

## ASL VERB MORPHOLOGY

In an earlier description of ASL verbs (Padden, 1988), I identified three classes of verbs on the basis of which affixes may be added to them. The first category of verbs, called "plain verbs," do not inflect for person or number, nor do they take locative affixes. Some have inflections for aspect.<sup>1</sup> Examples include LOVE, CELLBRATE, LIKE, TASTE, THINK, WONDER. A second category, "inflecting verbs," inflect for person, number, and aspect, but do not take locative affixes. Examples are GIVE, SHOW, TELL, ASK, SEND, BAWL-OUT, INFORM, ADVISE, FORCE, PERSUADE. A third class, "spatial verbs," do not inflect for person, number or aspect, but instead have locative affixes. Different subclasses of spatial verbs also add other affixes, including manner and noun-class morphemes. The three classes capture generalizations across verbs that display a particular pattern of morphology exclusively. Inflecting verbs are those that display person and number morphology; spatial verbs are those that display locative morphology.

In a recent paper, Johnson (1987) suggests that the label "inflecting verbs" is misleading because plain verbs also inflect, not for person and number, but for aspect. He suggests that the class be renamed "agreement" verbs to signify their most outstanding feature. His correction keys in on a central point underlying the distinction between classes: verb-agreement morphology appears only in one class of ASL verbs. I concur with this correction and shall henceforth refer to "inflecting verbs" as "agreement" verbs.

*Spatial Verbs*

All spatial verbs have locative affixes, but they fall into one of several subclasses depending on which combination of affixes they display. Supalla (1986, in press) has provided a detailed description of one large subset of spatial verbs, those he calls "verbs of motion and location," or "classifier verbs." In my analysis, which focuses on the presence of commonly shared morphology, the class of spatial verbs is larger than the class of classifier verbs. Spatial verbs include verbs that lack the highly detailed noun-classifier morphemes, but like classifier verbs, have locative morphemes. Except for subclass 1, the subclasses of spatial verbs below are analyzed extensively in Supalla (1986, in press).

- Subclass 1: Predicates that take locative affixes: MOVE, PUT.
- Subclass 2: Predicates that take locative, instrument-classifier, and manner affixes: CARRY-BY-HAND, HOLD-ERASER-BY-HAND.
- Subclass 3: Predicates that take locative, manner, and noun-classifier affixes: VEHICLE-MOVE-IN-STRAIGHT-PATH, PERSON-MOVE, FOUR-LEGGED-ANIMATE-MOVE.
- Subclass 4: Predicates whose locative affixes are on the body: GUN-DIRECTED-TO-TORSO, GUN-DIRECTED-TO-HEAD, HIT-IN-THE-EYE. (Supalla [1986] refers to these as "body-classifier verbs.")
- Subclass 5: Predicates with locative affixes and body-part noun classifiers: OUTSTRETCHED-WINGS, PAWS, CLENCHED-FIST. (Supalla [1986] refers to these as "bodypart classifiers.")

## The Relation Between Space and Grammar in ASL Verb Morphology

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One of the more traditional approaches to analysis of signed languages has been to examine the ways in which modality interacts with language structure (Klima, Bellugi, et al., 1979; Wilbur, 1979; Bellugi and Studdert-Kennedy, 1980). Perhaps the most compelling feature of signed languages, certainly one that has attracted much discussion, is their ability to exploit the visuo-spatial dimension. Unlike oral languages where space is referred to, in sign languages, space is physically available for representation. The space around and on the signer's body is exploited at all levels: formationally similar signs may contrast only in location; verb agreement is marked using spatial position; and discourse topics are distinguished from one another by where the signs are articulated.

The availability of this dimension begs the question of whether it affords signed languages grammatical possibilities that are not otherwise available in oral languages. Given a set or subset of grammatical markers, perhaps sign languages exceed the number within any set found in oral languages. It has been suggested elsewhere that ASL has unusually rich pronominal and agreement distinctions that may not be matched in oral languages (Lacy, 1974; Lillo-Martin and Klima, to appear). Since these distinctions are largely made spatially, perhaps this difference is due to the fact that space is implicit in oral languages, but explicit in signed languages. Alternatively, it is possible that the spatial dimension in signed languages exists only as an epiphenomenon of grammatical structure. Spatial contrasts and distinctions can be accounted for by grammatical features that already exist in the class of natural languages. Drawing on an analysis of verb morphology in ASL, I address the question of whether spatial possibilities of ASL verbs can be predicted from grammatical features. ASL has at least three major verb classes, which differ with respect to which morphemes can be added to them. I show that certain spatial possibilities in these verb classes can be predicted from constraints on verb agreement systems in natural languages. As such, these data show that at least with respect to one domain of verb morphology—agreement—spatial contrasts are predictable from grammatical contrasts needed in grammars of natural languages.

### Agreement Verbs

Agreement verbs are those that contain agreement affixes for person and number of the subject and/or final object (Padden, 1988), but not all verbs mark both. The verbs GIVE, SHOW, SEND, ASK, FORCE, PERSUADE, INFORM inflect for person and number of both the subject and final object. NAB, OPPRESS, CONVINCE inflect for person and number of the final object only.

