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NON-MANUAL REALIZATION OF AGREEMENT

IN AMERICAN SIGN LANGUAGE

by

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(Order No.   )

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ABSTRACT

This dissertation explores the use of head tilt and eye gaze as

non-manual grammatical correlates of syntactic agreement in

American Sign Language (ASL). While the non-manual grammatical

markings characteristic of questions, negative clauses, topics, etc.,

have been studied, the syntactic functions of head tilt and eye gaze

have received little attention in the literature.

In ASL, one important and systematic use of specific locations

in the signing space is expression of person features (phi-features).

This is evident, for example, in the determiner system, pronominal

reference, and manual marking of morphological subject and object

verb-agreement. Non-manually, these locations in space can be

signaled by the head tilting or eyes gazing to these points in space. We argue here that one major function of head tilt and eye gaze is non-manual expression of syntactic agreement.

In transitive constructions, head tilt is normally used to signal subject agreement, while eye gaze marks object agreement. In intransitive constructions, either device can be used to mark subject agreement. In both transitive and intransitive constructions, the non-manual agreement marking normally begins immediately before the VP (Verb Phrase) is articulated and extends over the VP. The interactions of different realizations of syntactic agreement are also examined.

The basic conclusion with respect to non-manual expression of agreement in ASL is that head tilt and eye gaze are associated with phi-features postulated to occur in the heads of agreement projections, in the same way that other non-manual grammatical correlates have been analyzed to be associated with syntactic features, such as +neg and +wh, occurring in the heads of functional projections. The generalizations proposed by Aarons, Bahan, Kegl, and Neidle (1992) about the distribution of non-manual grammatical

markings in ASL then provide a straightforward account for the

distribution of head tilt and eye gaze within the clause. Furthermore,

striking parallels in the use of head tilt and eye gaze to mark

agreement within DP and IP (Determiner and Inflectional

Projections) suggest important similarities between the agreement

projections internal to DP and IP. We explore the consequences of

these findings for an understanding of agreement in ASL and for

general theoretical questions about syntactic agreement.

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INTRODUCTION AND OVERVIEW

This dissertation explores the use of head tilt and eye gaze as non-manual grammatical correlates of syntactic agreement in American Sign Language (ASL). While the non-manual grammatical markings characteristic of questions, negative clauses, topics, etc., have been studied, the syntactic functions of head tilt and eye gaze have received little attention in the literature.

There are many different functions of head tilt and eye gaze within ASL. Some of these have been observed; some have been analyzed to some degree; but a systematic investigation of the role that head tilt and eye gaze play in ASL at the various linguistic levels and within discourse has yet to be conducted. This dissertation represents a first step toward that goal, in isolating and analyzing those uses of head tilt and eye gaze that relate specifically to the non-manual expression of syntactic agreement.

This dissertation is organized in the following way. Chapter 1 provides some general information about American Sign Language, specifically with respect to its users, origins, and linguistic properties, for the benefit of those unfamiliar with ASL (while others may wish to skip this, and to begin directly with Chapter 2). Chapters 2 and 3 provide background information about non-manual marking and agreement in ASL, in preparation for the discussion in Chapters 4 and 5 of the non-manual expressions of subject and object agreement, respectively, in transitive constructions. Chapter 6 provides an overview of the non-manual correlates of agreement in transitive constructions, including some extensions to previous observations and a discussion of a few problematic cases. Then, the non-manual expression of agreement in intransitive clauses is considered, and general conclusions about non-manual realization of agreement within IP are presented. Chapter 7 considers the consequences of these findings about head tilt and eye gaze for an understanding of agreement in ASL and for a general theoretical account of agreement crosslinguistically. In Chapter 8, the non-manual correlates of agreement internal to DP are considered briefly.

The non-manual correlates of agreement internal to DP parallel, in an interesting way, the non-manual expressions of agreement at the level of IP. Finally, Chapter 9 addresses the interactions between the realizations of non-manual correlates at the DP and IP levels.

