

# Syntactic-Semantic Interaction in Israeli Sign Language Verbs

## The Case of Backwards Verbs

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Previous studies of various sign languages have identified several classes of verbs which differ from each other on the basis of which agreement affixes can be attached to them. This paper focuses on one group of verbs, which inflect for person and number (i.e. agreement verbs, using Padden's 1990 terminology). The paper is concerned with the question of whether the agreement affixes that attach to agreement verbs correspond to the syntactic notions of *subject* and *object*, or to the thematic notions of *source* and *goal*. It is suggested that this question can be answered only by focusing on a subset of agreement verbs, namely backwards verbs. By comparing backwards verbs to regular agreement verbs, from the points of view of their morphological, syntactic and thematic behavior, the precise nature of the agreement system is revealed: agreement verbs are morphologically marked for both syntactic **and** thematic agreement. This is achieved by utilizing two different phonological elements available in the language: the direction of the path movement, and the facing (as distinct from orientation) of the hands. This analysis differs from previous treatments, which have disregarded facing as an independent marking device, and have therefore failed to account fully for the facts. It is argued that only an analysis which draws a distinction between these two mechanisms is descriptively adequate and explanatory.

**Key words:** Backwards verbs, agreement, agreement verbs

### Introduction

This paper looks at the interface between syntax and semantics as expressed by the morphology of agreement verbs in Israeli Sign Language (ISL). Previous studies of other Sign Languages (SLs) (mainly American Sign Language, ASL) have identified several classes of verbs which differ from each other on the basis of which agreement affixes can be attached to them. Padden (1990) identifies the following classes: one group of verbs does not take any agreement markers at all (Plain Verbs); another group is morphologically marked for location and position (Spatial Verbs), and yet a third group inflects for person/number (Agreement Verbs). This classification holds for ISL as well. It is the latter group which is the focus of this paper.

It has been a matter of controversy as to whether the agreement affixes attached to agreement verbs are best described as corresponding to syntactic notions such as **subject** and **object**, or as reflecting semantic/thematic notions, such as **source** and **goal**. In this paper I will claim that agreement verbs in ISL (and apparently other SLs) exhibit morphological marking of both syntactic **and** semantic/thematic structure, by using two

different mechanisms available in the language: the direction of the path movement, and the facing of the hand(s).

In previous studies (Friedman 1975; Fischer & Gough 1978; Meier 1982; Padden 1983; Brentari 1988), these two mechanisms have not been identified as serving different functions in the language. (Either the facing of the hand(s) was not mentioned at all, or both mechanisms were regarded as having more or less the same grammatical function.) However, their different functions become more visible by focusing on a small subset of agreement verbs, namely the so-called ‘backwards verbs’ (to be defined shortly). The importance of backwards verbs to the analysis proposed in this paper is two-fold: first, by deviating from the general morphological pattern of agreement verbs, backwards verbs draw our attention to the distinction between the two mechanisms mentioned above; and secondly, they make more perspicuous the relationship between the semantic/thematic structure of the verb and its syntactic structure.

The paper is organized as follows: Section 1 gives a general description of agreement verbs. (It is based on descriptions of agreement verbs in ASL, but since agreement verbs in ISL share the main characteristics of their ASL counterparts, this description holds of ISL as well.) Section 2 focuses on the syntactic and semantic properties of backwards verbs. In Section 3, several previous analyses of backwards verbs are presented, and are examined as to whether they can account for the properties mentioned in 2. In Section 4 a different analysis is presented, suggesting that the form of agreement verbs (and backwards verbs in particular) is determined by two principles, namely the Agreement Morphology Principles (AMPs). This analysis is compared with previous ones in Section 5. Section 6 explores several possible consequences of the AMPs to other aspects of grammatical analysis of verbs in ISL, and Section 7 summarizes the conclusions.

It is important to note that all previous analyses referred to in the course of this paper examine verb agreement in **ASL**, while the analysis I suggest is based on data from **ISL**. Thus, it might be the case that this analysis cannot account for the facts of ASL. It is my impression, however, that agreement verbs in general, and backwards verbs in particular, behave very similarly in both languages. Hence, the analysis suggested here might be valid for ASL as well. If it turns out not to be the case, much can be gained nevertheless, by examining the ways in which these two languages differ from each other.

## 1. The Morphology of Agreement Verbs<sup>1</sup>

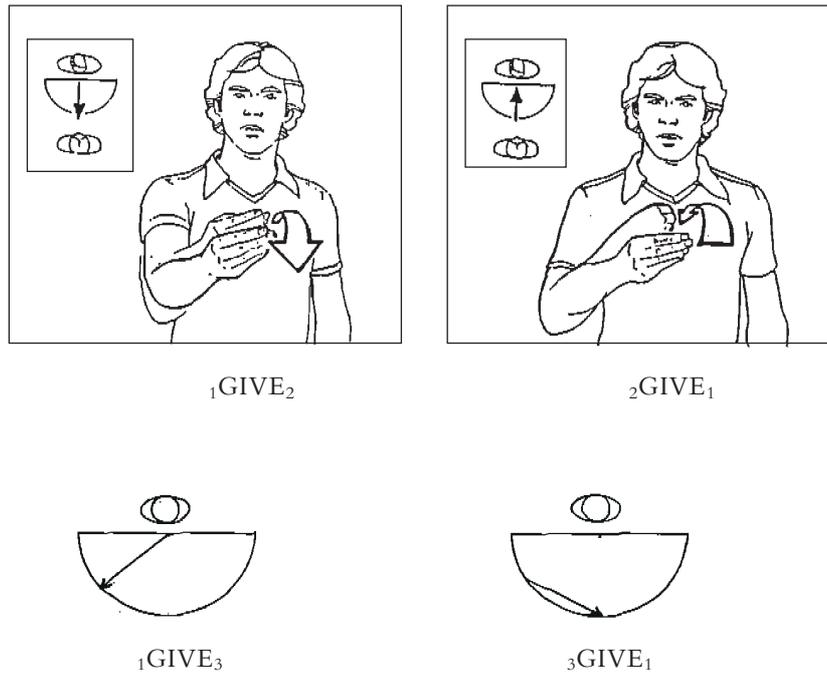
### 1.1. Regular Agreement Verbs

Agreement verbs can be described as consisting of a linear movement (path movement) on the horizontal plane, with agreement markers for subject (S) and object (O) on either ends: the beginning point of the sign is the S-agreement marker, and the end point — the O-agreement marker.

This is illustrated in (1)–(4) (see Figure 1), by the verb GIVE (ASL):<sup>2</sup>

- (1)           <sub>1</sub>GIVE<sub>2</sub> ‘I give you.’

- (2)  ${}_2\text{GIVE}_1$  'You give me.'  
 (3)  ${}_1\text{GIVE}_3$  'I give him.'  
 (4)  ${}_3\text{GIVE}_2$  'He gives you.'



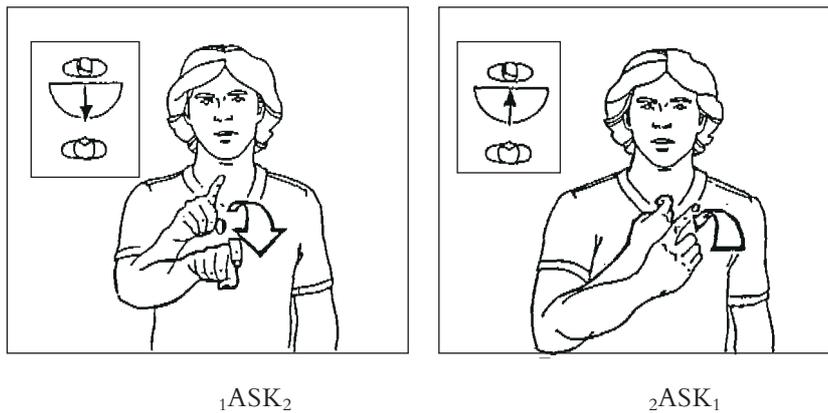
**Figure 1:** Inflected forms of the verb GIVE (ASL): agreement is manifested by the change in the direction of the path movement of the verb (sentences (1)–(4)).

The verb forms in (1)–(4) all share the same ‘root’ (consisting of hand configuration, S-Location, and type of Movement), and a mutable part — the **direction** of the path movement. The direction of the path movement changes in accordance with the arguments of the verb: it originates at the reference point assigned to the S (S-locus) and ends at the reference point assigned to the O (O-locus). Thus, in (1), the S is first person (1P) and the O is second person (2P). Accordingly, the path movement moves from 1P-locus (near the signer’s chest) to 2P-locus (the location of the addressee). In (2) the direction of the path is reversed, since the S is 2P and the O is 1P. In (3) the path moves from 1P-locus (the S-locus) to a reference point assigned to the location in space associated with the third person pronoun (3P-locus), and in (4) the path movement originates at 3P-locus and ends at 2P-locus.