**Person Agreement.** Traditionally, person agreement in ASL is described as having three forms: first, second, and third. First-person agreement forms are located near the signer's body, second-person in the direction of the addressee, and third, any other location (Padden, 1988). Meier (in press) observes that unlike first-person agreement, which is always located near the signer's body, second- and third-person agreement forms do not have fixed locations. Second-person forms involve eye contact with the addressee while pointing in the direction of the addressee. Third-person pronouns index any other location not involving eye contact with the addressee. Meier argues that since second- and third-person referents are disambiguated largely by eye contact, the conditions are pragmatic, not grammatical. Because the lexicon cannot enter "position of the addressee" as part of the phonological form of the second- and third-person pronoun, there can be no entries in the lexicon for second- and third-person pronouns. Consequently, Meier proposes that person in ASL falls into two categories: first- and non-first-person pronouns. Meier notes that although the lexicon may not have all three person categories, they are semantically distinct in ASL.

Lillo-Martin and Klima (in press) note the same difficulty as Meier and ask what form of the second- or third-person pronoun is to be entered in the lexicon. Further, they note that first-person pronouns have different locations during "role shifting" (discussed below); the body to which the first-person pronoun references shifts from side to side to indicate a change in subject identity. Consequently, a third-person locus under one body shift can become a first-person in another body shift. To handle the complex constraints needed to handle coreference across discourse units, Lillo-Martin and Klima propose no distinction between first- and non-first-person pronouns; instead they enter a single pronoun root in the lexicon, specified for handshape and movement but unspecified for location. The discourse representation component in the grammar interprets the index for coreference.

The proposals of Meier and Lillo-Martin and Klima differ in terms of whether first-person (and by extension, non-first-person) categories are grammatically marked. Meier argues that they are; Lillo-Martin and Klima argue that they are not. The strength of Meier's argument rests on his observation that in ASL there is a set of fixed first-person pronoun forms: I (first-person singular), MY (first-person possessive), WE (first-person plural), OUR (first-person plural possessive).

The form of person agreement markers in ASL is similar to person pronouns: first-person agreement forms are located near the signer's own body and second- and third-person forms are elsewhere. In the absence of a persuasive argument against Meier's observation that first person is marked independently in ASL, I shall assume a contrast between first and other categories of person.

**Number Agreement.** Number agreement in ASL falls into two categories: singular and plural. Plural agreement has a number of subforms, including dual, ("two"), exhaustive ("each"), and multiple ("them") (Klima and Bellugi, 1979).

The form of singular or unmarked number agreement is a single point in neutral space; plural agreement involves displacement, that is, movement away from a single point. Some forms of plural agreement are marked only on the final absolutive: the multiple and one form of the dual plural.<sup>3</sup>

A summary of the morphological differences between the three classes of verbs in ASL appears in table 1.

### Plain Verbs and Agreement Morphology

There are forms of plain verbs that potentially challenge the categorization in table 1; they contain indexical points, as do agreement markers. An example appears in sentence 1 below; the plain verb WANT is articulated twice, once at some specific locus (a, b). Like agreement verbs, the verb does not involve contact with the body, but is articulated in neutral space, using some specific locus. These forms resemble agreement verbs with deleted subject agreement, for example, OWE, CRITICIZE, which lack path movement and are executed at some point in the area around the signer's body (called "neutral space"). Note that sentence 1 is ambiguous, referring to either subject or object. Sentence 2 involves three iterations of WANT, and again is ambiguous as to whether subject or object is marked.

- (1) WOMAN<sub>a</sub> WANT; MAN<sub>b</sub> WANT.<sup>4</sup>  
 'The woman<sub>a</sub> is wanting and the man<sub>b</sub> is wanting, too.'  
 'The woman wants it<sub>a</sub> and the man wants it<sub>b</sub>.'
- (2) WOMAN<sub>a</sub> WANT<sub>a</sub> WANT<sub>b</sub> WANT<sub>c</sub> WANT.  
 'The women<sub>a,b,c</sub> are each wanting.'  
 'The woman wants this<sub>a</sub>, that<sub>b</sub>, and that one<sub>c</sub>, too.'

Instead of expanding the class of agreement verbs to include some plain verbs, I demonstrate below that these forms in question do not contain agreement morphology, despite their surface similarity to agreement verbs; instead, the correct analysis is that they contain pronoun clitics.

### THE ARGUMENT FOR PRONOUN CLITICS

All verbs containing pronoun clitics can also appear with overt pronouns. In sentences 3 and 4 the citation form of WANT is executed by the strong hand (S), and the

Table 1. Morphology of Verb Classes in ASL.

	Plain	Agreement	Spatial
Morphology			
person	no	yes	no
number	no	yes	no
locative	no	no	yes
noun classifier	no	no	yes
instrument classifier	no	no	yes

pronouns by the weak hand (W). Sentences 3 and 4, too, are ambiguous as to whether subject or object is marked. For each indexical point, there is a separate iteration of the sign WANT.

(3) S: WOMAN WANT; MAN WANT.

W: <sub>a</sub>PRO <sub>b</sub>PRO

'The woman<sub>i</sub> is wanting and the man<sub>j</sub> is wanting, too.'