CHAPTER ONE

AMERICAN SIGN LANGUAGE: BACKGROUND INFORMATION

1.1 Notice to Readers

The goal of this chapter is to provide background information about the origins and structure of American Sign Language for readers who may be unfamiliar with ASL. Readers may choose to begin instead with Chapter 2, where background information specifically relevant to the current dissertation will be provided.

1.2 Emergence of ASL

The origin of today's Deaf community in the United States is commonly traced to the establishment of the first permanent school for the deaf—the American School for the Deaf (ASD)—which was established in 1817 in Hartford, Connecticut. This should not be taken to suggest that signing did not predate the founding of ASD. It is known through historical and anecdotal accounts that there were several signing[1] communities "scattered" across the country up to the

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[1] For purposes of this discussion, home sign is included as well.

time of the founding of ASD. The signing communities consisted of

different groups ranging from those found in single families to

communities of users (e.g., an island village).

According to numerous accounts, some of them anecdotal, there

were—and still are—numerous home sign systems in the country (and

throughout the world, for that matter), all formed independently of

each other. There is substantial evidence to suggest that deaf

children often develop home sign systems that are much more

sophisticated than the ordinary gestures developed and used by

hearing people in conversation (see Goldin-Meadow and Mylander,

1983, and many other studies by Goldin-Meadow and her

colleagues).

There have been reports of another signed language,

independent of ASL, that existed in America prior to the founding of

ASD: Martha's Vineyard Sign Language, which was used mainly by

the people of Chilmark, a village on the western part of Martha's

Vineyard, off the coast of Massachusetts (Poole, 1979, 1983; Groce,

1985; Bahan and Poole Nash, to appear). That community had a high

incidence of genetic deafness, with the deaf population accounting for

4% of the village total (Groce, 1985). This resulted from many

generations of intermarriage, beginning in Kent, England before the settlement of the village in the 1690's and lasting into the 1950's (Groce, 1985). Over this time, the sign language evolved into a sophisticated language (Poole, 1979, 1983; Groce, 1985; Bahan and Poole Nash, to appear).[2] Martha's Vineyard Sign Language (MVSL) was not only used by Deaf people, but also by many hearing villagers.[3] Hearing people would use MVSL whenever there were deaf people present, or among each other without the presence of deaf people. It was, along with spoken English, a language of the community (Poole, 1979, 1983; Groce, 1985; Bahan and Poole Nash, to appear). The use of MVSL continued until the founding of ASD. When the people on Martha's Vineyard started sending deaf children to ASD in the early 1820's, this resulted in cross-fertilization between MVSL and what was at that time evolving into ASL (Poole, 1979, 1983; Baker and Cokely, 1980; Groce, 1985).

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[2] On the basis of limited anecdotal evidence, some people have suggested that this language may have been more an outgrowth of a home sign system than a fully developed language. However, it clearly had an extended community of users and was passed down over several generations, which strongly suggests that it was richer than some people have assumed.

[3] Presumably, the level of signing competence among hearing villagers would have varied greatly. While some may have learned the sign system fluently, others may have had more of a gestural system incorporating some of the signs they saw around them.

So, when the first school for the deaf was established in 1817, the school became the place where several existing signing 'microcosms' converged into one unified Deaf community, which has been thriving since that time, for over 175 years. American Sign Language emerged from this contact situation. Laurent Clerc, a Deaf Frenchman who was the school's first teacher, brought with him his knowledge of French Sign Language.[4] He taught the pupils with the language he knew and the students brought with them what they had developed and used at home. Out of this unique situation emerged a "new" language, and a new community as well. In a study of ASL cognates, 60% of modern ASL signs were found to be historically related to signs from old French Sign Language, similar to the signs with which Clerc came to America (Woodward, 1978).

Within the decade after the founding of ASD, more schools for the Deaf were formed in the USA mostly by people associated with ASD. The signs were therefore imported to those schools, and ASL

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[4] In fact, he was also familiar with a sign system that had been developed specifically for educational purposes in France: "Methodical Signing" (Lane, 1984). French Sign Language itself originated in a way similar to ASL, in that it emerged from several other signed languages from various homes and regions in France. The founding of the first school for the Deaf in Paris, France in 1755 allowed this to happen (Lane, 1984).

grew and spread in succeeding generations. Many of the alumni

from those schools would form an extended community of Deaf

people keeping in touch through a vast social network of clubs and

associations, which also grew with each generation (for information

on the history of the community, see Gannon, 1980; Lane, 1984; Van

Cleve and Crouch, 1989; Padden and Humphries, 1988).