It has been noticed (Friedman 1975; Fischer & Gough (F&G) 1978; Meier 1982; Valli & Lucas 1992 among others) that for some (but not all) agreement verbs, the change

in the direction of the path movement (determined by the locations established for the arguments) is accompanied by a change in the orientation of the palm.<sup>3</sup> ASK (ASL) is such a verb (as Figure 2 illustrates):

- (5)  ${}_1\text{ASK}_2$  'I ask you.'  
 (6)  ${}_2\text{ASK}_1$  'You ask me.'



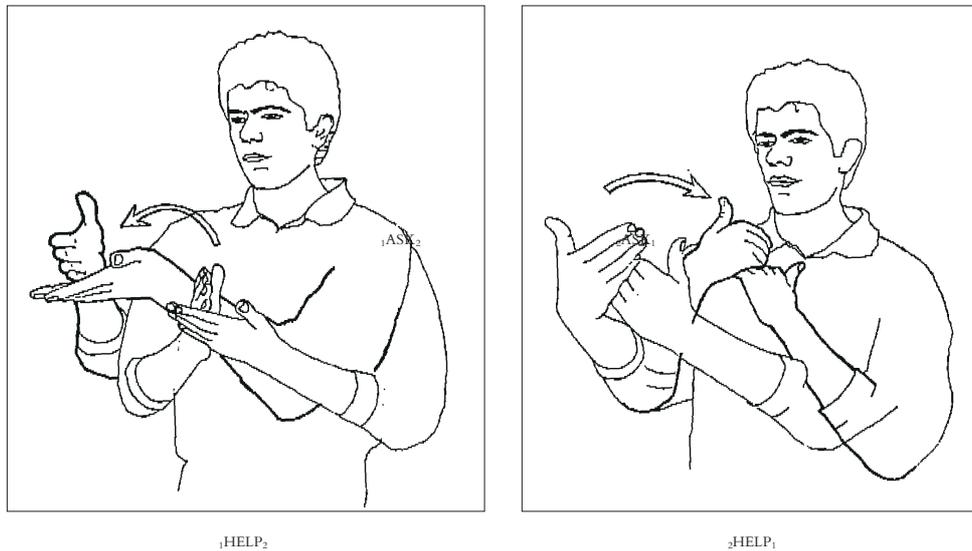
**Figure 2:** Inflected forms of the verb ASK (ASL): agreement is manifested by the change in the direction of the path movement and the orientation of the palm.

In (5), the path movement is from a point near the signer's chest towards the addressee, and the orientation of the palm is **outwards** (i.e. towards the addressee). In (6) the direction of the path movement is reversed, and so is the orientation of the palm: it faces **inwards** (i.e. towards the signer).

### 1.2. Digression: Orientation vs. Facing

The works cited above, which mention the reversibility of agreement verbs, describe it in terms of change of the orientation of the palm. Other works (e.g. Bos 1993) mention that agreement can be realized by either palm or finger orientation. However, it seems to me that orientation is not the relevant phonological element for characterizing reversibility. Rather, it is the facing of the hands (to be defined shortly).

Consider, for example, the verb HELP (ISL) (as illustrated in Figure 3):



**Figure 3:** Inflected forms of the verb HELP (ISL): facing is realized by finger orientation. That is to say, agreement in this verb is marked by finger orientation. Palm orientation is irrelevant for agreement in this case.

In the form  ${}_1\text{HELP}_2$  the fingertips of the hands point towards the 2P locus, whereas the orientation of the palm (of the dominant hand) is sideways, and the palm of the non-dominant hand is oriented upwards. In the form  ${}_2\text{HELP}_1$  the fingertips point towards 1P locus (i.e. towards the signer's chest), whereas the orientation of the palms is sideways and down (for the dominant and non-dominant hand, respectively). Clearly, it is the direction the fingertips are pointing to which marks the agreement with 2P and 1P, and not the orientation of the palm.

Hence, HELP is a verb which marks agreement by the orientation of the fingertips (as well as by the direction of the path movement). Palm orientation is irrelevant for agreement.

In the verb HATE (ISL), on the other hand, agreement is marked by the direction of the path movement and by palm orientation (see Figure 4). The fingertips point upwards, and do not mark agreement.



HATE

**Figure 4:** In the verb HATE (ISL), facing is realized by palm orientation, while finger orientation is irrelevant for agreement.

Thus, it seems that two kinds of distinctions should be drawn: (1) a distinction between palm orientation and finger orientation;<sup>4</sup> (2) a distinction between orientation features which mark agreement, and those that do not. (As we saw above, agreement can be associated with either palm or finger orientation, or both.)

I suggest (following Liddell and Johnson (L&J) 1985) that orientation features which mark agreement should be referred to as **facing**. L&J exemplify the distinction between orientation and facing with the verb STARE (ASL), where the facing of the fingertips changes in accordance with the loci assigned to the arguments of the verb, while the orientation of the palm is downwards for all inflected forms of the verb.<sup>5</sup> Note that this example (STARE (ASL)) equates facing with finger orientation. While this is the case for STARE, it need not necessarily be so: e.g. HATE (ISL), where facing is realized on the palms, and the orientation of the fingertips remains constant in all inflected forms of the verb. Thus the difference between orientation and facing cannot be defined in terms of the part of the hand on which they are realized, but rather in terms of those orientation features that do or do not change in accordance with the reference points assigned to the arguments of the verb. Facing is determined and constrained by the loci assigned to the arguments of the verb, whereas orientation is not constrained in such a way.<sup>6</sup>

Since facing plays a crucial role in the analysis of agreement verbs suggested in this paper, I shall give a tentative informal definition of the term. The exact formulation, however, still needs to be worked out.

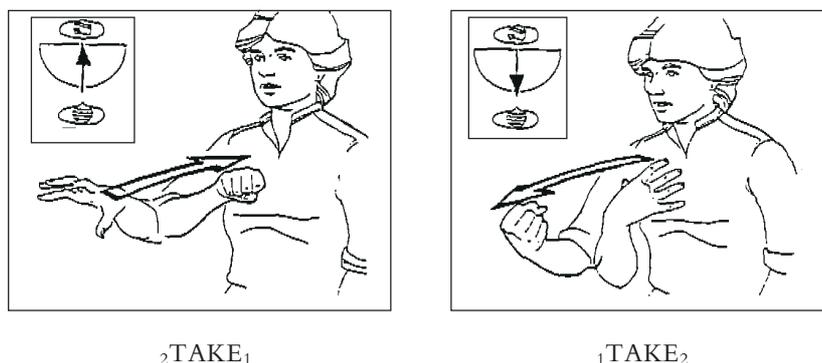
- (7) *FACING*: the direction towards which the fingertips or palm are oriented in agreement verbs,<sup>7</sup> as determined by the reference points assigned to the arguments of the verb.<sup>8</sup>

In the rest of this paper, I shall use the term **facing** instead of **orientation**.

### 1.3. Backwards Verbs

The agreement pattern described above (i.e. in which the path movement is from the S-locus to the O-locus, accompanied in some verbs by a change in the orientation of the palm), is the **regular** or **typical** agreement pattern in ISL (and in ASL as well), and it characterizes the majority of agreement verbs in these languages. There is, however, a small set of agreement verbs which follows a **backwards** or **atypical** agreement pattern: the path movement of these verbs is from the locus of the **object** towards the locus of the **subject**. TAKE (ASL and ISL) is a member of this subset of verbs (as Figure 5 illustrates):

- (8)  $_2$ TAKE $_1$  'I take from you.'  
 (9)  $_1$ TAKE $_2$  'You take from me.'



**Figure 5:** Inflected forms of the backwards verb TAKE (ASL): the path movement is from the locus of the object to the locus of the subject (sentences 8–9).

Some other verbs which follow this backwards agreement pattern are:

- ASL:** COPY, EXTRACT, INVITE, MOOCH, STEAL, TAKE, TAKE-ADVANTAGE-OF, TAKE-OUT. (Padden 1983)  
**ISL:** COPY, TAKE, CHOOSE, INVITE, TAKE-ADVANTAGE-OF, ADOPT, INHERIT, IMITATE, SUMMON, IDENTIFY (with).<sup>9</sup>

### Summary

Agreement verbs are verbs which mark agreement with their arguments by the beginning and end points of the path movement. In regular agreement verbs the initial point marks agreement with the subject, and the end point — agreement with the object. In backwards verbs the reverse is true: the initial point marks agreement with the object, and the end point — agreement with the subject.

