

The Optionality of Agreement Phrase: Evidence from German Sign Language (DGS)

Christian Rathmann
The University of Texas at Austin

1. Introduction

The following sentences show that in German Sign Language (DGS), a verb, as indicated by the subscripts, may be modulated to show agreement with the subject and the object. See Figure 1 for illustrations of the signs FRAGEN and LEHREN. (All figures are in the Appendix.)

- (1) a. HANS_i MARIE_j_i FRAGEN_j
Hans Marie ask
'Hans asks Marie.'
- b. HANS_i MARIE_j_i LEHREN_j
Hans Marie teach
'Hans teaches Marie.'

The modulation of the verb depends on the space in front of the signer, which may be used to establish referents. For example, Hans may be established on the right side and Marie on the left side. Let us label the locations with the indices of the noun phrases, i.e., *i* and *j* respectively.

The modulation alters the verb stem so that the 'back' of the sign corresponds to the subject index and the 'front' to the object index. Depending on the sign, the 'back' can mean the starting point of the movement; it can also mean the back side of the hand(s) in some signs. Similarly, the 'front' usually means the ending point of the movement and/or the front side of the hand(s). In the above examples, the verb stem moves from the subject to the object index.

Verbs which can undergo this kind of modulation have been called 'agreeing verbs' in the signed language literature (e.g., Padden 1983). In using the term 'agreeing verb' I restrict myself to (di)-transitive verbs that assign the theta-roles of agent and theme/patient to two animate arguments.

If a verb can undergo this kind of modulation, it must undergo the modulation. It is ungrammatical to sign the verb without the modulation, as shown by the absence of subscripts on the verb in (2b).

- (2) a. HANS_i MARIE_j_i VERSPOTTEN_j
 Hans Marie annoy
 'Hans annoys Marie.'
- b. * HANS_i MARIE_j VERSPOTTEN
 Hans Marie annoy
 'Hans annoys Marie.'

There are other agreeing verbs which should show agreement with the subject and object, but cannot due to phonetic reasons. For example, MAG 'like' requires contact with the signer's chest throughout the articulation of the sign. A modulation as described above would require the signer to release contact with the chest, but this lexical property apparently cannot be overridden

In such cases, an auxiliary-like element that I call 'PERSON Agreement Marker' (PAM) is inserted into the sentence. PAM uses the 'bent L' handshape and may be accompanied by the mouthing 'auf'.

- (3) a. * HANS_i MARIE_j MAG
 Hans Marie like
 'Hans likes Marie.'
- b. HANS_i _iPAM_j MARIE_j MAG
 Hans PAM Marie like
 'Hans likes Marie.'

See Figure 2 for illustrations of MAG and PAM. The element PAM shows agreement with the subject and the object, as indicated by the subscripts. In this sense, PAM serves to morphologically repair the lack of agreement on the verb MAG.

2. Research Question and Proposal

There has been debate in the literature on the syntactic status of agreement. For example, Pollock (1989) has suggested that there is a functional category called Agreement Phrase (AgrP) that is present in all syntactic structures. On the other hand, Iatridou (1990) has raised the question of providing independent syntactic motivations for such a functional category.

According to Chomsky's (1995) Full Interpretation, which says that "there are no superfluous elements in representations or derivations, so that the representations and derivations must be kept to a minimum", it may not be necessary to posit an AgrP in all the structures. Another way to understand the issue is Speas's (1994) Principle of Economy of Projection: "Project XP only if its head X or its specifier [Spec,XP] has independent semantic or phonetic content."

In this paper, I would like to revisit the question of whether the functional category of AgrP is motivated in the syntax for DGS. Clearly, there is phonetic content underlying the verb agreement in the above data, namely stem modulation with respect to the indices of the subject and the object. The phonetic content could be one potential argument for the presence of AgrP in sentences with overt agreement.