1.3 Cultural Transmission through the use of ASL in the Deaf Community

Over time, members of the Deaf community, through

socialization, formulated a set of norms that became the protocol for

their interactions with one another. Out of this system of interaction,

which passed on to succeeding generations, there formed cultural

patterns that have turned into what we call today American Deaf

Culture.[5] Over the years Deaf people have shared many stories and

tales of their lives. One of the primary functions of storytelling is

'sense-making', in terms of making sense of one's existence. In the

tales passed down, there is an embedded message about ways to

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[5] About 7 generations from the founding of ASD (calculated assuming 25.4 years to be the average age of one generation).

behave and not to behave and strategies for living as a Deaf person

in a world surrounded by hearing people (Padden and Humphries,

1988; Rutherford, 1993). With the telling of tales, the community

has succeeded in doing two things: allowing the culture to

perpetuate, and allowing the language to flourish.

One thing that enables the culture to flourish is the fact that, as

in every oral culture in the world, there are 'storytellers', who, by

telling stories and passing them down to younger people, play a role

as cultural historians, teachers, and language artists (Okpewho, 1992;

Edwards and Sienkewicz, 1990). One of the traits a teller has is the

ability to manipulate and play with the language. (For examples of

wit and poetry in ASL, see Lentz, Klima and Bellugi, 1980.) He

handles linguistic devices, including the ones described in this work,

with particular aptitude. In the next section we examine the

language of the storyteller and the culture: American Sign Language.

1.4 Basic Linguistic Structure of ASL

While signed languages are realized in a different modality

than spoken languages and make use of visual space instead of

sound, they share the same fundamental organizing principles that

have been found to characterize spoken languages. As in other

languages, sentences are structured in complex but regular ways and are made up of basic units of meaning, which in turn are composed of distinctive units (themselves devoid of meaning). Despite the fact that these distinctive units are not expressed through sound, they correlate with the kinds of distinctive units traditionally studied in "phonology," and thus the same terms are generally applied to the distinctive units in ASL.

1.4.1 Phonology

1.4.1.1 The "Phoneme"

A sign in ASL is produced using either one or two hands, depending on the sign itself. The hand assumes a particular handshape (e.g., closed fist with one index finger extended), with the hand oriented in a particular position (e.g., facing the signer's body), as the sign is formed in some specific place either on the signer's body or within the signing space (e.g., the tip of the finger making contact with the forehead), and undergoes one of a number of possible types of movement (e.g., unidirectional single contacting movement). The sign just described, for example, corresponds to THINK. Each of the characteristics of that sign might be altered in a way that would change the meaning. For example, if a repeated

movement were substituted for a single one, that would provide aspectual information. If the point of contact were instead located on the chin, that would produce the sign DISAPPOINTED instead of THINK. Thus, the elements mentioned above (e.g., index finger handshape, orientation toward signer's body, contact with forehead, single hand movement) combine to form a unit of meaning and to distinguish different meaningful units. Thus, these various possible handshapes, locations, orientations, and movements (called primes in Baker and Cokely, 1980) can be thought of as phonemes in ASL, despite the fact that they are articulated simultaneously rather than sequentially.[6] Stokoe's early work in analyzing the make-up of signs was extremely important and revealing, and he offered essentially the observations just described, although he used different terminology, such as 'cherology' (phonology), 'chereme' (phoneme), 'allocher' (allophone). He categorized signs according to 'dez' (handshape), 'tab' (location), and 'sig' (movement) (Stokoe, 1960; Stokoe, Casterline, and Croneberg, 1965). Many other people have

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[6] It should be pointed out that there is also a great deal of simultaneity in the articulation of sequential elements in spoken language as well.

also studied specific aspects of the articulation of ASL signs.[7]

As with phonemes in spoken languages, those phonemes can be further broken down analytically into their component parts, i.e., distinctive features. For example, in ASL the phoneme handshapes /3/ and /2/ are distinguished solely by the distinctive thumb position (extended vs. closed: [± closed thumb]); see, for example Figure 1. Another distinctive feature seen in Figure 1 is [± clenched fist], which distinguishes, for example, the phoneme handshapes /B/ and /A/.