## 2. The Syntactic and Semantic Structure of Backwards Verbs

Backwards verbs, then, form a distinct morphological set, characterized by reverse agreement morphology, i.e. by a path movement that originates at the locus of the object, and ends at the locus of the subject. Semantically, they also seem to have something in common: the subject of backwards verbs is understood to be the **goal** in some sense, while the object is associated with the notion of **source**.<sup>10</sup> These notions are relevant for distinguishing between pairs of verbs such as *give* and *take*. Consider, for example, the English sentences (10) and (11):

(10) I gave you the book.

(11) I took the book from you.

In both sentences, the **theme** (i.e. *the book*) changes its (physical) position and its possessor. In (10), *the book* is transferred from *I* to *you*, hence *I*, the syntactic S of the sentence, is the **source**, and *you*, the syntactic (indirect) O, is the **goal**. In (11), on the other hand, *I* is the S but the **goal** while *you* is the O and **source**. Returning to SL, backwards verbs, as exemplified by *take* (in (11)), have the following property: the nominal which designates the **goal** of motion is associated with the **S** of the verb, and the **source** nominal is associated with its **O**. The reverse is true for ‘regular’ verbs such as *give*.

Thus, morphologically and semantically backwards verbs differ from regular agreement verbs. Syntactically, however, backwards verbs (in ASL) exhibit regular behavior with respect to phenomena such as Agreement Marker Omission and Control (as described in Padden 1983): Agreement Marker Omission refers to the possibility of omitting the S-agreement marker of the verb, whether it is realized as the beginning point of the verb (as in regular verbs) or as its end point (as in backwards verbs).<sup>11</sup> The following sentences are from Padden (1983:117, 119): (the omitted agreement marker is indicated by the “0” subscript. In these cases, Padden notes, “the resulting form has a reduced linear movement” (ibid., p. 117)).

(12) WOMAN<sub>0</sub>GIVE<sub>1</sub> NEWSPAPER ‘The woman gave me a newspaper.’

(13) <sub>1</sub>INDEX <sub>3</sub>TAKE-OUT<sub>0</sub> FRIEND SISTER.  
‘I’m taking out my friend’s sister.’

(14) \*<sub>1</sub>INDEX <sub>0</sub>TAKE-OUT<sub>1</sub> FRIEND SISTER ‘I’m taking out my friend’s sister.’

GIVE (in sentence (12)) is a regular agreement verb, hence the S-agreement marker occurs verb initially; TAKE-OUT (in (13) and (14)) on the other hand, is a backwards verb, and so

the S-agreement marker occurs verb finally. As is shown by the ungrammaticality of (14), it is the S-agreement marker that is deleted, and not just any marker at the beginning point of the verb.

The second phenomenon described by Padden (1983) in which backwards verbs exhibit regular syntactic behavior is a Control constraint, which she refers to as the “Coreference Constraint on FORCE-type verbs”. Padden points out that structures with matrix verbs like FORCE, PERMIT, COMMAND, differ from other structures containing matrix verbs like HOPE, INFORM, ASK-IF “in that a coreferentiality constraint applies with the group of FORCE-type verbs” (ibid., p. 121). This constraint rules out sentences in which the object agreement marker of the matrix verb is noncoreferential with the S-agreement marker of the embedded verb, whether it is realized at the beginning or end point of the verb. This is illustrated in (15)–(18) (taken from Padden (1983:121, 122); GIVE in (15) and (17) is a regular agreement verb, while INVITE in (16) and (18) is a backwards verb):

- (15)  ${}_1\text{INDEX } {}_1\text{FORCE} {}_2\text{GIVE} {}_1\text{ MONEY}$ .  
‘I’ll force you to give me the money.’
- (16)  ${}_1\text{URGE}_j {}_i\text{INVITE}_j\text{ SISTER}$ .  
‘I urged him to invite his sister.’
- (17)  $\star {}_1\text{INDEX } {}_1\text{FORCE} {}_2\text{GIVE} {}_2\text{ MONEY}$ .  
‘I’ll force you that he would give you the money.’
- (18)  $\star {}_1\text{URGE}_j {}_j\text{INVITE}_i\text{ SISTER}$ .  
‘I urged him that his sister invite him.’

Examples (15) and (16) are grammatical since in both the S-agreement marker of the embedded verb is coreferential with the O-agreement marker of the matrix verb (though in (15) the former is realized as the beginning point of the verb, and in (16) as its end point). Examples (17) and (18) are ruled out since the S-agreement marker of the embedded verbs (GIVE and INVITE, respectively) is noncoreferential with the O-agreement marker of the matrix verbs. It should be noticed that **linearly** (17) shows the same agreement coreference pattern as that of (16) (i.e.  $\text{VERB}_i\text{ VERB}_i$ ) while (18) has the same coreference pattern as (15) ( $\text{VERB}_i\text{ }_i\text{VERB}$ ). Yet (15) and (16) are grammatical, whereas (17) and (18) are not. Padden argues that the ungrammaticality of (17) and (18) indicates that this constraint is sensitive to the syntactic notions of S and O rather than to the linear position of the agreement markers on the verbs.

*Summary*

Backwards verbs form a distinct set from both a morphological and a semantic point of view: morphologically they exhibit a backwards agreement pattern (i.e. they differ from regular agreement verbs in the linear ordering of affixation), and semantically the S of backwards verbs is associated with the notion of **goal** while their O is understood as the **source**. In their syntactic behavior, however, (with respect to phenomena such as Agreement Marker Omission and Control) they do not differ from regular agreement verbs.

In the next section I will survey several analyses of backwards verbs, and examine them with respect to the properties mentioned above.

### 3. Previous Analyses

#### 3.1. Friedman (1975)

Friedman (1975) suggests that the notions of **source** and **goal** are essential to the analysis of agreement verbs in ASL,<sup>12</sup> since the form of these verbs (in particular the direction of the path movement) is a visual representation of these notions. Friedman claims that the direction of path movement in the ASL verb system should be stated in semantic terms, i.e. as moving from **source** to **goal**. This analysis enables Friedman to predict the direction of the path movement in both regular and backwards verbs in a single statement.

- (19) Source-Goal Analysis (following Friedman 1975): In both regular agreement verbs and backwards verbs, the path movement is from the **source NP** to the **goal NP**.

Note that under an analysis stated in source/goal terms, there is no need to make reference to backwards verbs, since it holds for all agreement verbs (both regular and backwards).<sup>13</sup>

#### 3.2. Padden (1983)

As we have seen, Padden (1983) shows that backwards verbs exhibit regular syntactic behavior with respect to phenomena such as Control and Agreement Marker Omission. Padden argues that an analysis stated in syntactic terms (subject and object) can capture these generalizations more straightforwardly than an analysis stated in terms of source/goal. Her argumentation is along the following lines:

Consider, for example, (12)–(14) (repeated here as (20)–(22)), which illustrate the phenomenon of Agreement Marker Omission:

- (20) WOMAN<sub>0</sub>GIVE<sub>1</sub> NEWSPAPER  
‘The woman gave me a newspaper.’
- (21) <sub>1</sub>INDEX <sub>3</sub>TAKE-OUT<sub>0</sub> FRIEND SISTER.  
‘I’m taking out my friend’s sister.’

- (22)  $\star_1$ INDEX  $_0$ TAKE-OUT $_1$  FRIEND SISTER.  
‘I’m taking out my friend’s sister.’

An analysis stated in terms of semantic roles could account for (20) in the following way:

- (23) The agreement marker for the source may be optionally deleted (ibid. p. 119)

But (23) yields wrong predictions concerning (21) and (22): it would wrongly predict (22) to be grammatical (since the source is deleted) and (21) to be ungrammatical (since the goal and not the source is deleted). Hence, in order to account for the behavior of backwards verbs, an additional statement is needed in the grammar:

- (24) The agreement marker for the goal of backwards verbs may optionally delete (ibid. p. 120)

But an analysis stated in syntactic terms (S and O) could account for these facts in a single statement:

- (25) The subject agreement marker may optionally be omitted (ibid. p. 120).<sup>14</sup>

It is important to notice that an analysis in source/goal terms not only needs two statements to account for the Agreement-marker-omission facts, but it also provides no explanation as to why it is the source that can be omitted in regular agreement verbs, but the goal that is deletable in the case of backwards verbs.

