEME	LOC	INDEX	TERM.	FROM	TO	TERM.	LOC	INDEX	
X	X	X	X	X	X	X	X	X	source/goal verb
X					X	X	X	X	goal verb
X						X	X	X	stative
X	X	X	X	X					source verb
X	X	X	X						stative opposition
X						X	X		noun

The classifier/lexical theme is the last morpheme added onto a verb stem to make a word. Notice that every sign has a lexical theme. The element in the lexical theme slot can be a simple classifier, a handling classifier, or an entire nominalized sentential verb which consists of a fully formed sign plus its associated object proclitic.¹⁰ We will not focus here on the word formation rules for building up an ASL motion/location verb stem, but rather will focus on the role of the classifiers that occur in embedded nominalized sentential verbs and those that occur inside the proclitics associated with these nominalized sentential verbs.

Let's begin by examining the MOV-LOC representation of the sign for VOTE. The representation appears in (1a) below:

(1a) VOTE

Even with our brief introduction this transcription takes some explaining. First of all, the elements under the triangles are the lexical themes. They are realized concurrent with the M/L string which dominates them. Let's start with the stack of triangles on the left. The bottommost triangle dominates two classifiers: th-CL and g-CL. The first is the "thumb classifier" or "copy classifier." This classifier when it occurs in conjunction with another classifier indicates either itself (thumb) or a copy of the classifier it occurs with. The second classifier is the "long thin object" classifier which can classify anything from a telephone pole to a line of thought. In this case, it classifies the index finger itself. At this point we have just two classifiers which we know will hold a theme relation to the dominating M/L string. They will indicate a physical characteristic of the thing that moves with respect to a verb of motion or is located with respect to a verb of location.

Move up to the next string (___ON LOC_b). At this point we see we have a stative locational ON string. A contacting relation holds between the thumb (th-CL) and what is located at location_b and between the index finger (g-CL) and what is located at location_b. We also have information about what is located at location_b. The line "___" preceding ON LOC_b indicates that an object proclitic has been moved from that_b position. All proclitics gravitate to verb initial position--even from embedded M/L strings frozen within a lexical item. They are interpreted, however, as if they remained in their embedded string. They play no role in the literal interpretation of the verb and have no consequences for the syntax. Their role is to be distinguished from true matrix proclitics which do play a role in the syntax. The proclitic associated with this string is the next sign to the left. Again, in the lexical theme slot, we see g-CL and th-CL--but this time in

the reverse order. Moving up to the dominating string (AT LOC_b) we discover that two relations hold again: g-CL is AT location_b and th-CL is at location_b, simultaneously. If we plug this information back into the bottommost M/L string in the rightmost stack of triangles, we find that th-CL and g-CL are simultaneously serving as both the classifier in an object proclitic (as what is located at the anchor point for the contacting relation) and as the element which is located. Simultaneously the thumb is in contact with the index finger and vice versa. The marking of this string as reciprocal is redundant.

Move up to the next M/L string (ON LOC_c). Everything under the two lower triangles serves as the lexical theme of this locational contact string. Thus, what is at location_c is contacted by means of the index finger and thumb which are in contact with each other. Nothing in the sign tells us what is at location_c, but the classifiers used to contact it indicate that the object handled must be small and thin. The entire structure discussed so far (namely, all the material under the bottom three triangles in the rightmost stack) constitutes a handling classifier. Although handling classifiers are morphologically complex, they are frozen forms and are treated in a wholistic fashion. This whole unit indicates "the handling of a small thin object."

Move up to the next M/L string (___TO+IN LOC_a). Here we have a motional relation (TO) to a goal (LOC_a) which terminates in containment (IN). The element which moves with respect to this motional relation is the entire handling classifier. Thus, the handling of some small thin object moves into what is located at location_a. Again, to find out what is located at location_a, we look for^a the object proclitic co-indexed with location_a which has climbed into pre-verbal position. We find it to be the second of the four stacks of triangles. It tells us that an o-CL (a container classifier) is located at location_a. So, plugging this back into its embedded clause we find we have^a a hand holding some object between its index finger and thumb moving into a container at location_a. None of the locations referred to thus far are actually indexed into the signing space (an area about waist height extending outward horizontally in front of the signer). They are indexed relative to their own embedded M/L strings. Only matrix locations receive a discourse or syntactically relevant referential index.¹¹ As an aid to deciphering the notation, matrix locations are indexed with numbers and embedded locations with letters.