Also, as with phonemes in spoken language, the particular "phonetic" realization of a phoneme may differ. In some cases the allophonic variants are in free variation, as is the case with the two ways of producing the B handshape (with either a straight hand or a bent hand). In other instances, the choice of allophone is dependent on the context in which the phoneme occurs. For example, the point of contact (for signs like KNOW, THINK, etc.) may change from

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[7] E.g., Battison (1978), who introduced a fourth category: palm orientation. He also introduced the term 'parameters' (which included handshape, location, movement and palm orientation). Others who have studied the articulation of signs include: Kegl and Wilbur (1976); Friedman (1976, 1977); Lane, Boyes Braem and Bellugi (1976); Poizner and Lane (1978); Boyes Braem (1981); Brentari (1990); Sandler (1989); Ann (1993).

Figure 1[8]

Handshape Distinctive Features

± closed thumb   ± clenched fist

/3/   /B/

/2/   /A/
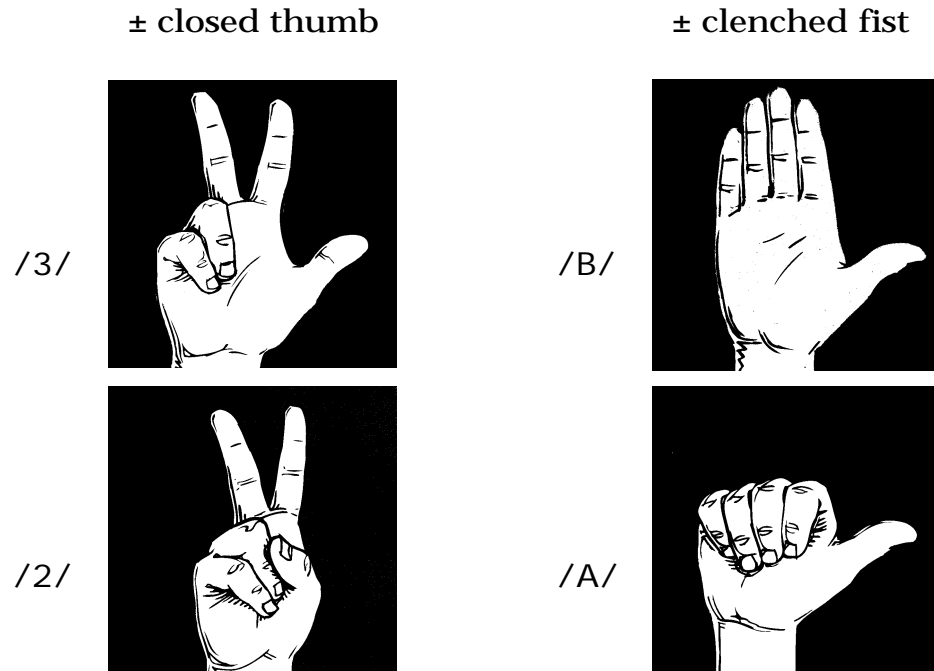
forehead to cheek just in case the following phoneme is located

below the cheek[9] (Kegl and Wilbur, 1976; Friedman, 1976, 1977;

Poizner and Lane, 1978; Boyes Braem, 1981).

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[8] These pictures are copied (with permission) from the American Sign Language Handshape Chart, Illustrated by Frank Allen Paul, © Dawn Sign Press, 1994.

[9] This involves an instance of assimilation to place of articulation.