Similarly, Padden argues that an account of the “Coreference constraint on FORCE-type verbs” in source/goal terms would need two separate statements in the grammar, one for regular verbs, the other for backwards verbs; whereas an analysis in S/O terms could handle the constraint in a single statement.

Therefore, Padden concludes that agreement must be syntactically determined (since the syntactic phenomena she refers to cannot be accounted for straightforwardly by a semantic analysis such as suggested by Friedman 1975), and suggests that the atypical morphology of backwards verbs should be taken care of in the lexicon; i.e. backwards verbs should be marked as morphologically “backwards” in the lexicon:

- (26) Subject–Object Analysis (following Padden 1983): The path movement of agreement verbs is from subject-locus to object-locus. Backwards verbs are marked in the lexicon as morphologically “backwards” (i.e. their path movement moves from object-locus to subject-locus).

While Padden’s analysis captures neatly the fact that backwards verbs behave as regular agreement verbs syntactically, it clearly misses a semantic generalization, namely that backwards verbs share a common semantic structure, which is reflected in the morphology. Under her analysis, backwards verbs have to be marked ad-hoc in the lexicon, without any explanation as to why these particular verbs exhibit backwards morphology. Thus, it seems that a semantic analysis such as suggested by Friedman (1975) misses a syntactic generalization, while an analysis in syntactic terms (Padden 1983) misses a semantic generalization.<sup>15</sup> Brentari (1988) notices this “double faced” behavior of backwards verbs, which led her to suggest an analysis in both syntactic and semantic terms.

### 3.3. Brentari (1988)

Brentari (1988) states that “there is a correlation between the direction of Path as a part of the linguistic code of ASL and semantic notions that have been associated with transitivity relations.” (ibid. p. 21) Thus, the direction of the path movement reflects the transitivity relation which holds between the arguments of the verb: when the theme is transferred from S to O, the path movement moves **from** the locus of the S (i.e. “regular” verbs). And when the theme is transferred from O to S, the path movement moves **towards** the subject. Brentari argues that it is the notion of **subject** and not **source** that is relevant here, since the path movement of agreement verbs moves towards or from the locus of the subject and not the location of the **theme** (when there is a discrepancy between the two). Brentari’s analysis, stated as the “Direction of Transfer Rule” (DTR), incorporates both the semantic notion of ‘transfer of theme’ and the syntactic notion of ‘subject’:

- (27) Direction of Transfer Rule: (ibid. p. 22) “When the transfer of a theme is away from the subject, the Path will move away from the spatial locus associated with the signer (in the default case) or away from the overtly marked subject spatial locus. When the transfer of theme is toward the subject, the Path will move toward the spatial locus associated with the signer (in the default case) or toward the overtly marked subject locus.”

The DTR is an improvement over previous analyses in that the direction of the path movement of agreement verbs falls out of the theory without any further stipulations, and need not be arbitrarily marked in the lexicon. And the regular syntactic behavior of backwards verbs follows from the fact that in both parts of the DTR the direction is marked with respect to the locus of the **subject**.<sup>16</sup>

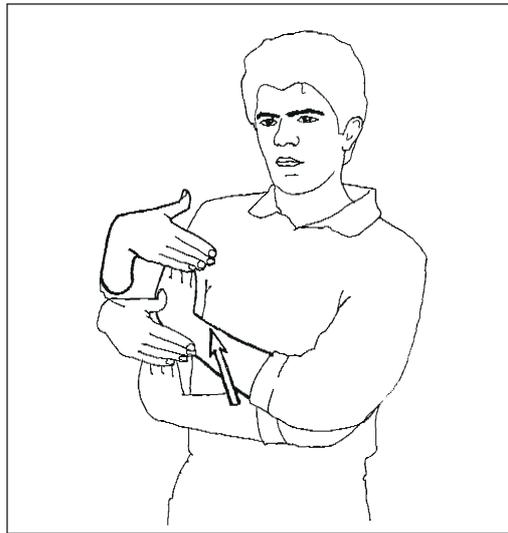
But the DTR has several shortcomings: it makes wrong predictions with respect to the form of reflexive verbs, it does not make specific enough predictions with respect to the direction of path movement, and it does not explain some similarities and differences in the form of regular vs. backwards verbs. Let us examine these points one by one:

#### 3.3.1. Reflexives

In ISL, a reflexive verb is not marked by special reflexive morphology.<sup>17</sup> Rather, it takes the form  ${}_i\text{VERB}_i$  (i.e. both agreement markers are assigned the same reference point). Since the S and O of the verb share the same locus (and the source and goal as well), it is of interest to see what direction the path movement takes. The DTR is stated in terms of the subject only, and thus it predicts that in case of regular verbs, the path movement will be **away** from the subject (since the theme is transferred from S); and in case of backwards verbs, the path movement will be **towards** the subject (since the theme is transferred to S). This prediction, however, yields the wrong results: in ISL reflexive verbs there is hardly any path movement at all, and if any path movement can be discerned, it is an upwards movement **towards** the locus of the Subject-Object (in regular agreement verbs), from a location a bit lower to that point. Notice that the facing of the hands is **towards** the locus of the S-O (see Figure 6). (If a verb has an internal movement (handshake or

orientation change), it will retain this type of movement under the reflexive reading as well.)

In the case of reflexive backwards verbs (as, for example, in —<sub>1</sub>TAKE<sub>1</sub> ‘I took (something) from myself’), the reduced path movement is upwards and **away** from the locus of the S-O (again, contrary to the predictions of the DTR). The facing of the hands is **towards** the locus of the S-O (as in regular agreement reflexive verbs, a fact unexplained by the DTR). Thus, the DTR is unable to account for the form of reflexive verbs in ISL.



<sub>1</sub>HELP<sub>1</sub>

**Figure 6:** The reflexive form of the regular agreement verb HELP (ISL) ‘I help myself’. The path movement is upwards and towards the locus of the subject-object.

### 3.3.2. The direction of Path

**3.3.2.1. Underspecifications of the direction of the Path.** Since the DTR is stated in terms of subject only, the direction of the path movement is not completely specified. Take, for example, the two following verb forms:<sup>18</sup>

(28) <sub>1</sub>TAKE<sub>2</sub> ‘You take from me.’

(29) <sub>3</sub>TAKE<sub>2</sub> ‘You take from him.’

TAKE is a verb in which the transfer of the theme is towards the subject. According to the DTR the path will move towards the subject (2P locus, in this case). But the DTR says nothing about **the beginning point** of the path, since it does not refer to the locus of the object; more specifically, it does not predict that the verb in (28) originates at 1P locus, and that the verb in (29) originates at 3P locus. Thus, the difference in the direction of the

path movement in (28) and (29) can not be taken care of by the DTR. (An even stronger claim is that the DTR implies that there should be no difference in meaning between (28) and (29), since in both cases the path movement moves **towards** the locus of the subject.)

**3.3.2.2. Similarities in the direction of Path.** Consider the following verb forms:

(30)  $_2$ GIVE $_1$  ‘You give me.’

(31)  $_2$ TAKE $_1$  ‘I take from you.’

In both (30) and (31) the direction of the path movement is **from** 2P locus towards 1P locus. This similarity cannot be captured straightforwardly by the DTR, since these verbs exhibit different transitivity relations, and so the form of each verb is taken care of by a different mechanism (namely, the two parts of the DTR). The DTR correctly predicts that in (30) the Path will be **away** from the locus of the subject, i.e. **away** from 2P locus (since GIVE is a verb in which the theme is transferred away from S). As for (31), it correctly predicts that the Path will move **towards** the locus of its subject, i.e. **towards** 1P locus. Since the DTR refers to only **one** reference point (for each verb), it cannot explain the fact that the two verb forms have identical path movement (i.e. the DTR cannot predict that in both verb forms the path movement moves **from 2P towards 1P**, since it is stated in terms of only one reference point).

These shortcomings of the DTR stem, in my opinion, from the following oversights:

- a. The DTR does not make explicit reference to the **object** of the verbs.
- b. The DTR is stated in both syntactic and semantic terms, rather than keeping these components separate.

The analysis I propose below differs from the DTR in precisely those respects. In particular, I claim that the notion of object is central to the morphological form of the verbs in ISL, and that the semantic and syntactic components should be kept separate.<sup>19</sup> I will show that the morphology of ISL provides support for maintaining this distinction.