For another signed language, American Sign Language (ASL), Neidle, Kegl, MacLaughlin, Bahan and Lee (2000), following Pollock (1989), have suggested that AgrP is present in all sentences. They use a similar kind of argument: there is always phonetic content to be found through non-manual expressions, such as eye gaze which they argue manifests object agreement and head tilt which they argue manifests subject agreement. As they note, such nonmanuals are optional, and the question remains whether there is AgrP in the structure if the nonmanuals are optionally not used.

To determine whether AgrP is motivated in the syntactic structure of DGS, I would like to follow the spirit of Iatridou (1990) and provide an independent syntactic motivation for AgrP, apart from others like those suggested by Chomsky (1995) and Speas (1994).

I first turn to the functional motivations behind the insertion of PAM: phonetic and pragmatic constraints. Then I raise the question of whether PAM is indeed inserted in AgrP as opposed to another functional category like AspP. I present evidence from two domains: (i) syntactic motivations from the asymmetries between sentences with PAM and sentences without, and (ii) the complementary distribution of PAM with other forms of PAM in DGS.

3. Interaction between Phonetic Constraints and PAM

In this section, I show that there are phonetic constraints at this interface require the insertion of PAM. The phonetic constraints that I refer to are those that have been identified by Mathur and Rathmann (2001). I will now give examples of three such constraints.

First, one phonetic constraint interacts with verbs that are body-anchored. For example, the DGS sign for 'talk to' is SPRECHEN. While the form of the sign can be used for a first person subject and a nonfirst object associated with the addressee, the body contact in SPRECHEN blocks the inflection for two nonfirst person arguments. See Figure 3. There are a few other DGS verbs that behave similarly: VERRATEN 'tattletale', VERTRAUEN 'trust', HASSEN 'hate', and MAG 'like'.

A second phonetic constraint involves some conflict in the motor requirements of the hand/arm movements. One of them bars movement that takes place from the shoulder joint, the elbow joint, and the radio-ulnar part of the arm which is facing up. For example, BERATEN 'counsel' is a two-handed sign which has the palm facing up. If you want to say 'you counsel me' in DGS, you have to twist the hands in such a way that the final form would not be well-formed according to the phonetic constraint. See Figure 4.

Now we turn to the last example of a phonetic constraint. Let us look at another DGS sign for 'annoy' VERSPOTTEN, which involves both hands in the V handshape. The sign 'I annoy you all' is not well-formed because it violates a phonetic constraint against movement that involves outward rotation from the shoulder as well as the elbow.

So far, we have seen three examples of phonetic constraints that block full verb agreement. These phonetic constraints have cross-linguistic status: they appear not only in DGS but also in other signed languages such as American Sign Language (ASL), Australian Sign Language (Auslan), and Russian Sign Language (Mathur and Rathmann 2001).

The agreement is supposed to be expressed overtly, but since the verb cannot be modulated for number due to these phonetic constraints, the derivation crashes as a result at the articulatory-perceptual interface. Instead, another derivation is chosen in which a morphological marker, PAM, is pulled from the lexicon and is inserted into AgrP once it has been projected. Then PAM can be modulated for number instead of the verb, so that agreement is now expressed overtly at the articulatory-perceptual interface.

4. Interaction between Pragmatic Constraints and PAM

PAM may be inserted not only due to phonetic factors but also due to pragmatic factors, in particular those that force a specific episodic reading. Note that episodic readings are available only with stage-level predicates. While a fully inflected verb may have either an episodic reading or a generic reading, when PAM gets inserted, it is this episodic reading that is forced. To see this consider the following sentences.

- (4) SOHN_i [MUTTER_i 5-JAHRE _iLEHREN_j]
 son mother 5 years teach
 ok 'A mother used to teach her son for 5 years' (generic reading)
 ok 'A mother has been teaching her son for 5 years' (episodic reading)

The context for this sentence is ambiguous between generic and episodic readings. Now compare the sentence with the following, where PAM has been added.