Move up to the topmost M/L string (AT LOC₁₀). Here we have the matrix M/L relation of the verb. It is a locational proximity relation which asserts that the entire event (a clausal lexical theme) indicated in the stack of triangles it dominates occurs at location₁₀. Thus, at location₁₀, a putting of a small thin object into a container occurs. Of course, the entire stack of embedded strings is idiomatized to mean "voting." So, we have "a voting

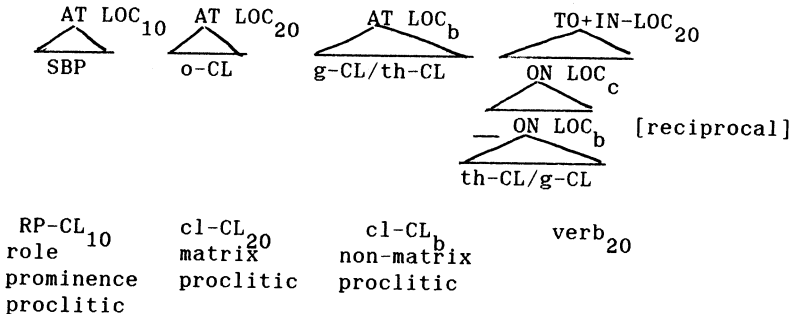
occurred at location₁₀.

Up to now, we have ignored the initial sign in this structure, the one whose bottommost element is SBP. SBP stands for "signer's body position." This is a special classifier which indicates the person who has role prominence with respect to the action of the verb. It serves as the lexical theme of a second proclitic which attaches to the beginning of the verb. This proclitic generally marks subjects, but also frequently gets an ethical dative reading: e.g., "The cup fell off of the table on me" (non-locative reading). The interpretation of this proclitic is role prominence at location₁₀. Plugging this clitic into the verb, we get "a putting of a small thin object into a container occurred at the location of a person associated with location₁₀;" or "person₁₀ voted."¹²

The entire representation in (1a) is traditionally labeled by ASL linguists with the gloss VOTE and has traditionally been described as mono-morphemic. It is the handshapes "o", "g" and "th" which are considered by Newport to be "phonological parameters" and not morphemes, particularly not classifiers. This would also be true of all the sign internal movements and both of the proclitics. This seems hard to reconcile with the fact that she considers the next sign to be totally productive and multi-morphemic. It seems to us a sign can be frozen and still multi-morphemic.

(2a) o-CL#PUT-SMALL-OBJECT-INTO-A-CONTAINER

'to put a small thin object into a container,'
'to put a marble into a cup,' etc.

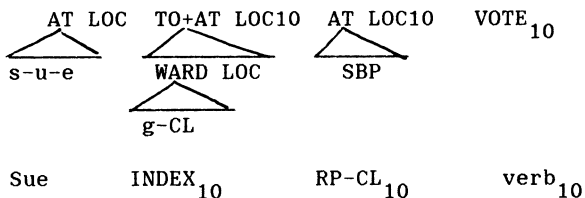


We will leave the deciphering of this representation as an exercise for the reader except to point out the few instances where it differs from the preceding example in (1a). Notice that everything is the same except that TO+IN LOC₂₀ is now a matrix string. It is no longer embedded under the intransitive locational

string AT LOC₁₀. As a result, its associated proclitic (container at location₂₀) is now also a matrix proclitic. As we said earlier, this has consequences for both the interpretation of this sign and for its role in the syntax and discourse. This string is no longer opaque with respect to the syntax. Now the container classifier and the inserting of some object are taken literally. Furthermore, the container classifier and the locative agreement marker on the verb are indexed into the signing space and agree with NP antecedents. This would be impossible were they embedded. The choice of classifier in the object proclitic and the choice of handling classifier are also now more variable and are highly constrained by physical properties of the NP antecedent. One final difference is that the role prominence clitic is no longer co-indexed with the verb. It still retains its subject status, however, because the presence of a handling classifier as the lexical theme of a matrix verb forces construal of some [+human] argument, preferably one with role prominence, as an agent of causation (for details see Kegl (1985)).