#### 4. Suggested Analysis

The analysis that I suggest is based on the observation that agreement verbs mark the relations that hold between their arguments not only by the direction of the path movement, but also by changing the facing of the hand(s). This observation is mentioned in Friedman (1975), Fischer & Gough (1978), Meier (1982), Klima & Bellugi (1979), Liddell & Johnson (1985), Valli & Lucas (1992) among others. The following is from Fischer & Gough (1978):

If in addition to or instead of a change in direction of movement in a verb to show who is doing what to whom, there is also a change in the orientation of the hand(s), the verb is **reversible**, since the hands can reverse or change their orientation. Not all directional verbs are reversible, and there is at least one reversible verb that cannot change direction. (p. 28)

The above description shows that F&G regard reversibility and directionality as two distinct but related phenomena, both reflecting the same notion, namely the grammatical relations among the arguments of the verb.<sup>20</sup> I claim, however, that directionality and reversibility serve **different functions** in the language: the direction of the path movement marks the semantic (or thematic) relations among the arguments of the verb, while the facing of the hand(s) marks the syntactic relations between the arguments of the verb.<sup>21</sup> I suggest that the form of an agreement verb in ISL is determined by the following two principles:

- (32) *Agreement Morphology Principles (AMPs):*
- a. The direction of the path movement of agreement verbs is **from source to goal**. Linear order: 1. source. 2. goal.  
and
  - b. The facing of the hand(s) is **towards the object of the verb**.<sup>22,23</sup>

To see how these principles interact in determining the form of agreement verbs in ISL, consider the following verb forms:

(33) <sub>1</sub>GIVE<sub>2</sub> ‘I give you.’

(34) <sub>2</sub>GIVE<sub>1</sub> ‘You give me.’

(35) <sub>2</sub>TAKE<sub>1</sub> ‘I take from you.’

In (33), the source of the transfer of the theme is *I*, and the goal is *you*. According to principle (a) of the AMPs, the path movement is from 1P locus to 2P locus. The object of the verb is *you*, and so according to principle (b), the hands are facing 2P locus (i.e. they are facing outwards).

In (34), the source is *you* while the goal is *me*. Thus, the path movement is from 2P locus to 1P locus. The object of the verb is *me*, and so the hands are facing 1P locus (i.e. inwards).

In (35), the source and goal are *you* and *I* respectively, determining that the direction of the path movement is from 2P locus to 1P locus. The object of the verb is *you*, and so according to principle (b), the hands are facing towards 2P locus (i.e. outwards).

Sentences (34) and (35) have the same thematic structure: in both verbs the source of the transfer is 2P and the goal is 1P. As predicted by principle (a), both forms have the same direction of path movement (from 2P locus towards the signer’s chest). Examples (33) and (35), on the other hand, have the same syntactic structure: in both, the subject of the verb is *I* and the object of the verb is *you*. As predicted by principle (b), in each form, the hands are facing the same reference point — that of 2P (i.e. in both forms, the hands are facing towards the addressee, but the direction of the path movement is opposite).<sup>24</sup>

These facts are presented in (36):

(36)

	<b>Source</b>	<b>Goal</b>	<b>Subject</b>	<b>Object</b>	<b>Morphological form</b>
$_1$ GIVE $_2$	1P	2P	1P	2P	1P $\supset\rightarrow$ 2P
$_2$ GIVE $_1$	2P	1P	2P	1P	1P $\subset\leftarrow$ 2P
$_2$ TAKE $_1$	2P	1P	1P	2P	1P $\supset\leftarrow$ 2P

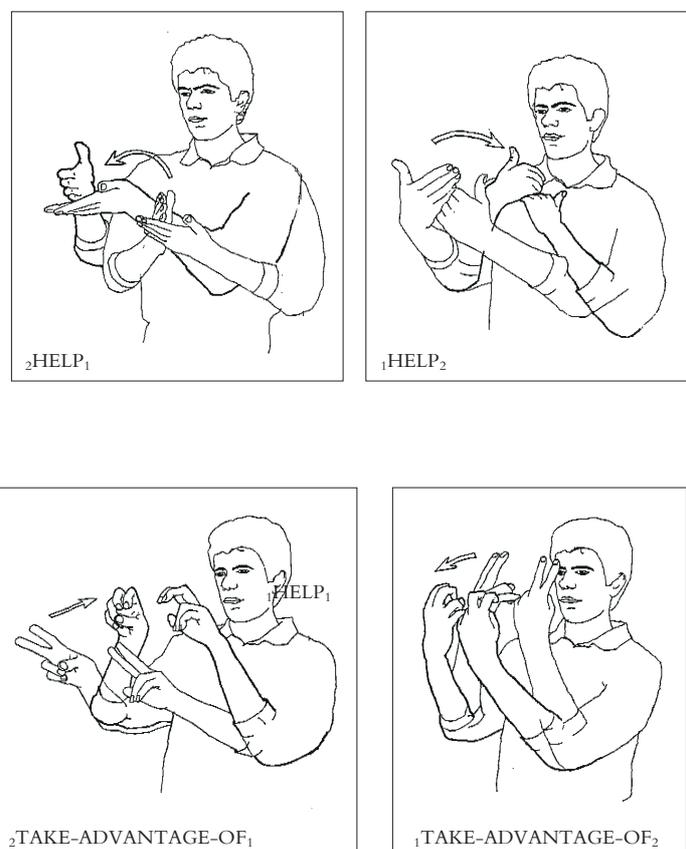
$\rightarrow$  Direction of path movement.

$\supset$  Facing.

The interaction between the direction of the path movement and the facing of the hands is illustrated in Figure 7. Since GIVE and TAKE (ISL) have internal movements, it is easier to see the facing change with two parallel verbs — HELP and TAKE-ADVANTAGE-OF.

Under this analysis, the behavior of backwards verbs seems less mysterious. Their regular syntactic behavior is marked by their regular **syntactic** morphology: in backwards verbs, as in regular agreement verbs, the facing of the hand(s) is towards the reference point of the **object**. The morphology of their thematic structure also follows the general principle that holds of regular agreement verbs as well; i.e. the direction of the path movement is **from source to goal**. The “backwardness” (or, in more neutral terms — the markedness) of backwards verbs stems from the **less typical association** between the syntactic and thematic roles: it is less typical for subjects to be associated with the notion of **goal** (as in backwards verbs) than with the notion of **source** (as in regular verbs).<sup>25</sup>

In the following section, I will return to the points that were problematic for previous analyses and examine how they can be accounted for by the “Agreement Morphology Principles” (AMPs) suggested above.



**Figure 7:** The interaction between the direction of the path movement and the facing in regular agreement verbs (e.g. GIVE, HELP (ISL)), and in backwards verbs (e.g. TAKE, TAKE-ADVANTAGE-OF (ISL)).

## 5. Comparison with Previous Analyses

The shortcomings of previous analyses (Friedman 1975; Padden 1983; Brentari 1988) are of two types: (a) They are not explanatory enough, in that some predictable properties of backwards verbs must be stipulated, and the ‘backwardness’ of backwards verbs vs. agreement verbs is not explained; (b) They cannot account for some of the data.

In this section I argue that the AMPs provide an improvement in that they are able to account for and explain the properties of backwards verbs, without further stipulations; and they can account for the data under discussion.

### 5.1. Explaining the backwardness of Backwards Verbs

The drawbacks mentioned in (a) above result from the fact that each of these analyses

identifies only **one** morphological agreement mechanism, namely the direction of the path movement.<sup>26</sup> In Padden (1983) the direction of the path movement is determined by the syntactic structure of the verb (and hence a semantic generalization is being missed); Friedman (1975) takes the direction of the path movement to represent the thematic structure (which leaves some syntactic phenomena unaccounted for); whereas in Brentari (1988) the direction of the path movement is determined by the transitivity relations which hold between the S of the verb and its theme (i.e. both syntactic and thematic structures are relevant for the direction of the path movement), but the relation between the facing of the hand(s) and syntactic function is unaccounted for.

The AMPs differ from these analyses in that they identify **two** agreement mechanisms: **the direction of the path movement**, which marks the semantic/thematic agreement, and **the facing of the hand(s)**, which marks subject/object agreement. By admitting two distinct agreement mechanisms, both the semantic properties and the syntactic behavior of agreement verbs fall out of the theory straightforwardly: the Agreement-marker-omission phenomenon, which had to be accounted for by two separate statements under the Source/Goal analysis, can be handled in one statement in AMPs terms:

- (37) *Agreement-marker-omission*, in AMPs terms: The agreement marker (i.e. reference point) which is not marked by the facing of the hands can be deleted.