- (5) SOHN_i [MUTTER_i 5-JAHRE _iPAM_j _iLEHREN_j]
 son mother 5 years PAM teach
 ?? 'A mother used to teach her son for 5 years' (generic reading)
 ok 'A mother has been teaching her son for 5 years' (episodic reading)

It is no longer possible to have a generic reading under which the mother used to feed the son for a period of time. Moreover, there is a sign in DGS glossed as FERTIG which seems to be a pragmatic marker that indicates that the event described by the sentence has come to a complete end. This marker induces an episodic reading of the verb where the episode has now been accomplished, a reading which is compatible with the use of PAM, as shown in the following sentence.

- (6) SOHN_i [MUTTER_i 5-JAHRE _iPAM_j _iLEHREN_j] FERTIG
 son mother 5 years PAM teach finish
 * 'A mother used to teach her son for 5 years' (generic reading)
 ok 'A mother has been teaching her son for 5 years' (successive episodic reading)

The story here is that if an episodic reading needs to be forced, and if PAM is not inserted, the sentence will be pragmatically odd.

The idea that an auxiliary-like element like PAM 'forces' an episodic reading can be explained if there is a shift in the semantics of the verb so that there is a spatio-temporal argument tied to the event described by the sentence. This idea is not new and receives independent motivation from other work on spoken languages such as Green's (2000) work on African American English involving the *be*-type construction:

- (7) *Be*-type construction in African American English
 a. Bruce be crying when the teacher call his mother.
 b. HAB [call his mother (the teacher, e)] [cry (Bruce, e)]

The *be*-type construction serves to establish the event described by the predicate at a particular time and place. Note that the predicate is a stage-level predicate with an event argument, expressed by *e*. Green notes that stative verbal predicates like psych verbs can also occur in the *-ing* form in *be*-type constructions, as shown in the following:

- (8) *Be*-type construction coerces stage-level reading on individual-level predicate
 a. Sue be having a lot of books.
 'Sue usually/always has a lot of books'
 b. Sue be knowing that song.
 'Sue usually/always knows that song'

Green argues that even though these predicates are inherently individual-level, it is the *be*-type construction forces a stage-level reading on the predicates and changes the interpretation from one of a state to one of an event.

The same thing seems to be happening with PAM. The following sentence is ambiguous between an episodic and a generic reading:

- (9) MARIE_i HANS_j [IX_i IX_j KENNEN]
 Marie Hans she him know
 'Marie knows Hans.'

However, when one inserts PAM, the stage-level (episodic) reading is coerced:

- (10) MARIE_i HANS_j [,PAM_j KENNEN]
 Marie Hans PAM know
 'Marie knows Hans at a particular moment.'

This sentence is especially used in a context where Marie is trying to recall who Hans is and finally recalls who he is at that particular moment.

5. First Argument for Inserting PAM under AgrP: Asymmetry between Sentences with PAM and Sentences with Agreeing Verbs

So far, we have seen that PAM may be inserted due to phonetic or pragmatic reasons. The next question is, where in the structure is PAM inserted? It is argued here that PAM is inserted under AgrP.

There are other possibilities where PAM could be inserted. For example, it is possible that PAM is inserted inside the verb phrase. Alternatively PAM could be inserted into Aspect Phrase if there is an episodic reading involved, since this reading may have more to do with telicity (versus atelicity), which is one feature of Aspect. One important fact that is relevant here is that PAM cannot be modulated for temporal aspect, but it can be modulated only for agreement. (In contrast, regular verbs can be modulated for temporal aspect and agreement.)

Thus I assume that when PAM is inserted, it is inserted into an AgrP, where the strong phi-features of [number] will be copied from the verb phrase and receive interpretation. The remaining features in VP will then be deleted (Chomsky 1995). Otherwise, if PAM is not inserted, the only way that the derivation may pass is if the verb is inserted from the lexicon already inflected and its features are then interpreted within the VP.

I now present two kinds of arguments for this position. In this section, I show that there is an asymmetry between sentences with PAM and sentences with agreeing verbs which argues that PAM is best positioned under AgrP rather than under VP. In the next section, I demonstrate the complementary distribution of PAM with other kinds of PAM. Sentences with agreeing verbs and sentences with PAM have different properties. For example, PAM may cliticize to the object, whereas an agreeing verb cannot. When PAM is cliticized to the object, the whole unit may move to a structurally higher position, such as before modals or negation. In contrast, in a sentence with an agreeing verb, the object may not move above a modal or a negation.