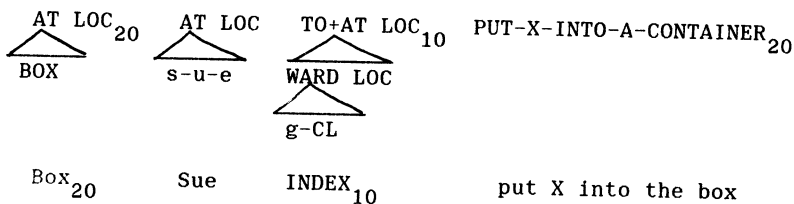
Four examples below illustrate grammatical and ungrammatical uses of VOTE and cl-CL#PUT-SMALL-OBJECT-INTO-A-CONTAINER. In order to save space and keep the transcription simpler, we have substituted an indexed gloss for the signs in question. A full transcription can be had by substituting (1a) and (1b) minus their role prominence proclitics for these glosses. Sentence (3) shows a grammatical use of the intransitive verb VOTE. Notice that it allows only one NP argument.

(3) 'Sue votes.'



Sentence (4) shows a grammatical use of cl-CL#PUT-SMALL-OBJECT-INTO-A-CONTAINER which because of its matrix proclitic requires an additional NP argument corresponding to the container which serves as the goal of the verb.

(4) 'Sue put a small object into a box.'



The next two sentences show the ungrammaticality that results if these two verbs are substituted for one another in these sentence contexts. At this point, all the transcriptions are simplified by glosses. Sentence (5) is bad because cl-CL\#PUT-_{13} $\text{SMALL-OBJECT-IN-CONTAINER}$ occurs with one too few arguments.

(5) 'Sue put a small object into a container.' [no goal NP]

*SUE+INDEX_{12} $\text{PUT-X-INTO-A-CONTAINER}_{20}$

Sentence (6) is ungrammatical because VOTE is intransitive and the sentence has an extra NP argument.

(6) 'Sue voted a box.' [extra argument]

*BOX_{20} , SUE+INDEX_{10} VOTE_{10}

The syntactic behavior of the above verbs in differing sentential contexts demonstrates that embeddedness of a given string makes it opaque with respect to the syntax. We also see that only the topmost M/L string determines the internal arguments a given verb will select for. Such observations can only be made, by the way, if we view signs, both "frozen" and productive, as morphologically complex--not as mono-morphemic.

From the above examples, we have syntactic evidence of this opacity effect which is independent of any evidence from semantic interpretation such as literal *vs.* idiomatized readings. We can then add that the semantic effects further support the opacity of embedded strings.

We also see here a structural account of what it means to be "frozen." This is distinct from the symptoms exhibited by frozen signs. The opacity effects can be attributed as much to the fact that embedded strings become lexical islands as they can to the arbitrary distinctions between frozen and non-frozen signs. However, the fact that a sign is "frozen" does not mean that its sub-lexical morphological structure is eradicated. In the remainder of the paper we would like to discuss two additional pieces of evidence in favor of the morphemehood of sublexical

elements internal to "frozen" signs. The first concerns internal reanalysis of frozen signs and the second concerns recreolization of ASL by Deaf children of non-native Deaf ASL signers who are exposed primarily to data from the "frozen" lexicon. We will mention these issues only briefly, referring the reader to additional sources for further details.