Moreover, the ‘regularity’ of regular agreement verbs and the ‘backwardness’ of backwards verbs can be identified not by the direction of the path movement (towards or away from the signer), but rather in the different possibilities of interaction between these two components. These possibilities are shown in (38):

(38)

<b>NP<sub>1</sub></b>	<b>NP<sub>2</sub></b>	
Source	Goal	
Subject	Object	a. regular agreement verbs
Source	Goal	
Object	Subject	b. backwards verbs

Table row (38a) is the more typical type, both from the point of view of its sublexical structure, and its morphological manifestation: it is more typical for S to be associated with source, and O with goal, than vice versa, and it is more typical morphologically for a forward movement (rather than a backwards movement) to be co-articulated with forward facing of the hands. This observation cannot be arrived at within the framework of an analysis which recognizes only one agreement mechanism in the language.

## 5.2. AMPs vs. DTR: reflexives and specifications of the path movement

Brentari’s DTR is stated in terms of the relationship between the direction of the path

movement and the S-locus. As was pointed out earlier (Section 3) it makes wrong predictions, or does not make specific enough predictions in certain cases. I return now to these cases and examine how they can be accounted for by the AMPs. I shall also discuss one case which seems to be problematic for the AMPs. I shall argue, however, that this is only an apparent counter-example, and that it could be accounted for by a mechanism needed independently in the language.

### 5.2.1. *Reflexives*

Since in reflexive verbs the reference point for **source** and **goal** is identical, principle (a) predicts that there will be no path movement at all. Principle (b) predicts that the facing of the palm (in both regular verbs and backwards verbs) is **towards** the O locus (which, in reflexive verbs, is the locus of both S and O). Putting the two principles together, the prediction is that the form of reflexive verbs in both regular and backwards verbs is identical, since in both cases there is no path movement, and the hand(s) is facing the S/O locus. This prediction is, by and large, correct. But, as I mentioned before, sometimes a very small path movement can be discerned.<sup>27</sup> In such cases, the path movement will move upwards and **towards** the S/O locus in regular verbs, and (upwards and) **away** from that locus in backwards verbs (the opposite of the prediction made by Brentari's DTR). This slight difference in the articulation of reflexive regular vs. backwards verbs might be an indication that the language "tries to retain" the distinction between regular and backwards verbs (i.e. the different types of association between the syntactic and thematic structures), even when such differences are phonologically neutralized.

### 5.2.2. *The direction of Path*

Recall that the DTR could not fully specify the direction of the path movement, since it is stated in terms of only **one** reference point. For example, it could not account for the difference in the direction of the path movement in the verb forms in (39) and (40):

(39)           <sub>1</sub>TAKE<sub>2</sub> 'You take from me.'

(40)           <sub>3</sub>TAKE<sub>2</sub> 'You take from him.'

The DTR correctly predicts that the Path moves towards the 2P locus (the locus of the S), but it says nothing about the beginning point of the path, and therefore the difference in the direction of the path movement in (39) and (40) is not accounted for. In our analysis, however, the direction of the path movement is taken care of by principle (a) of the AMPs (namely that the direction of the path movement is from source to goal), which is stated in terms of **two** reference points, that of the **source** and that of the **goal**. Thus the direction of the path movements in (39) and (40) is fully specified: in both verb forms the **goal** is 2P, but in (39) the **source** is 1P, while in (40) it is 3P. And so in (39) the path moves from 1P to 2P, and in (40) from 3P to 2P.

### 5.2.3. *Similarities in the direction of Path*

The DTR had a similar problem accounting for the fact that the two verb forms in (41) and (42) have identical path movements:

(41)       <sub>2</sub>GIVE<sub>1</sub> ‘You give me.’

(42)       <sub>2</sub>TAKE<sub>1</sub> ‘I take from you.’

Again, this difficulty stems from the fact that the DTR makes reference to only one reference point. Under the AMPs these facts are accounted for straightforwardly. The identical path movement in both (41) and (42) results from both verb forms having the same thematic structure: in both cases the **source** is 2P and the **goal** is 1P. Hence, according to principle (a) of the AMPs, the path movement in both verbs originates at 2P locus and ends at 1P locus.

The DTR is not only unable to predict the similarity of the path movement of those two verb forms, but it also blurs the special semantic relations which hold between them (i.e. that they have the same source/goal structure) and the difference in their syntactic structure (i.e. that they have a reverse S/O structure). This results, in my opinion, from not keeping the semantic and the syntactic notions separate, but rather combining them both in a single statement. Recall that the DTR is stated in terms of the locus of the **S** (which enabled Brentari to account for the syntactic behavior of agreement verbs); but the notions of source/goal are implied in it, in the description of the direction of the path, as moving **away** (i.e. source) or **towards** (i.e. goal) the S-locus. Thus implicitly, the DTR combines the syntactic notion of S with the semantic notions of source (in regular verbs) or goal (in the case of backwards verbs). Since the exact nature of the relationship between these two components is left unspecified, the DTR is not insightful as to the relationship between the verb forms in (41) and (42).<sup>28</sup>

The AMPs keep the syntactic and semantic components separate. By doing so, they are able to correctly predict and explain the similarities and differences between (41) and (42): the similarity in their semantic structure is reflected morphologically in both forms having the same direction of path movement (as predicted by principle (a)), and the difference in their syntactic structure is reflected morphologically in the reverse facing of the hand(s) (as predicted by principle (b)).

The AMPs, then, are able to overcome the problems faced by the DTR by referring to two reference points, and by keeping separate the syntactic and semantic components. They are also able to accurately predict the form of agreement verbs, since they refer to the facing of the hand(s) (a property not mentioned at all in the DTR).

### 5.3. *Subject agreement or source agreement?*

It should be noticed, however, that the DTR is stated in terms of **subject** and not in terms of source/goal, since Brentari claims that it is the notion of subject, and not source, that captures the generalizations about verb agreement. One argument in support of her

claim is that when there is a discrepancy between the locus of the S and the initial location of the theme, the agreement marker on the verb agrees with the S-locus, as in the following (from Brentari 1988:21):

- (43) BOOK INDEX<sub>a</sub> INDEX<sub>1</sub> 3BORROW<sub>1</sub>  
 'I borrowed the book from him/her.'

In (43), the book is located at reference point (*a*), which is the 'source' of the motion. The verb, however, agrees with the locus of the lender and the borrower. Thus it could be concluded that agreement should be stated in terms of S/O, rather than in terms of source/goal.<sup>29</sup>

The analysis proposed here seems to run into problems in such cases where there is a mismatch between the actual location of the **theme** and the location of the arguments of the verb, since it is not clear which mechanism ensures that the verb agrees with its arguments, and not with the source and goal of the actual motion.<sup>30</sup> This is only an apparent problem, however. It stems from a confusion between two types of motion implied in this sentence: a physical motion (change of position), and a figurative motion (change of possession). It is only the latter that is part of the core meaning of the verb. The actual physical motion is secondary, and it is more like an adverb (or adjunct),<sup>31</sup> in that it conveys the location of where the action takes place. The figurative sense of motion (which is part of the core meaning of the verb) is achieved by taking as **source** and **goal** not actual physical points in space, but rather the arguments of the verb.<sup>32</sup> Thus, the association between the source/goal nominals and the arguments of the verb should be reflected in the sublexical structure of the verb in order to achieve an accurate lexical description.<sup>33</sup>

Bearing this in mind, the agreement facts exhibited by agreement verbs are no longer problematic; the association of source/goal with the S and O of the verb is part of the sublexical structure of the verb, and need not be stipulated independently in order to account for sentences such as (43). The verb agrees with the source/goal nominals which are part of its thematic structure, which, in turn, are co-indexed with the verb's syntactic arguments (i.e. with S and O respectively for regular verbs, and with O and S respectively for backwards verbs). The actual physical motion expressed by the sentence does not control the agreement of the verb.

### *Summary*

In this section I have shown that the analysis which I have proposed is able to account for the properties of both regular and backwards verbs, without having to resort to ad-hoc stipulations. It is able to predict the form of both regular and backwards verbs by the same principles (i.e. the AMPs). This analysis also has the advantage of being able to explain the markedness of backwards verbs. These advantages are made possible because this analysis draws a distinction between two components, namely direction and facing, that were lumped together as one mechanism in previous analyses.

## **6. Further Consequences**

In Section 5, the AMPs were compared with other analyses of backwards verbs and agreement verbs. It was shown that the AMPs are more explanatory and can account for the data, since they identify the facing of the hand(s) as a distinct agreement marker, thus allowing two separate agreement mechanisms in ISL.