First, when a verb is not able to show agreement due to phonetic constraints, PAM is inserted. Afterwards, the object is obligatorily shifted into the specifier position of AgrP, since the structure in (13) is not grammatical at the surface. The result is that PAM and the object are adjacent to each other. Under this condition of adjacency, PAM may cliticize to the left of the object.

- (13) Underlying structure:

$$\text{HANS}_i \quad [_{\text{AgrP}} \text{PAM}_j \quad [_{\text{VP}} [\text{MAG} [\text{MARIE}_i]]]]]$$
 'Hans likes Marie'
- (14) Object shift

$$\text{HANS}_i \quad [_{\text{AgrP}} \text{MARIE}_{i1} \text{PAM}_j \quad [_{\text{VP}} [\text{MAG} [t_j]]]]]$$
- (15) Object cliticization

$$\text{HANS}_i \quad [_{\text{AgrP}} \text{PAM}_j + \text{MARIE}_{i1} \quad [_{\text{VP}} [\text{MAG} [t_j]]]]]$$

In contrast, when there is an agreeing verb in the sentence, there is no object shift nor object cliticization. One could theoretically assume that there is AgrP in the structure, as in (16). The object could raise to the specifier position of AgrP, as in (17). However, this is not possible unless the subject and the object are clearly topicalized with a special non-manual topic marker. Since object shift is not possible with agreeing verbs and since there is no PAM, there is also no cliticization process in sentences involving agreeing verbs.

- (16) Underlying structure:

$$\text{HANS}_i \quad [_{\text{AgrP}} \quad [_{\text{VP}} [\text{FRAGEN}_j [\text{MARIE}_i]]]]]$$
 'Hans asks Marie'
- (17) Object shift

$$* \text{HANS}_i \quad [_{\text{AgrP}} \text{MARIE}_{i1} [_{\text{VP}} [\text{FRAGEN}_j [t_j]]]]]$$
- (18) Object cliticization

$$* \text{HANS}_i \quad [_{\text{AgrP}} \text{FRAGEN}_j + \text{MARIE}_{i1} \quad [_{\text{VP}} [t_j]]]]$$

To see more clearly this asymmetry between sentences with PAM and sentences with agreeing verbs, a further prediction is that the PAM+object unit may occur not only before the verb, as we have seen in (15), but also before negation, aspect, and modals. On the other hand, in sentences with agreeing verbs, the object cannot appear before such elements.

- (19) PAM sentence: object can follow or precede negation
- a. HANS_i [_{NegP} [NOCH^NICHT] [_{AgrP} [_i PAM_j+MARIE_j]] [_{VP} [MAG]]]]
 - b. HANS_i [_{NegP} [_i PAM_j+MARIE_j]_k [NOCH^NICHT] [_{AgrP} t_k [_{VP} [MAG]]]]
- ‘Hans does not yet like Marie.’
- (20) Agreeing verb: object can only follow negation
- a. HANS_i [_{NegP} [NOCH^NICHT] [_{VP} MARIE_j _iFRAGEN_j]]
 - b. * HANS_i [_{NegP} MARIE_j [NOCH^NICHT] [_{VP} t_j _iFRAGEN_j]]
- ‘Hans has not yet asked Marie.’