'The woman wants it<sub>i</sub> and the man wants it<sub>j</sub>.'

(4) S: WOMAN WANT WANT WANT.

W: <sub>a</sub>PRO <sub>b</sub>PRO <sub>c</sub>PRO

'The women<sub>i,j,k</sub> are each wanting.'

'The woman wants this<sub>i</sub>, that<sub>j</sub> and that one<sub>k</sub>, too.'

The key, crucial fact about these structures is that they are not restricted to plain verbs but can also be found in nouns and adjectives, as in sentences 5 through 8. Like plain verbs, they appear in plain, citation form.

(5) S: I SEE DOG DOG DOG.

W: <sub>a</sub>PRO <sub>b</sub>PRO <sub>c</sub>PRO

'I saw a dog here, there and there, too.'

(6) I SEE DOG DOG DOG.

'I saw a dog here, there and there, too.'

(7) S: HAVE CAR LINE-OF BLUE BLUE BLUE.

W: <sub>a</sub>PRO <sub>b</sub>PRO <sub>c</sub>PRO

'There's a line of blue cars.'

(8) HAVE CAR LINE-OF BLUE BLUE BLUE.

'There's a line of blue cars.'

The distribution of these pronoun clitics mirrors that proposed for simple clitics in Zwicky and Pullum's (1983) analysis of the English 'n't' affix. Relevant for the present discussion is their observation that clitics 'exhibit a low degree of selection with respect to their hosts while affixes exhibit a high degree of selection with respect to their stems.'<sup>4</sup> Inflectional affixes are restricted to a single grammatical category, for example, the English plural '-s' is confined to nouns, the past tense '-ed' to verbs. Clitics, in contrast, can appear across categories, for example, the English "'ve" contraction can be attached to verbs, prepositions, or nouns. Sentences 1, 2, 6, and 8 demonstrate that the mutable forms are not selective as to grammatical category and can appear without semantic restriction.

There is, however, one restriction on forms with pronoun clitics, a strictly phonological one. Pronoun clitics cannot attach to 'body-anchored' signs, or signs that involve contact with the body (sentences 9 and 10). Examples of such signs are: HAVE, HUNGRY, CAT, MOUSE, CHINESE, SUSPICIOUS, LIVE, etc. With body-anchored signs, only sentence 9 is a possible structure.

(9) S: WOMAN HAVE; MAN HAVE.

W: <sub>a</sub>PRO <sub>b</sub>PRO

'The woman has it and the man does, too.'

(10) \*WOMAN HAVE; MAN HAVE.

'The woman has it and the man does, too.'

The restriction on signs like HAVE, again, is not selective; it can apply across grammatical categories to any form having a certain phonological shape. The noun CAT is likewise a body-anchored sign, and it disallows dislocation to neutral space, but it can be accompanied by simultaneous pronouns. This restriction is similar to the one found in the English "'-d" contraction for "would/had"; the contraction appears only with forms ending in a vowel.

There are structures where agreement verbs are accompanied by simultaneous pronouns. However, the verbs cannot appear in an uninflected or citation form; agreement is obligatory as shown in sentence 12. Furthermore, unlike clitics in sentences 1 through 4, there is no unambiguous interpretation of the agreement marker.

(11) \*S: WOMAN GIVE GIVE GIVE.

W: <sub>a</sub>PRO <sub>b</sub>PRO <sub>c</sub>PRO

'The woman gave it to her, him and her, too.'

(12) S: WOMAN GIVE<sub>a</sub> GIVE<sub>b</sub> GIVE<sub>c</sub>.

W: <sub>a</sub>PRO <sub>b</sub>PRO <sub>c</sub>PRO

'The woman gave it to her<sub>i</sub>, him<sub>j</sub> and her<sub>k</sub>, too.'

In conclusion, the apparent similarities between pronoun clitics and agreement affixes are misleading. The special mutability allowed in forms such as sentences 1, 2, 6, and 8 are best represented in terms of pronoun clitics, not as agreement, thus preserving the generalization that person and number affixes are highly restricted, appearing only with verbs, and that plain verbs in ASL lack agreement morphology.

#### AGREEMENT VERBS AND SPATIAL VERBS

Having determined that there is only one class of verbs in ASL that displays agreement morphology, the question now is how the spatial possibilities of these verbs differ from spatial verbs, which contain not agreement, but locative morphemes. There are two relevant facts about agreement verbs: first, agreement morphology cannot co-occur (following Supalla [1986] and Liddell [1984], cannot be arranged simultaneously, or vertically) with locative, manner, instrument, or nominal morphemes. Unlike spatial verbs, where rich combinations of simultaneously occurring locative, nominal, instrument and manner affixes are possible, agreement affixes are exclusive of these affixes.<sup>5</sup>

Second, agreement verbs and spatial verbs use the space in front of the signer's body in very different ways. Agreement verbs have certain spatial restrictions that do not apply to spatial verbs; the spatial possibilities of agreement verbs are far more constrained. This second fact, I later argue, follows from properties of verb agreement morphology in natural languages.