When an ASL sign is "frozen" and begins to acquire a more idiomatized interpretation, it should be a prime candidate for reanalysis. If the sign internal units are realized as phonemes, we should expect a reanalysis which allows a less constrained sequencing of motions, locations and handshapes than we find in productive signing. On the contrary, reanalysis of ASL signs most frequently favors reanalysis of the internal structure of a sign to a form which would be another allowable output from the highly constrained set of word formation rules. Numerous cases of reanalysis are discussed in terms of MOVE-LOC notation in Shepard-Kegl (1985). But, many supportive examples can also be found in Frishberg's (1975) analysis of compounding and historical change in ASL.

A more interesting piece of evidence for the morphological integrity of sub-lexical sign units comes from cases of recreolization. Only 6% of the U.S. deaf population learn ASL from deaf native signing parents. A majority have hearing parents and their earliest communication is "home sign" (Goldin-Meadow (1979), a gestural system which resembles a pidgin in having little internal morphology, with grammatical relations indicated by isolated words in a fairly rigid order. Newport (1982) noted that 1st generation signers go on to learn mostly items from the "frozen lexicon" of ASL because they are primarily exposed to Pidgin Sign English (PSE; a pidgin between hearing and deaf signers.) In this respect they share characteristics with L2 learners of ASL.

The complex morphology and syntax of ASL shows up only in second generation signers. Newport claims that a "complex morphological analysis is performed by second generation signers on an input that does not itself contain this morphology." She argues that the "frozen lexicon" of ASL (also the primary input for second generation signers) contains, as formational entities inconsistently associated with meaning, handshapes and movements which in ASL are morphological components of verbs of motion and location. Second generation signers regularize these associations ending up with productive form-meaning components uncharacteristic of the parent language. The learning process is said to contribute structural characteristics to languages resulting in an output more highly structured than the input.

If we recast Newport's insights concerning ASL recreolization in a morphological framework more consistent with Aronoff (1975) which recognizes that to be a morpheme a unit need not have a consistent association with some meaning; we find that the

recreolization process is triggered by sub-lexical morphological regularities still evident in "frozen signs." The crucial point here is that the signing of children of deaf native signers of ASL is indistinguishable from the signing of children of deaf second language learners of ASL, even though the language of the parents differs greatly--the latter being composed of primarily frozen signs. These children are not just creolizing a pidgin, they are creolizing to a specific language target. A creolization process should leave more degrees of freedom in terms of the language output. What we see here is an instance where the children creolizing the language have access to language specific information unattended to by second language learners. Kegl (forthcoming) argues that it is the sub-lexical structure of M/L strings and their associated proclitics present in the frozen lexical items used by the parents of these children that provides the data with which these children are able to set the parameters for ASL. They can extend regularities in the frozen signs to the morphology and syntax of the language as a whole, and thus acquire the full productive fluency comparable to children of native signers.

This phenomenon seems to indicate that classifiers and motion/location relations internal to frozen signs never really lose their morpheme status, even if they make no contribution to the meaning of the sign. They continue to exhibit morphological regularities which may be accessible for lexical redundancy rules or for contribution to the child's acquisition of grammatical structures. All in all classifiers, despite the effects of lexical freezing, appear able to maintain their classifier status.

FOOTNOTES

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Rather than a complex set of symbols for the transcription of ASL signs or glosses which obscure any formational characteristics they may have, we adopt the notation proposed in Gee and Kegl (1982) which represents simple motion by a set of two glosses. The first specifies whether we have movement to a goal ("TO"; ==>X) or movement from a source ("FROM"; X==>). The second indicates the type of relation held at the anchor point (source or goal) of that movement: "AT" = proximity/location at the anchor point; "ON" =

contact with something located at the anchor point; "IN" = containment within something located at the anchor point; and "WARD" = orientation toward an anchor point.