We see parallel examples with perfective aspect and modals:

- (21) PAM sentence: object can follow or precede perfective aspect
- a. HANS_i [_{AspP} [GEWESEN] [_{AgrP} [_i PAM_j+MARIE_j]] [_{VP} [MAG]]]]
 - b. HANS_i [_{AspP} [_i PAM_j+MARIE_j]_k [GEWESEN] [_{AgrP} t_k [_{VP} [MAG]]]]
- ‘Hans already likes Marie.’
- (22) Agreeing verb: object can only follow perfective aspect
- a. HANS_i [_{AspP} [GEWESEN] [_{VP} MARIE_j _iFRAGEN_j]]
 - b. * HANS_i [_{AspP} MARIE_j [GEWESEN] [_{VP} t_j _iFRAGEN_j]]
- Hans has already asked Marie.’
- (23) PAM sentence: object can follow or precede modal
- a. HANS_i [_{TP} [KANN] [_{AgrP} [_i PAM_j+MARIE_j]] [_{VP} [SCHWINDELN]]]]
 - b. HANS_i [_{TP} [_i PAM_j+MARIE_j]_k [KANN] [_{AgrP} t_k [_{VP} [SCHWINDELN]]]]
- ‘Hans can lie to Marie.’
- (24) Agreeing verb: object can only follow modal
- a. HANS_i [_{TP} [KANN] [_{VP} MARIE_j _iFRAGEN_j]]
 - b. * HANS_i [_{TP} MARIE_j [KANN] [_{VP} t_j _iFRAGEN_j]]
- Hans can ask Marie.’

In sum, I have shown a clear asymmetry between sentences with PAM and sentences with agreeing verbs. In the former kind of sentence but not in the latter, the object may appear either after or before various elements such as negation, aspect, and modals. This can be explained only if we assume that PAM is inserted under AgrP, and the object is shifted into the specifier position of AgrP, whence the PAM+object may move to a higher structural position above negation, aspect, and/or modals. If PAM is inserted under VP, it would not be possible to derive those different word orders, as observed with sentences with agreeing verbs. This suggests that when PAM is inserted, it is inserted under AgrP; otherwise, if there is an agreeing verb, there is no AgrP.

6. Second Argument for Inserting PAM under AgrP: Complementary Distribution with other Forms of PAM

The other kind of evidence comes from the complementary distribution of PAM with other elements in DGS. So far, we have looked at one form of PAM but there are actually two other kinds of PAM, which I will label PAM-ÜBER and PAM-FÜR respectively. See Figure 5 for illustrations. Moreover, I will label the original form as PAM-AUF.

PAM-ÜBER uses the same handshape as PAM-AUF, i.e. the bent L handshape, but the mouthing that may accompany it is different and uses the form /ube/. The movement is also different: it marks just one endpoint, which is associated with the adjunct that is the theme of constructions like ‘read about’ or ‘talk about’. As for the other kind of PAM, PAM-FÜR uses the spread F handshape and may be accompanied by a mouthing of /fyr/. It marks the two endpoints that are associated with the subject and with the object that receive the theta-roles of agent and beneficiary respectively. Apart from phonological differences, they differ in that they mark different argument structures.

These forms are in complementary distribution. One way to see PAM-ÜBER and PAM-FÜR’s parallel behavior with PAM-AUF is that they may cliticize to an object and appear in a structurally higher position above a modal or negation. First here is a simple sentence that uses PAM-ÜBER and a modal:

- (25) IX_i KANN [PAM-ÜBER_j (object pro_j)] UNTERHALTEN
 ‘We can chat about you’

The PAM-ÜBER unit may precede the modal KANN, as in the following sentence:

- (26) IX_i [PAM-ÜBER_j (object pro_j)] KANN UNTERHALTEN
 ‘We can chat about you’

There are also parallel examples illustrating the same point for PAM-FÜR:

- (27) IX_i KANN [PAM-FÜR_j (object pro_j)] BUCH KAUFEN
 ‘We can buy a book for you’
- (28) IX_i [PAM-FÜR_j (object pro_j)] KANN BUCH KAUFEN
 ‘We can buy a book for you’

The fact that these different forms of PAM are in complementary distribution suggests that PAM-ÜBER and PAM-FÜR also occur in AgrP. What this shows us is that PAM-AUF is not the only element that requires the projection of AgrP. The distribution of PAM-ÜBER and PAM-FÜR therefore constitute independent evidence for the projection of AgrP, since they require the projection for different reasons for PAM-AUF: case-checking for indirect objects with different kinds of verbs.