#### THE SPECIAL CONSTRAINTS OF PERSON AGREEMENT

There are a number of pairs of verbs that are phonologically similar, even identical, and contrast only in morphology. The similarity between pairs like these led earlier

investigators of ASL verb structure such as Friedman (1975) to propose a single category "directional verbs" for all verbs that involve a path movement from one location to another. But the similarity based on path movement is misleading. For example, compare GIVE, an agreement verb, and CARRY-BY-HAND, a spatial verb. Although their forms are identical, their morphologies are distinct.

- (13)  $\text{I GIVE}_n$   
 'I give you.'  
 (14)  $\text{I CARRY-BY-HAND}_b$   
 'I carried it from here to there.'

In sentence 13, the first segment of the verb involves a location near the signer's body, likewise in sentence 14. However, in 13 at the first position (1) is a person-agreement morpheme; in 14, it is a locative morpheme (2). First-person agreement forms can phonetically vary from any location near the signer's chin, down to the upper torso, and to the middle torso. However, each of these same locations are distinctive for the class of locative morphemes in ASL. In sentence 15 below, the first segment is a locative morpheme whose location is near the signer's chin. Sentences 16 and 17 reveal contrastive meanings.

- (15)  $\text{I CARRY-BY-HAND}_d$   
 'I took the paper I had near my chin and carried it there.'  
 (16)  $\text{I CARRY-BY-HAND}_d$   
 'I took the paper I had near my chest and carried it there.'  
 (17)  $\text{I CARRY-BY-HAND}_d$   
 'I took the paper I had near the lower part of my body and carried it there.'

Likewise, compare the agreement verb CATCH and the spatial verb CATCH-BY-HANDS. The form of the agreement verb does not vary according to scale or identity, as sentences 18 and 19 show.

- (18) POLICE CATCH<sub>a</sub> MAN, BIG-SHOULDERED.  
 'The police arrested a large man.'  
 (19) POLICE CATCH<sub>a</sub> WOMAN, THIN.  
 'The police arrested a slender woman.'

But the spatial verb, CATCH-BY-HANDS, with the instrument classifier: -BY-HANDS varies in scale and location depending on features of the object.

- (20) POLICE CATCH-BY-HANDS MAN BIG-SHOULDERED.  
 'The police grabbed hold of a big-shouldered man.'  
 (21) POLICE CATCH-BY-HANDS WOMAN, THIN.  
 'The police grabbed hold of a slender woman.'  
 (22) POLICE CATCH-BY-HANDS-NEAR-WAIST.  
 'The police grabbed him at the waist.'  
 (23) POLICE CATCH-BY-HANDS-NEAR-HEAD.  
 'The police grabbed him at the throat.'

The spatial contrast between person agreement and locative morphology can be characterized in this way: the phonetic representation of location in person agreement involves reference to vectors, not specific points. First-person agreement involves a vector located toward the upper center of the signer's body. Non-first-person agreement likewise involves general direction of movement away from the signer's body. Locative morphemes, in contrast, access specific locations.

Up to this point, the terms "person agreement," "index," and "spatial location" have been used to reference a spatial location on or around the signer's body. A careful distinction among the three will make clearer the special nature of person agreement. A "spatial location" is any physical point on or around the signer's body. It is neutral with respect to agreement or pronoun morphology. An "index" is referential; it exists in contradistinction to some other index. Person morphemes simply distinguish between first- and non-first-person. First person occupies a vector near the signer's body; non-first, vectors apart from the signer's body.

### THE SPECIAL CONSTRAINTS OF NUMBER AGREEMENT

Another instructive way to compare the spatial possibilities of agreement morphology and locative morphology is with number inflections. Compare below GIVE, an agreement verb and PUT, a spatial verb. GIVE is inflected for the plural, exhaustive number agreement, and there is a phonologically similar form with PUT. In sentences 24 and 25 below, the movement of the verb forms is nearly identical. Both GIVE and PUT involve three iterations, each evenly spaced with respect to the other.

- (24)  $\text{I GIVE}_{d_1}$ , exhaust.  
 'I gave one to each of them.'  
 (25)  $\text{I PUT}_{d_1}$ ,  $\text{PUT}_{d_2}$ ,  $\text{PUT}_{d_3}$ .  
 'I put one in each of those places.'

Contrast sentence 25 with sentence 26, where the distance between the end points is variable. The distance between the first two points is shorter than between the second and the third. The meaning is entirely different:

- (26)  $\text{PUT}_{d_1}$ ,  $\text{PUT}_{d_2}$ ,  $\text{PUT}_{d_3}$ .  
 'I put one here; I put one at close distance to the first, and I put a third item at some distance from the other two.'

There is no comparable contrast with GIVE. A form of GIVE that is phonetically similar to sentence 26 would have no change in meaning. It would be within the range of permissible phonetic variation for exhaustive agreement. Its phonetic form can vary from three locations evenly spaced apart or three locations of variable distance from each other. The spatial verb PUT does not inflect for plural agreement; instead, the nearly identical form is actually made up of three distinct verb phrases ('I put one here; I put one there; and I put one over there'), each one with a different locative morpheme. Sentence 24 contains a single verb phrase; sentences 25 and 26 contain three VPs each.