1.4.1.2 Segments and Autosegments

Subsequent to Newkirk's (1981) sequential analysis of segments in ASL phonology, Liddell and Johnson (1986) further described the movement parameter by applying advances from autosegmental phonology to an analysis of ASL. They proposed that ASL signs can be represented by a distinct tier of Movements and Holds. When a sign is made, it may start in a position that is held for a short time and then move into another position, which may also be held briefly at the end. Sandler (1987) extends the autosegmental account to include handshape, as well, as a separate tier (rather than requiring handshape to be specified for every movement and hold independently). She uses the term "location" rather than "hold". According to the Hand Tier (HT) model proposed by Sandler, locations (L) and movements (M) are the major sequentially occurring phonological categories. Hand configuration, the third major category, is represented only once in a morpheme and is automatically associated to the LM skeletal tier.

Thus, just as ASL has analogs to the basic distinctive units found in spoken languages, there is also an analog of the notion of "syllable". Perlmutter (1992) suggests that, just as spoken languages

exploit syllabic units with Consonants at the periphery and Vowels as the nucleus, signed languages have Holds at the periphery of syllables and Movement as the syllabic core. There is much current and ongoing research into what constitutes a syllable in ASL (see, for example: Brentari, 1990, 1993; Corina, 1990; Coulter, 1993; Wilbur, 1990b, 1993).

1.4.1.3 Other Phonetic and Phonological Processes

In fact, there are analogs in ASL to the whole range of phonetic and phonological processes that have been observed for spoken languages. Even such things as whispering and loud speech find equivalents in signed languages. Instead of raising and lowering the volume of speech, the signer expands or diminishes the signing space. In order to whisper, a signer would reduce his signing space significantly and pull the signing plane off center and low so that his body is partially blocking the space as he engages in a "whisper". In order to produce a "loud" sign (see Kegl and Poizner, 1994), the signer expands the signing space, and the signs produced are larger and more distinct; in addition, there is a tendency to produce one-handed signs with two hands.

Phonetic processes such as assimilation are also quite frequent. One example of assimilation to place of articulation was given earlier, involving a change in the point of contact of a sign like KNOW. There can be assimilation to hand configuration as well. Consider what happens when the sign SEE precedes the sign HAPPEN as in (1):[10]

$$\overline{\hspace{3cm}\text{q}}$$

(1)   YOU   SEE HAPPEN

'Did you see it happen?'

The sign HAPPEN, normally formed with an index finger, may assimilate to the K handshape of SEE.

Diachronically, just as in spoken language, changes occur that may involve assimilation. For example, in the sign TOMATO, which was originally derived from a sign in which the two hands were composed of different handshapes (RED + SLICE), the non-dominant hand assimilated to the handshape of the dominant hand, thereby making both handshapes similar (Frishberg, 1975). Another example

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[10] We are using a conventional system by which ASL signs are represented by glosses that consist of the closest English translation for the sign, in capital letters. This is an impoverished system of representation, because in reality there is no one-to-one correspondance between ASL signs and English words. However, for purposes of presenting the data, this system is used here. Symbols used in the glosses are explained in the Appendix.

of this kind of historical change is from MIND + DROP to FAINT,

where the orientation of MIND changed to conform to that of DROP.

There are also examples of "fast speech phenomena," including

reduction, where certain features or segments are reduced or

deleted. For example, in fast speech, the distance between two

points of contact is often reduced, such as for the sign CONGRESS,

where the location between the first and second contact points (on

the two sides of the upper chest just off the shoulders) is reduced.

In general, movements may occur over a smaller distance in fast

speech, and repetition may also be reduced (Kegl and Poizner, 1994).

Contraction also occurs with great frequency (Kegl and Philip,

1983; Kegl and Poizner, 1994). The process of phonological

contraction is similar to the compounding process described below.

In this process two signs are fused into one and reduced in overall

production. Contracted forms also frequently display assimilation.

Consider, for example, the contracted sign SHOULD^NOT. Indepen-

dently, the sign SHOULD is produced in neutral space in front of the

signer's body with a crooked index finger and the palm facing

downward and undergoes a repeated unidirectional movement. The

sign NOT is normally produced with the thumb sticking out and the

fingers clenched, and it starts with the thumb's contact under the chin and then undergoes a unidirectional single movement towards neutral space. The contracted form has SHOULD's location move up towards the neutral space outside the chin. When contracted, the handshapes of SHOULD and NOT assimilate into a joint handshape, made with a crooked index finger, extended thumb and clenched fist.