This analysis has further consequences for future study of verbs and verb agreement in ISL. Two of these possible consequences are explored in this section: (1) Phonological restrictions on the forms of agreement verbs; (2) The centrality of the **object** in verb agreement.

### **6.1. Phonological restrictions on the form of the verbs**

It has been noticed (by F&G 1978) that some verbs are directional (i.e. the direction of the path movement is mutable) but not reversible (i.e. the facing of the hand(s) does not change) while other verbs show the opposite pattern. As directionality and reversibility were regarded in these papers as having more or less the same function in the language, it was difficult to explain the phonological forms of various agreement verbs. The present analysis, however, maintains that these two components serve different functions in the language, and should be kept distinct. One of the outcomes of maintaining this distinction is that each component can be subject to different phonological/morphological constraints. For example, it seems that a repetitive movement reduces the length of the path movement, yet it does not constrain the facing in any way. Thus verbs in which the movement is specified for [repetitive] are characterized by a reduced path movement, yet they retain their reversibility (e.g. TEACH (ISL)).

Another factor which seems to constrain directionality is initial contact (especially on the face): verbs which are marked for [initial contact] have a path movement from the initial contact point towards the goal (i.e. it does not originate at the source locus; e.g. ASK, ANSWER (ISL)).<sup>34</sup> Reversibility, on the other hand, seems to be sensitive to different constraints. For example, it seems that inward facing in citation form blocks reversibility (e.g. TELL-STORY (ISL)). Another factor which seems to block reversibility is when the facing of the hands and the direction of the path movement are not on the same axis in citation form; i.e. signs in which the fingertips are facing to the side, while the direction of the path movement is either outwards or inwards. (As, for example, in the sign GIVE

(ASL and ISL), when it incorporates the classifier C (CL:C) for long cylindrical objects, i.e. GIVE-A-GLASS.) It seems that when the direction of the path movement and the facing are on different axes, reversibility is blocked.

These two constraints on reversibility (namely, that reversibility is blocked when the facing is either inwards or to the side in citation form) imply that reversibility is possible only if the facing in citation form is outwards.

These constraints on directionality and reversibility can interact, yielding the following possibilities (as Figure 8 illustrates):

(44)

		Repetitive movement	
		[+rep] M ⇒ reduced path movement	[-rep] M ⇒ regular path movement
Facing	outwards		
In	↓ [+reversible]	TEACH	HELP
Citation	non outwards		
Form	↓ [-reversible]	TELL-STORY	ASK, ANSWER [+initial contact]



**Figure 8:** The interaction between the various phonological constraints on the direction of the path movement and the facing of the hands (Table 44).

The various phonological manifestations of these agreement verbs are accounted for in a straightforward manner under an analysis which regards the direction of the path movement and the facing of the hand(s) as two different and distinct mechanisms.

### 6.2. *The Centrality of the Object*

Principle (b) of the AMPs states that the facing of the hand(s) is towards the **object**. It does not make any reference to the **subject**.<sup>35</sup> This raises the question of whether and how the subject is marked on the verb. There are several possibilities: (a) The subject is marked by default; the subject is the “other” agreement marker, the agreement marker which the hand is **not** facing. (b) The subject is not marked by agreement at all. ISL has source/goal agreement and object agreement, but no subject agreement.

I will not attempt to address this issue here. It is important to notice, however, that both of the above possibilities imply the precedence of object agreement marking over subject agreement marking in the morphology of the verb. There are several phenomena in both ASL and ISL which seem to me to substantiate the above observation:<sup>36</sup>

1. Subject-agreement Marker Omission (Padden 1983; Meier 1982 and Lillo-Martin 1991) described in Section 2, where only subject agreement marker, but not the object marker, may be omitted (i.e. the object agreement marker is obligatory).
2. The form of reflexive verbs (in ISL) is determined by object agreement rather than subject agreement. That is to say, the form of the verbs (their facing, their internal movement and their path movement if there is one) shows object agreement rather than subject agreement with the S/O reference point.
3. The object-agreement marker in ISL is marked for both person and number, while the subject-agreement marker is marked only for person, not for number (i.e. only the object-agreement marker has both a singular and a plural form).

If it turns out that ISL has object agreement, but not subject agreement, this might have implications for generalizations about hierarchies of verb agreement in human languages in general. I leave these implications and consequences for future research.<sup>37</sup>

## 7. Conclusions

This paper has focused on the agreement system of agreement verbs in ISL. It has addressed the question of whether agreement verbs morphologically mark their syntactic arguments or semantic/thematic notions such as source/goal. Regular agreement verbs provide no conclusive evidence for supporting either hypothesis. Such evidence, however, is provided by backwards verbs, which function as a test-case, since they manifest a different combination of the same ‘ingredients’.

By examining the properties of backwards verbs and comparing them with regular agreement verbs, the analysis presented in this paper has provided evidence for the following claims:

1. ISL has two agreement mechanisms; one is marked morphologically by the direction of the path movement, the other, by the facing of the hand(s).
2. Each of these systems encodes different grammatical relations, namely the semantic/thematic structure and the syntactic argument structure, respectively.
3. The morphological realization of these systems reflects two possible associations between them: one of them, the ‘typical’ one, is characteristic of regular agreement verbs (source-goal with subject-object respectively), while the other, atypical, possibility characterizes backwards verbs (source-goal with object-subject, respectively).

Thus, the ‘backwardness’ of backwards verbs is attributed to the less typical association between their thematic and syntactic structures. Neither of these components by itself is in any sense ‘backwards’. It is only the special combination of them which results in this ‘backwardness’.

The uniqueness of ISL, a manual-visual language, is that a large portion the sublexical structure of the verb — its thematic structure, syntactic structure and the way they are

associated, is reflected directly in its morphology, which makes it much more accessible than in spoken languages, and hence its importance to linguistic theory in general.

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### **Notes**

1. The description of agreement and backwards verbs in this section is based mainly on Padden (1983). To make this preliminary presentation simple, I use her terminology for describing the agreement markers on those verbs, though this terminology is based on theoretical assumptions which will be challenged in coming sections.
2. The first index indicates the agreement marker on the beginning point of the verb. The second index indicates the agreement marker at the end point of the verb. For notational conventions used in this paper, see the Appendix.

3. F&G (1978:28) refer to the changing of the orientation of the hand(s) as **reversibility**, whereas the change in the direction of the path movement is referred to as **directionality**. They point out that there are directional verbs which are not reversible, and there is at least one verb which is reversible but not directional (OWE (ASL)).
4. The necessity for drawing a distinction between palm orientation and finger orientation in order to provide an accurate representation of the sign has been pointed out in various works, e.g. Kegl and Wilbur (1976) Wilbur (1979) and works cited there. Wilbur (1979) points out that finger orientation is better defined with respect to the metacarpals (rather than the fingertips), because “the fingers may bend in toward the palm, thus obscuring the direction in which they would be pointing if they were extended straight. A line extending from the metacarpals is used to define finger orientation, whether the fingers are extended or bent.” (ibid., p. 64).
5. Note that the orientation must still be represented for STARE, to distinguish it from PERSON-LYING-DOWN (ASL) (Wendy Sandler, personal communication). Thus, it seems that the orientation is relevant for the **lexical** characterization of the sign, while facing is relevant for describing its agreement pattern.
6. It was pointed to me by an anonymous reviewer that facing need not necessarily be constrained by the loci of the arguments; the main difference between orientation and facing is that facing changes whereas orientation is constant. While this is true in many cases, in some verbs orientation also changes as a result of the change in facing. For example, in HELP (ISL), facing is realized on the fingertips, but the palms change their orientation as well, because in that sign it is physically impossible to change the facing of the fingertips without changing palm orientation. (The fact that palm orientation is in many cases determined by fingertips orientation was noted Greftegreff 1992, with respect to indexical signs in Norwegian SL.)
7. I make no claim here about whether facing must be specified for signs other than agreement verbs, or whether specification of orientation is sufficient.
8. Whether facing is realized on the palms or fingertips can be predicted from the orientation features of the citation form of the verb: facing is realized on that part of the hand which is specified for outward orientation in citation form. (This predicts that if no part of the hand is specified for outward orientation — facing would be phonologically neutralized. I will return to this point in Section 6.1.)
9. A similar sub-set of verbs with “backwards” morphology has been noted in other SLs as well (Taiwan SL — Smith 1990; Italian SL — Pizzuto, Giuranna & Gambio 1990).
10. I use the notions **source** and **goal** in the sense of Gruber (1976). Gruber introduces these notions for describing the semantic structure of “verbs of motion”, where the term “motion” is used in “a physical or in an abstract sense, indicating a change of position, possession, identification, activity etc.” (ibid., p. 38). Verbs of motion are associated with three nominals: the **Theme** — “the entity which is conceived as moving or undergoing transitions” (ibid., p. 38), the **Source** nominal — the originating point of motion, and the **Goal** — the ultimate destination of the motion.
11. Padden (1983) describes Agreement Marker Omission in ASL. I have observed this phenomenon in agreement verbs in ISL as well.
12. Friedman refers to these verbs as **multidirectional verbs**, and she includes in this class of verbs all verbs in which the direction of the path movement is mutable; i.e. Padden’s (1983) Spatial Verbs (such as GO/COME) are also included in this class.
13. An analysis of verb agreement in terms of source-goal is argued for in Shepard-Kegl (1985), where she argues that there are indeed no backwards verbs, since they do not differ from regular agreement verbs (ibid. p. 422).
14. But see Shepard-Kegl (1985:403–6) for a different analysis of this phenomenon.
15. Meier (1982:65) and Janis (1992:318) make a similar observation.
16. Notice that although the DTR is not stated in terms of the notions of **source** and **goal**, these notions are implied in it, since the **theme** is transferred **from** or **towards** the subject. Thus,