Compare also GIVE in sentence 27, where the final object is marked for reciprocal agreement (a type of dual agreement of the subject and final object), and the forms of PUT in sentences 28 and 29. Reciprocal agreement has one of two possible forms: in one, the two hands cross and terminate at the other's beginning point; in the other, the end point of the two hands' path movements is adjacent. There is no contrast in meaning. However, this same phonetic variation is contrastive with PUT.

- (27)  ${}_{+B}$ GIVE $_{-A}$ .  
'They gave each other something.'

- (28)  ${}_{A}$ PUT $_{B}$ ;  ${}_{B}$ PUT $_{A}$ .  
'I put one in each other's places.'

- (29)  ${}_{A}$ PUT $_{B}$ ;  ${}_{B}$ PUT $_{A}$ .  
'I put the two of them next to each other.'

These examples demonstrate that while the phonological forms of plural agreement may be similar to a series of spatial verbs, each with locative morphemes, their morphologies are not at all identical. Number-agreement morphemes in ASL are complex and numerous but all involve fixed trajectories of movement. The reciprocal number-agreement form, for example, can vary in possible end positions, where the hands are near each other, or in each other's places. Locative morphemes, in contrast, are drawn from a rich class of forms, each varying finely one from the other in range of possible locations. Consequently, what is phonetic variation for number agreement is distinctive for locative morphology.

It appears that number agreement can be accompanied by pronoun clitics. In sentence 30 below, there are two iterations of GIVE, each inflected for exhaustive plural. The two inflected forms of GIVE are articulated in different locations, one in location marked (a), and the other marked (b). The first plural refers to one group, and the second to a second, distinct group.

- (30) C-O  ${}_{a}$ GIVE $_{a}$ ;  ${}_{b}$ GIVE $_{b}$ ; FINISH  ${}_{a}$ GIVE $_{a}$ ;  ${}_{b}$ GIVE $_{b}$ .  
'The company gave one to everyone in that group, and one to everyone in the other group.'

Instead of entering each possible form of a particular number inflection in the lexicon, a reasonable solution would be to isolate the indexical element, which is then interpreted elsewhere in the grammar. The result is a set of number-agreement morphemes that are constrained in movement and spatial range, capturing, as with person morphemes, the generalization that verb-agreement morphemes are constrained in an unusual way. A fuller discussion of how agreement morphemes and clitics are combined is left for a future paper.

In summary, agreement morphology is distinguished by spatial constraints of a particular kind. Like locative morphology, agreement morphology exploits the space around the signer's body, but the spatial possibilities are much more limited. In particular, agreement morphology accesses broader chunks of space. Non-first person contrasts with first person, but the individual person morpheme has the form of a vector. Although person and locative morphemes in ASL are remarkably similar, a

closer analysis shows that these similarities are superficial, masking deeper morphological differences.

## AGREEMENT SYSTEMS IN NATURAL LANGUAGES

The preceding sections show that a distinction can be drawn about the different ways that agreement and locative morphology exploit the space around the signer's body: agreement morphology uses vectors, but locative morphology draws from a much richer inventory of loci. The crucial point here is that this distinction is not accidental but follows from properties of natural-language agreement systems. Specifically, the special restrictions on ASL verb morphology can be accounted for by more general restrictions on verb agreement in natural languages.

Verb agreement constitutes a subset of agreement structures. Other types of agreement include agreement of quantifiers, modifiers, determiners, and anaphoric pronouns with nouns in gender, number, person, case, and definiteness (Moravcsik, 1978). Moravcsik defines agreement broadly as "a grammatical constituent A is said to agree with a grammatical constituent B in properties C in language L if C is a set of meaning-related properties of A and there is a co-variance relationship between C and some phonological properties of a constituent B<sub>i</sub> across some subset of the sentences of language L, where constituent B<sub>i</sub> is adjacent to constituent B and the only meaning-related noncategorical properties of constituent B<sub>i</sub> are the properties C." (1978, 333). Moravcsik further specifies that among the class of structures that are excluded from "agreement" are the set of semantic/selectional restrictions that apply to specific lexical items, for example, *pour* in English. Although *pour* requires that there be an appropriate receptacle, the two do not "agree." There must be a "grammatical or semantic syntagmatic relation" between two sets of lexical items, a fact absent from this particular example—the verb *pour* does not contain a marker from a category of agreement forms, nor does it appear in a class of lexical items which vary in the same way.

In natural languages, verb agreement has three traditional categories: person, number, and gender. As the previous section demonstrates, ASL marks person and number agreement, but does not mark gender. There are, however, other sign languages that do, for example, Taiwanese Sign Language (Smith, in press).

What is crucial for the facts about agreement morphology in ASL is a central claim about verb agreement morphology in natural languages: the possible categories are made up of a very small number of elements, specifically no more than three, sometimes only two. Number agreement is typically characterized in terms of two categories: singular and plural. There have been proposals for a third category: paucal (more than one but less than many). Person agreement is first, second, and third. Gender is masculine, feminine, and neuter.

There have been reports of languages that counter this claim, as in a proposal for fifteen gender classes in Serbo-Croatian argued against by Corbett (in press). Corbett argues that the "maximalist" proposal, or one that posits more than the traditional three genders, can be reanalyzed positing only three genders. In the case of Serbo-Croatian, the gender system can be analyzed as made up of three "controller" genders: masculine, feminine, and neuter, with two subgenders in the mas-

culine—animate and inanimate. Subgenders are predictable morphological variations for the same gender class, usually for noun class such as animacy. Corbett concludes that in cases where upward of four, eight, or fifteen genders are proposed for a single language, a reanalysis can usually be carried out reducing the number to no more than three genders.