Contraction differs from compounding in ASL in that the signs that contract invariably retain their original meaning and reduce more than compounded elements (Kegl and Poizner, 1994). For example, in the contracted form WILL^NOT, the Holds at the end of WILL and at the beginning of NOT (see bold) trigger Hold deletion, resulting in the contracted item; the sign WILL also assimilates to the place of articulation of NOT, as shown in Figure 2:

Figure 2
Contraction

Sign not contracted		Signs contracted
WILL NOT		WILL^NOT
HM**H** **H**MH		HMMH

1.4.1.4 Modality-specific Constraints and Processes

In addition, there are other "phonological" constraints and properties that do not have spoken language analogs, but which have more to do with the specific mode of articulation. For example, Battison (1978) identified some phonological conditions on two-handed signs. They are the "symmetry" and "dominance" conditions.[11] The symmetry condition states that if both hands move, then both hands must have the same handshape (e.g., EXPLAIN, MAYBE, GO). The dominance condition states that if two hands are used but one hand does not move, then the dominant hand will do the movement and the weak hand (i.e., non-moving hand) will remain passive. Furthermore, the passive hand will have unmarked handshapes.[12] (See also Siple, 1978, for a discussion of constraints based on perceptual considerations.)

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[11] See Uyechi (1994) for a reanalysis of the symmetry condition.

[12] Unmarked handshapes in ASL are these seven handshapes: 1,0,5,C,A,B,S. These handshapes are considered unmarked because they are most common in ASL as well as other signed languages in the world; they are also the handshapes children usually use first (McIntire, 1977).

1.4.2 Morphology

Several types of morphological processes productive in ASL will be described here. As with the phonological system just discussed, the morphological processes found in ASL correspond to those that are standardly found for spoken languages, both for derivational and inflectional morphology.

1.4.2.1 Compounding

In ASL, compounds are phonologically marked by a particular reduction in the form of the compound sign. The meaning of the compound frequently diverges somewhat from the compositional meaning of the two signs. For example FACE^STRONG is a compound in ASL meaning "to resemble." The production of the signs is different in a compound than when they are produced individually. Liddell and Johnson's Movement-Hold model is used here to illustrate the process in compounding FACE and STRONG; the Holds (see bold in Figure 3 below) at the end of FACE and at the beginning of STRONG undergo Hold deletion, to form FACE^STRONG.

Figure 3

Compounding

Signs produced individually	Compound signs
FACE STRONG	FACE^STRONG
MH H MH	MMH

This reduction speeds the production of the compound. In fact, the production of a compound in ASL takes roughly half as long as it would take to produce the two signs individually in succession (Klima and Bellugi, 1979).

1.4.2.2 Derivational Processes including Category Change

Nouns may be derived from verbs. Supalla and Newport (1978), in their landmark study, identified a large set of related nouns and verbs in ASL. In earlier studies, Stokoe, Casterline and Croneberg (1965) had not distinguished, for example, the noun, CHAIR, from the verb, SIT. The signs appeared the same because they share the same handshape, orientation, and location. However, Supalla and Newport noticed that many nouns are produced with a reduplicated movement. They characterized this process after examining more than 100 noun verb pairs. In their data they found that if the verb has a single movement, then the noun will have a

repeated movement. They also found cases where verbs have a repeated movement; in those cases, however, the repeated movement of the corresponding noun is restrained (i.e., the movement is smaller and quicker). They thus identified a process of noun formation in these cases that resulted in a repeated and restrained movement for the noun form. They argued that the nouns are derived from the verb stem, in part because it is simpler to derive a repeated movement from a single movement than to do the reverse. Consider again the example just mentioned: SIT and CHAIR. SIT is produced with two H-handshaped hands facing down with the dominant hand moving in a unidirectional single movement to contact the weak hand. The sign for CHAIR is produced in the same way except for the movement, which is unidirectional and repeated.