7. Discussion

PAM is inserted in AgrP to ensure convergence at the two interfaces. Here I raise several further questions regarding the syntax of PAM.

7.1 *The Nature of the Derivation*

The first question is how the derivation proceeds with respect to the insertion of PAM. There are two possible ways. One way is to let the derivation proceed as usual. If PAM is required yet there is none in the numeration, the derivation crashes. Another derivation will have to proceed in which PAM is part of the numeration. Thus whatever derivation there is must be attempted until there is one that converges at the two interfaces.

Another way is to use Last Resort (Chomsky 1995). If the derivation crashes at one of the interfaces, PAM will be inserted as a last resort, much like *do*-support for English and as argued for Brazilian Sign Language (LSB) by Quadros (1999). *Do*-support, when it is inserted, does not and cannot affect the syntactic structure. In this sense, the insertion of PAM does not seem to be like *do*-support because the insertion of PAM does affect the syntactic structure, namely it invokes the projection of AgrP.

7.2 *Cross-linguistic Applications*

Another issue is whether the above observations have any cross-linguistic applications. Not all signed languages have a counterpart to the element PAM that we have been discussing. ASL is one notable example. It seems from a review of the signed language literature that there are in fact two kinds of signed languages, one with PAM-like elements and the other without.

Those that seem to behave like DGS in having PAM-like elements include Sign Language of the Netherlands (Bos 1996), Japanese Sign Language (Torigoe 1994 and Fischer 1996), and Taiwan Sign Language (Smith 1990).

Those that behave like ASL in not having any PAM-like elements include Russian Sign Language, Australian Sign Language (Mathur and Rathmann in press), and Swedish Sign Language. Since I have shown above how the projection of AgrP depends on the insertion of PAM in DGS, I suggest that if there is no PAM in languages like ASL, no AgrP will be projected either.

7.3 *Correlation with Word Order*

One interesting thing about the distinction between the two kinds of signed languages seems to be the following: those languages which use PAM do not seem to have fixed word order on the surface, whereas those which do not have PAM seem to have more restricted word order, in particular SVO word order.

Fischer (1975) has argued for a basic SVO word order for ASL using data mostly from reversible sentences, among other evidence. She attributes the strictness of word order in ASL to the necessity for keeping the relations among the subject, the verb, and the object clear. That also seems to be the case for other signed languages that fall into the same group as ASL in the above typology.

On the other hand, the literature on signed languages with PAM has not argued for any particular basic word order for these languages, although it has often been suggested that SOV is the preferred word order (e.g. Bos 1995 for Sign Language of the Netherlands). It seems then that the category of signed languages with PAM do not seem to have strict basic word order. This may

be because word order is not necessary in these signed languages to express the relationships among the subject, the verb, and the object. Rather, they could show the same through an Agr projection and subsequent insertion of PAM.

It should be noted that all of the DGS data presented here show overt nominals in order to clarify the word order. In actual discourse, there is a preference to establish overt nominals as the topics (and optionally at particular locations in the space in front of the signer) and then use null pronominals afterwards. Also, if PAM is used for pragmatic reasons, there is a strong preference to place it in the sentence-final position, which could be the Focus Position.

8. Conclusion

In conclusion, I suggest that AgrP is projected in order to ensure convergence at the articulatory-perceptual interface and/or the conceptual-intensional interface.

In keeping with Minimalist assumptions, overall convergence requires convergence at two interfaces, one at the articulatory-perceptual interface and the other at the conceptual-intensional interface. A derivation will crash if there is no convergence at either interface. It has been demonstrated that there are phonetic constraints at the articulatory-perceptual interface which require a projection AgrP in particular signed languages for convergence. Similarly, it has been shown that there may be pragmatic constraints at the conceptual-intensional interface which may also play a role in the projection of AgrP for convergence.