It appears that number and person are likewise constrained to a small number of contrastive categories. Moravcsik (1978), in her review of number agreement across languages and across language families, has argued that there are basically two number-agreement forms: singular and plural, with several subdivisions within the plural category: dual, trial, plural of paucity, and plural of abundance. And Greenberg (1966) has proposed a universal stating that all languages distinguish, at least semantically, between three person categories.

### VERB AGREEMENT IN NATURAL LANGUAGES AND ASL VERBS

Corbett's careful reanalysis of various gender systems points to the common confounding in oral languages between gender and noun class (for example, animacy). Based on claims by Friedman (1975) and others, what seems to be common in analyses of signed languages has been uncertain distinctions between person agreement and locative morphology because their phonological forms are so similar. But as Corbett, Moravcsik, and Greenberg argue, what distinguishes verb agreement morphology from other types of morphology is the small number of possible markers within each agreement category.

The outstanding property of agreement systems appears to be their contrastive properties. Each category has at most a three-way contrast, sometimes only two. If we take this to be a basic definition of agreement, then the spatial restrictions of agreement morphology in ASL can be accounted for in an interesting way. If we translate the fact about the three-way contrast of agreement systems into spatial terms, it follows that person-agreement morphology as in <sup>1</sup>GIVE<sub>a</sub> use a vector space, in contrast to locative morphology in verbs like <sub>a</sub>CARRY-BY-HAND<sub>b</sub>, which use a three-dimensional space. Number agreement, likewise, involves trajectories in a certain direction, but locative morphology can appear at any point along each of the three dimensions.

Agreement verbs in ASL as a whole restrict spatial possibilities compared to spatial verbs. What this special example from ASL demonstrates is that the sharp distinction in spatial possibilities between the two classes of verbs is not merely a fact about two different verb classes in ASL, but can be seen in terms of contrastive possibilities in verb-agreement morphology.

### "ROLE-SHIFTING" AND LOCATIVE MORPHOLOGY IN ASL

The preceding sections demonstrate that the apparently limitless spatial possibilities of ASL verbs are actually quite constrained and the constraints can be characterized in terms of universal restrictions on verb-agreement morphology in natural languages.

There is another set of structures in ASL that seems to have limitless spatial possibilities; these structures fall into the category of what has been generally referred to as "role-shifting," structures in which the body shifts out of an unmarked position into some other location, either to the side or slightly forward. But, as will be shown, even these structures can be accounted for by a more general characterization of morphology in natural languages.

The term "role-shifting" is an unfortunate one because it suggests that the structures are accounted for in terms of play-acting or role-changing principles. It also suggests a global description for what are most certainly several different structures (Padden, 1986). One common role-shifting structure is the type that resembles "direct quotation" or "reported speech" in English (Parlee, 1973). Shown below in sentences 31 and 32, direct quotation in ASL involves a shift to one side followed by another sequence where the body is shifted to an opposite position. These positions can be from side to side as in sentence 31 or from front to back, as in sentence 32. All involve certain facial features marking signing intonation, similar to speaker intonation, which Parlee identified as distinctive about direct quotation. Signing intonation is accompanied by various signing cues, which not only mark question formation but also mimic actual signing behavior such as eye contact, head nodding, and squeezed eyebrows requesting confirmation.

(31) WOMAN SAY [I GIVE-YOU NEXT-WEEK]<sub>1</sub> (body shift) I [NO, GIVE-ME TOMORROW.]  
 'The woman said, "I'll give it to you next week."  
 'I replied, "No, give it to me tomorrow."  
 -----raised brows-----

(32) [YOU WORK NOW?]<sub>1</sub> (body shift) [NO, NOT WORK.]  
 'Are you working?'  
 'No, I'm not working.'  
 -----shake head-----

The conditions that govern body shifting in the above structures are stated in terms of discourse topics, speaker perspective, etc. No constraints need be stated in terms of verb class. But there is another set of role-shifting structures that are constrained in a different way. These also involve body shifting but are not direct quotation. In each of the verb pairs in sentences 33 through 35 below, the verbs are spatial verbs: the first a body classifier (the body holding the gun, the body with the syringe, the body yielding a closed fist), followed by another classifier verb involving contact with the body: GUN-HELD-BY-HAND-TO-HEAD, SYRINGE-INJECTED-IN-REAR, FIST-GRAZES-CHEEK. The body shift appears between the two verbs.

(33) MAN [GUN-IN-HAND]<sub>1</sub> (body shift) [GUN-HELD-BY-HAND-TO-HEAD.]  
 'The man held a gun to another's head.'

(34) NURSE [INJECTS-SYRINGE-IN-HAND]<sub>1</sub> (body shift) [SYRINGE-INJECTED-IN-REAR.]  
 'The nurse gave him a shot in the buttocks.'

(35) MAN [SWINGS-FISTI]<sub>1</sub> (body shift) [FIST-GRAZES-CHEEK.]  
 'The man swung at his cheek.'