In reality, the two motions "TO" and "FROM" constitute the same relation "MOVE" (for arguments see Shepard-Kegl (1985)). We retain the TO/FROM distinction to aid reading of our transcriptions. The physical articulation of the movement is invariant at the most abstract level. It is simply motion along a path. However, the details of articulation may vary depending upon co-articulation effects and other effects of context. For example, signs can have multiply embedded and concurrently articulated motion/location strings. The topmost motion/location relation is generally articulated by a whole arm movement involving the shoulder. The same movement more deeply embedded may involve elbow, wrist or even finger movement. With respect to these "phonetic" variations, our notation can be said to be phonemicized. As a result, it is often difficult for the non-signer to reconstruct the exact physical articulation of the sign from its morpho-phonemic transcription. For this we apologize. However, since this is a discussion more within the realm of morphology and syntax, we hope you will bear with us and realize that we are more concerned with making the sub-lexical regularities of signs apparent than we are with providing a narrow phonetic transcription.

³ Structurally, the classifier is prefixed to the beginning of a verb. However, classifiers are handshapes and verb stems are movements and the two do not occur independently of one another. Therefore, like the dependency relation between tones and vowels, we find that handshapes are mapped onto movements. So the surface realization of a sign has the classifier realized concurrent with the movement component of the stem rather than preceding it.

⁴ All signs in the ASL lexicon, whether productive or not, show evidence of being structurally related to a basic M/L class.

⁵ Following Gee and Kegl (1982a,b) and Shepard-Kegl (1985) we will assume that the frozen portion of the ASL lexicon is derived from the M/L component by processes of metaphorical extension from a basic set of M/L forms. These extensions are frequently signalled by association with a body part (head = cognition, eye = vision, mouth = locution, chest = emotion, etc.). Causation is indicated by constructions in which a handling classifier co-occurs with a M/L stem. Kegl (1985) argues that these verbs are comparable to serial verb constructions where causation is marked by the merger of a verb of "manipulation" (handle, hold, take) with a typically unaccusative verb. An analysis of metaphorical extension within the single sub-class of verbs of cognition can be found in Dexter (1982).

⁶ Words in all capitals are glosses for ASL signs. In instances where a single word gloss will not suffice, circumlocutions are indicated by a string of hyphenated English words. Such strings

reflect nothing structural about the ASL sign other than its resistance to a single word translation. Glosses have little relation to the phonological or morphological properties of the signs themselves. They are simply the most frequent English gloss associated with the ASL sign. Glosses reflect no information about the inflectional or derivational characteristics of a sign. They are simply a mnemonic for recognition of a lexical item by signers/sign language researchers. We use them in our discussion in place of the actual transcriptions of the signs for purposes of expediency, particularly to save space and make it easier on readers who are not yet adept at reading ASL transcriptions. As will be seen below, in most cases sole reliance upon glossing will obscure crucial similarities between signs and will generally omit that grammatical information which is most helpful in proceeding with any linguistic argumentation.

This sign usually involves an o-handshape (left hand) set in front of the signer's body and a movement of the right hand, in a configuration with index finger and thumb touching, such that the tips of the thumb and index finger are contained within the aperture of the o-handshape of the left hand. Some signers assimilate the handshape articulated by the the left hand to the handshape articulated by the right hand. Others, according to Supalla (p.c.) use a closed fist instead of an o-handshape on the left hand. There are no instances of this second variation among my language informants.

The proclitic is a word containing the o-classifier for container as its lexical theme. Its behavior is most comparable to the types of clitics found in Romance languages. For details on proclitics and enclitics in ASL see Kegl (in press b). It is a pronominal object clitic which, instead of being specified for gender, indicates some physical characteristic of the non-theme object by means of a classifier. This clitic also absorbs case. Objects receiving the role theme do not have corresponding clitics, but are frequently incorporated into the verb by a process of noun incorporation (Kegl (1985)).

For a near-exhaustive list of ASL classifiers and their properties see Supalla (in press).

This position allows for infinite recursion and thus we get M/L strings within M/L strings. There is no performance restriction on the number of embeddings.

Referential indices in ASL are overtly realized.

The tense here is unmarked. Tense in ASL is marked by an independent time adverbial. Only aspect is marked on the verb.

This sentence is grammatical if an implied NP is assumed. The reading would be "Sue put a small object into some kind of a container."

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