In broad terms, the main conclusion is that there is no AgrP in the syntactic structure per se. Instead, a verb is inserted from the lexicon into its base-generated position within the verb phrase, VP, and is already modulated for inflection. This is consistent with Chomsky (1995) who argues that “agreement has an even more restricted role and unique status than before, with no apparent impact for the core computational processes.”

The net result is that AgrP in certain signed languages is projected only if it is required for convergence and if there is morphological content like PAM that needs to be inserted into the AgrP. In other signed languages, there is no projection of the AgrP at all since they do not have the morphological content that needs to be inserted, and convergence would have to be achieved in other ways.

Some (e.g., Chomsky 1995) have suggested doing away with AgrP for all languages. Others, (e.g., Pollock 1989), have suggested all languages have AgrP, and yet others like Speas (1994) suggest that some languages have AgrP while other languages do not, depending on their morphological and syntactic properties. On the other hand, it is suggested that the presence (or absence) of AgrP does not need to be pre-established within a language. Rather, its presence can be made optional within a language.

References

- Bos, H. (1994). An Auxiliary Verb in Sign Language of the Netherlands. In I. Ahlgren, B. Bergman and M. Brennan (eds.), *Perspectives on Sign Language Structure*. vol. 1, 37-53. Durham: ISLA.
- Chomsky, N. (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Fischer, S. (1975). Influences on Word Order Change in American Sign Language. In C. Li, (ed.), *Word Order and Word Order Change*. Austin, TX: University of Texas Press.

Fischer, S. (1996). The Role of Agreement and Auxiliaries in Sign Language. *Lingua* 98, 103-120.

Green, L. (2000). Aspectual *be*-type Constructions and Coercion in African American English. *Natural Language Semantics* 8, 1-25.

Iatridou, S. (1990). About Agr(P). *Linguistic Inquiry* 21, 551-577.

Mathur, G. and C. Rathmann (2001). Why not GIVE-US: An Articulatory Constraint in Signed Languages. In V. Dively, M. Metzger, S. Taub, and A. Baer (eds.), *Signed Languages: Discoveries from International Research*, 1-26. Washington, D.C.: Gallaudet University Press..

Neidle, C., J. Kegl, D. MacLaughlin, B. Bahan, and R. G Lee. (2000). *The Syntax of American Sign Language*. Cambridge, MA: MIT Press.

Padden, C. (1983). *Interaction of Morphology and Syntax in American Sign Language*. Ph.D. Dissertation, University of California at San Diego.

Pollock, J-Y. (1989). Verb Movement, Universal Grammar, and the Structure of IP. *Linguistic Inquiry* 20, 365-424.

Smith, W. (1990). Evidence for Auxiliaries in Taiwan Sign Language. In S. Fischer and P. Siple, (eds.), *Theoretical Issues in Sign Language Research, vol. 1: linguistics*, 211-228. Chicago: University of Chicago Press.

Speas, M. (1994). *Economy, Agreement, and the Representation of Null Arguments*. Ms., University of Massachusetts, Amherst.

Appendix

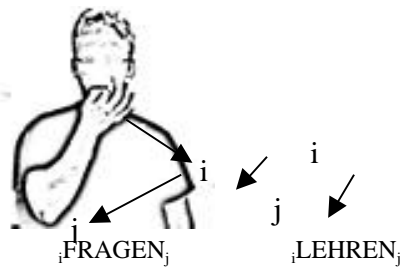


Figure 1. FRAGEN and LEHREN

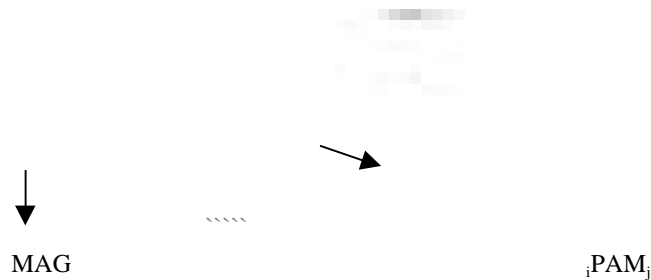


Figure 2. MAG and PAM