The role-shifting structures in sentences 33 through 35 involve "shifting locative grids." A locative grid, first defined by Supalla (1987), is a set of interconnected locative points. Locative grids are located on or around the signer's body. When the body is a locative grid, each point on the body is a location, connected in scale to some other point on the body. To specify locations other than those on one locative grid, a body shift is needed.

Two restrictions apply to body/locative grids (Supalla, 1986): (1) The body is to scale. Any body classifier involving contact or proximity with the body follows its actual scale. (2) There is exactly one body per body classifier. What follows from the above restrictions is that the body cannot be used for more than one locative grid. Sentence 36 has only one possible meaning: there is a single head, attached to the same hand that is holding a gun, and there is another gun held by another person and held to the same head.

(36) MAN [GUN-IN-HAND]: [GUN-HELD-BY-HAND-AT-RIGHT-TEMPLE].

\*The man, held a gun and a gun was held to his, head.\*

\*The man, held a gun and a gun was held to his, head.\*

However, if there is a body shift between the two verbs, the unacceptable meaning in sentence 37 becomes possible:

(37) MAN [GUN-IN-HAND]: (body shift) [GUN-HELD-BY-HAND-AT-RIGHT-TEMPLE].

\*The man, held a gun and a gun was held to his, head.\*

\*The man, held a gun and a gun was held to his, head.\*

Using locative morphemes, signers can access not only a single three-dimensional space, but also additional related spaces that are connected by rules of anaphora. In structures such as sentences 33, 34, 35, and 37, there are complex spatial verbs with locative morphemes of different locative grids. Agreement morphology, in contrast, disallows these kinds of shifts. A structure comparable to sentence 37 but with agreement verbs results in "odd" structures that consultants say are "pointless" like sentence 38 because agreement morphology does not have the same kind of combinatory or grid "chaining" possibilities as does locative morphology.

(38) MAN [GIFT]<sub>i</sub>: (body shift) [GIFT]<sub>j</sub>.

\*The man gave it to her; someone gave it to her.\*

If space indeed were to offer limitless possibilities in ASL, then structures like sentence 38 should be permissible; as it turns out, only locative morphology allows these special kinds of body-shifting structures.

## CONCLUSION

The spatial possibilities in sign languages lend themselves in interesting ways to the question of how modality interacts with language structure. The case of agreement morphology in ASL offers one piece of evidence showing that at least with respect

to verb morphology in ASL, the spatial possibilities are shaped by restrictions on verb-agreement morphology in natural languages. Spatial verbs exhibit morphology that has locations along any number of three-dimensional spaces; agreement morphology, in contrast, is highly constrained. Agreement morphemes use a space composed of vectors and fixed trajectories of movement. Locative morphology exploits a richer set of locations, and new sets are available through body shifting. This spatial restriction is consistent with properties proposed for verb agreement in general: they are made up of a very small number of elements, either two or three, and are categorical and contrastive rather than detailed.

These data reveal another observation about the dimension of "space" in ASL. It has been observed elsewhere (Klima and Bellugi, 1979) that the space around the signer's body has different dimensions at each level of analysis, from phonological space (phonemically contrastive locations), morphological space (agreement morphology) to syntactic and discourse space (indexing and anaphora). What these data illustrate is that even within a single grammatical class—verbs in ASL—space takes contrastive forms, from the rich detailed space found in spatial verbs to the sparse and categorical space found in agreement verbs. Further, it demonstrates that rich body-shifting possibilities are in fact limited to a certain set of structures. Agreement verbs fail to access these structures.

Finally, there remains one set of elements that exploit the spatial dimension and appear to do so in a way unmatched in oral languages: the indexic segments. The challenge to those constructing a grammar of ASL will be to account for these segments in a principled way.

## NOTES

- This paper took fuller shape following its first presentation at the Second International Conference on Theoretical Aspects of Sign Language Research. I owe thanks to Freda Norman and Cindy O'Grady, who helped me to refine the distinctions between verb classes, and to Diane Lillo-Martin, David Perlmutter, and Karen van Hoek for additional discussions. They may still disagree with certain points in this paper.
- There are semantic restrictions: HAVE cannot take aspect, but CRY can inflect for habitual, continuative, and other temporal markers.
- A potential problem for Lillo-Martin and Klima, one that they recognize, is that Lyons (1977) has argued that all natural languages grammatically mark the distinction between first and non-first persons.
- Dual agreement has one of two forms: a one-handed form with a displaced path movement and two end points; or a two-handed form, each hand's path movement executed either simultaneously or in sequence. The first form is possible only on the final absolutive. The second form is possible for both subjects and final direct objects. I am not sure if the second form is indeed an inflection; if so, it would be an exception to the final absolutive rule.
- Notation of first person in sign glosses is by the subscript "1" all other person categories will be marked by the letters "a, b, c, . . ." Same person is marked by identical subscripts. Identity is marked by the subscripts "i, j, k, . . ." In structures where the two hands are used to execute signs simultaneously, glosses appearing on a line preceded by "S" indicate that the signs are articulated with the strong hand, the right hand for a right-handed person, and the left for a left-handed person. The following line, preceded by "W" represents signs articulated on the weak hand, or the nondominant hand, that is, the left hand for a right-hander, etc.
- Agreement morphology interacts with aspectual morphology but this interaction is not relevant for the purposes of this paper.