implicitly, the subject is understood as the semantic **source** in one case, and as the semantic **goal** in the other. I shall return to this point later on.

17. ASL differs from ISL in that respect: in ASL there is a reflexive pronoun (an A handshape with an extended thumb), and the verb is articulated with respect to the locus of that pronoun (Diane Brentari, personal communication). The DTR (which was developed to account for the facts of ASL, not ISL) may then be able to account for reflexives in ASL. But Janis (1992) points out that in ASL, reflexive verbs exhibit only object agreement, a point which might be problematic for the DTR. It might be argued (Ronnie Wilbur, personal communication) that since in reflexive verbs the subject is identical to the object, there is no actual transfer of the Theme, and therefore the DTR is irrelevant. But then a different mechanism altogether will have to account for the fact that reflexive verbs exhibit object (rather than subject) agreement.
18. Sentences (28) and (29) illustrate the problem with respect to the backwards verb TAKE. But this point (i.e. the underspecification of the direction of the Path) is problematic for regular agreement verbs as well. (I am in debt to Diane Lillo-Martin for pointing it out to me.)
19. Janis (1992) also maintains that the semantic and syntactic components should be kept separate, but she formalizes this distinction in terms of different hierarchies of agreement controllers in ASL. Since her work became available too late for incorporation into this paper, a detailed comparison between her approach and the approach suggested here is beyond the scope of this paper. For further details the reader is referred to Janis's work.
20. F&G are not explicit as to whether they refer to syntactic notions of S and O, or to thematic notions such as recipient, agent etc.
21. Uyechi (1994) has independently arrived at a similar conclusion regarding the distinction between the function of the direction of the path movement and the facing of the hands.
22. Whether it is the direct or indirect object that the hands are facing is a matter I shall not address in this paper.
23. Not all agreement verbs change facing. In some cases the facing change is phonologically blocked. I shall return to this point in Section 6.
24. It was pointed out to me by an anonymous reviewer that the ASL verb pair LEND/BORROW might constitute a problem for this analysis, since in some dialects BORROW is only optionally reversible, i.e. the facing changes only optionally while the movement shifts.
25. It seems that subjects are more readily associated with **source** rather than **goal**, because both notions (i.e. subject and source) are associated with the notion of **agent** (Yehuda Falk, personal communication). Agents tend to be realized grammatically as subjects (in the unmarked case), and agents tend to be situated at the source point of the action, in order to exert control (as pointed out in Shepard-Kegl 1985:424). Anderson (1971:173) notes that in many languages (e.g. Latin, Old English, German, Tibetan), sources and agents (which he calls Ergatives) are marked superficially by the same morphological case or preposition.
26. Shepard-Kegl (1985) differs from the above treatments in that she does draw a distinction between two mechanisms. She argues that "...ASL has both source/goal agreement and subject/object agreement; and that these two agreement systems serve totally different functions in the grammar." (ibid. p. 401). The main difference between her analysis and the analysis I propose here is that for Shepard-Kegl the subject/object agreement marker is not realized morphologically by the hands, but rather as a "role prominence" clitic (manifested by the signer's torso); while I argue that this agreement marker is realized by the hands.(i.e. that both types of agreement are manifested manually). The relationship between the 'role prominence' clitic and the subject/object agreement which I proposed above is not yet clear to me; it seems unlikely that these two mechanisms redundantly mark the same system in the grammar of these languages. Note that while both mechanisms (role-prominence-clitic and the facing of the hands) mark syntactic relations, the former is characteristic of **subject** while the latter is stated in terms of **object**. Thus, it might be suggested

that these are two different **case markers**, nominative and accusative respectively. Such an analysis, however, needs to await future research.

27. This is the case especially when the verb has no internal movement. Since the reflexive form of the verb deprives the sign of its path movement, a sign without internal movement would remain without any movement at all, which is phonetically impossible. (See Brentari 1990; Perlmutter 1992 and Sandler 1993, 1994 for a discussion about movement as the most sonorous element in the sign.)
28. An anonymous reviewer has pointed out to me that the DTR could be trivially fixed to account for sentences 39–42. But notice that even if the DTR is stated in terms of two reference points (and thus the path movements in 39–40 would be fully specified), the DTR would still need two distinct statements to account for both regular and backwards verbs. That is to say, the DTR cannot account for the behavior of the two types of agreement verbs by the same mechanism, but rather each part of the DTR accounts for only one set of verbs: the first part of the DTR is relevant only for regular agreement verbs, whereas its second part relates only to backwards verbs. The analysis suggested here, however, accounts for both types of verbs by a single mechanism, namely the AMPs.
29. Padden (1983) makes a similar claim with respect to the verb INVITE.
30. Spatial verbs differ from agreement verbs precisely in this respect: i.e. spatial verbs agree with the source and goal of motion rather than with their subject and object. Janis (1992) points out that the two kinds of agreement (i.e. locative agreement and person agreement) are mutually exclusive: locative and person agreement cannot co-occur on the same verb. (I thank an anonymous reviewer for bringing this to my attention.)
31. For convincing argument along the same lines see Shepard-Kegl (1985:408).
32. It has been pointed out to me by an anonymous reviewer that the distinction between the physical motion and the figurative motion is precisely the difference between spatial and agreement verbs.
33. In Gruber (1976), for example, this association is done by co-indexing of the source/goal nominals and the arguments of the verb.
34. Diane Lillo-Martin (personal communication) points out that verbs marked for initial contact can have goal agreement in ASL as well.
35. It was pointed to me (Wendy Sandler, personal communication), that it might be argued that principle (b) of the AMPs should be stated in terms of subject as well, since two reference points are needed to determine the axis of the facing; i.e. when the facing of the hand(s) is towards 2P locus, the back of the palm can be oriented towards 1P locus **or** 3P locus, depending on who the subject is. I suggest, however, that the axis of the facing in the inflected forms of the verb is predictable from the relation between the axis of the path movement and the facing in citation form. That is to say, if in citation form the direction of the path movement and the facing are on the same axis, then for all inflected forms of the verb they will be on the same axis. Hence, the axis of the facing is determined by the Object locus and the axis of the direction of the path movement, and no reference to the Subject locus is needed.
36. Very similar observations concerning the centrality of object agreement in ASL were made independently by Janis (1992), who mentions them as evidence for ranking objects above subjects in her hierarchy of agreement controllers in ASL.
37. See Meir (1994) for a suggestive analysis aimed at resolving this apparent difference between ISL and (at least some) spoken languages. It is suggested there that the object agreement marker should be re-analyzed as an accusative case marker; thus, agreement verbs in ISL mark the syntactic relations between their arguments by case marking rather than agreement.

### Appendix: Notational Conventions

Since there is no standard transcription system for ISL, the following notational conventions are used (following Padden, 1983):

- Signs are represented with English glosses in capitalized letters.
- For signs which are articulated in a specific locus position, this position is indicated by a subscript which precedes the sign.
- Articulation at 1P locus is indicated with a 1 subscript. Articulation at 2P locus is indicated with a 2 subscript. Articulation at 3P locus is indicated with a 3 subscript (or with letters *i j k* etc., when more than one 3P locus is assigned in a given sentence).
- For signs which have a path movement (i.e. the articulation of the sign involves moving from one locus position to another), the subscript which precedes the sign indicates its beginning point, and the subscript which follows the sign — its end point.

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