## REFERENCES

- Bellugi, U., and Studdert-Kennedy, M., eds. (1980). *Signed and spoken language: Biological constraints on linguistic form*. Weinheim: Verlag Chemie.
- Corbett, G. (in press). An approach to the description of gender systems. In *Studies in syntax and universals of language*, edited by M. Atkinson et al. Oxford: Oxford University Press.
- Greenberg, J. (1966). Language universals. In *Current trends in linguistics*, vol. 3, edited by T. Sebeok, 61-112. The Hague: Mouton.
- Friedman, L. (1975). Space, time and person reference in ASL. *Language* 51:940-61.
- Johnson, R. E., and Liddell, S. K. (1987). A morphological analysis of subject-object agreement in American Sign Language. Paper presented at the Fourth International Conference on Sign Language Linguistics, 15-19 July, Lapenanta, Finland.
- Klima, E., and Bellugi, U. (1979). *The signs of language*. Cambridge, MA: Harvard University Press.
- Lacy, R. (1974). Putting some of the syntax back into semantics. Paper presented at the Linguistic Society of America Annual Meeting, 28-30 December, New York.
- Lillo-Martin, D., and Klima, E. (in press). Pointing out differences: ASL pronouns in syntactic theory. In *Theoretical issues in sign language research I: Linguistics*, edited by S. Fischer and P. Siple. Chicago: University of Chicago Press.
- Liddell, S. (1984). THINK and BELIEVE: Sequentiality in ASL. *Language* 60:372-99.
- Meier, R. (in press). Person deixis in ASL. In *Theoretical issues in sign language research, I: Linguistics*, edited by S. Fischer and P. Siple. Chicago: University of Chicago Press.
- Moravcsik, E. (1978). Agreement. In *Universals of human language*, vol. 4, edited by J. Greenberg, 331-74. Stanford: Stanford University Press.
- Padden, C. (1986). Verbs and role-shifting in ASL. In *Proceedings of the fourth national symposium on sign language research and teaching*, edited by C. Padden, 44-57. Silver Spring, MD: National Association of the Deaf.
- \_\_\_\_\_. (1988). *Interaction of morphology and syntax in ASL*. Garland Outstanding Dissertations in Linguistics, Series 4. New York: Garland Press.
- Pardee, B. (1973). The syntax and semantics of quotation. In *A festschrift for Morris Halle*, edited by S. Anderson and P. Kiparsky, 410-18. New York: Holt, Rinehart and Winston.
- Siple, P., ed. (1978). *Understanding language through sign language research*. New York: Academic Press.
- Smith, W. (in press). Evidence for auxiliaries in Taiwan Sign Language. In *Theoretical issues in sign language research I: Linguistics*, edited by S. Fischer and P. Siple. Chicago: University of Chicago Press.
- Supalla, T. (1986). The classifier system in ASL. In *Noun classes and categorization: Typological studies in language*, edited by C. Craig, 181-214. Philadelphia: John Benjamins Publishing Co. \_\_\_\_\_ (in press). *Structure and acquisition of verbs of motion in ASL*. Cambridge, MA: MIT Press/Bradford Press.
- Wilbur, R. (1979). *American Sign Language and sign systems*. Baltimore: University Park Press.
- Zwicky, A., and Pullum, G. (1983). Cliticization vs. inflection: English *n't*. *Language* 59:502-13.

## Polymorphic Predicates in Swedish Sign Language<sup>1</sup>

LARS

I would like to begin by expressing my gratitude for being invited to this honor. It is a great honor for me to be invited to Gallaudet University. I would like to take this opportunity to congratulate Gallaudet on its first deaf president and chairman of the Board of Trustees. It is an important achievement not only for people in the United States, but for deaf people all over the world. Such an achievement inspires us to continue the fight to achieve equality.

### THE IMPORTANCE OF SIGN LANGUAGE RESEARCH

At Gallaudet University a great deal of knowledge about sign language teaching and research, deaf culture, etc. has been accumulated. "Gallaudet" is a well-known concept within deaf communities all over the world. Gallaudet place where sign language research started with William C. Stokoe in 1955. Stokoe published the first linguistic analysis of American Sign Language followed by *A Dictionary of American Sign Language on Linguistic Principles* in 1965, the first dictionary of its kind. The research paved the way for acceptance of sign language as a language.

The same chain of events occurred in Sweden. Sign language research in 1972 with Bria Bergman. Largely as a consequence of this research, Sign Language was acknowledged by the Swedish Parliament in 1981. Deaf people have the right to be bilingual was legally established, stating that Swedish Sign Language should be our primary language and Swedish the second language. There should be a new curriculum for schools for the deaf, stating that sign language should be the language of instruction and a scheduled subject of its own. It became possible for deaf people to study sign language at the university level in 1981, and for deaf people in 1987. There is a Department of Sign Language within the Institute of Linguistics at Stockholm University. Both research and instruction is financed by the government. Research is an important tool in our struggle for the acceptance of sign language as one of the languages in society.