Another way in which nouns can be derived from verbs is described in Padden and Perlmutter (1987). They showed how an activity noun can be derived from a non-stative verb by a change in the manner of movement. The movement is reduplicated and "trilled" ("repeated numerous times (small, quick, stiff movements)," p. 343). The verb ACT is produced with two hands making a large circular, unidirectional and alternating movement. The derived noun

ACTING is, however, produced with a small, tense, unidirectional and alternating movement, repeated several times in a trilled manner. This process is productive, as can be shown with other non-stative verb-noun pairs.

Characteristic type adjectives can be derived from other adjectives in ASL. Klima and Bellugi (1979) and Padden and Perlmutter (1987:344) described derivation of characteristic adjectives from other adjectives indicating "incidental or temporary states, not from those referring to inherent state, e.g., TALL, SHORT, UGLY, BLONDE." All characteristic adjectives involve two hands; they are produced with circular reduplicated movements. Whether the underlying structure has one hand or two, the derived form will always be two-handed. If the underlying structure is one-handed then the derived form is two-handed, alternating and circular, but if the underlying structure is two-handed, then there is no alternating movement. Whether the underlying structure has a single movement or repeated movement, the movement in the derived form will always be repeated and circular.

There is also another adjectival derivation process to produce an adjective with the "ish" meaning (Bellugi, 1980; Padden and

Perlmutter, 1987). The adjectives may vary in their manner of movement, but the "ish" form is always trilled (that is, having tense repeated movements). For example the sign BLUE is made with a unidirectional repeated movement. BLUISH is made with a much reduced trilled movement. This is productive across the class of derived "ish" adjectives.

1.4.2.3 Affixation

Like other languages, ASL makes use of affixation for word/sign formation. However there are fewer processes of affixation in ASL than in English. An example of suffixation in ASL involves the suffix for agent. The agentive suffix is added to the verb to create an agent noun. In the suffixation process there is a phonological reduction in the verb (i.e., the final Hold is eliminated) when the agent morpheme is affixed to it. An example of this affixation would be TEACH + AGENT.

Another example of affixation occurs in the comparative and superlative constructions. There are degrees of comparison in ASL. These are derived from the sign MOST, which is made in isolation with two hands: two A handshapes facing each other, with the dominant hand brushing the knuckles of the other hand as it moves

up in a sharp motion. The suffix used to derive the comparative and superlative constructions is just the dominant hand from the sign MOST, with the superlative involving a faster, larger movement upward than the comparative. For example, SMART+MOST, FAST+MOST.

1.4.2.4 Number incorporation

Numbers in ASL have distinctive handshapes. These handshapes may productively incorporate into certain classes of signs, e.g., time, dollars, calendar, age, and regularity in relation to time (e.g., 'every year'). In this production only the handshape changes to incorporate the number. For example the sign for WEEK is made with two hands; the weak hand has the B handshape and the handshape of the active hand is 1. A signer can incorporate any number up to 9 by changing the handshape of the active hand to incorporate the desired number (Baker and Cokely, 1980; Liddell and Johnson, 1986; Chinchor, 1981).

1.4.2.5 Classifiers

Classifiers play a major role in ASL. Within the classifier system the phonological parameters are also morphemic (i.e.,

classifier morphemes consist of a single phoneme). In the ASL classifier system there are two basic components: the hand configuration (one of the classifier handshapes) and its mandatory movement root (called 'verb of motion' by Supalla, 1982, 1986; or 'classifier predicate' by Schick, 1987, 1990). The hand configuration (classifier) functions as a bound morpheme and is dependent upon cooccurrence with the movement or location root. The different types of movement morphemes are: path, direction, and manner. The movement path is considered the root of the movement morpheme complex. The other two movement morphemes, i.e., the direction of movement and the manner of movement, are affixed to the path. For example, to describe a rabbit running downhill, a bent V classifier handshape is used in conjunction with the path of its movement in a downhill direction. If the rabbit hops as it goes downhill, this is expressed in the manner (i.e., bouncy) in which the path is executed. The direction and manner morphemes are embedded in the path. This system is very productive in ASL and forms the basic structure of the language (Frishberg, 1975; Kegl and Wilbur, 1976; McDonald, 1982; Supalla, 1982, 1986; Schick, 1987, 1990).

1.4.2.6 Inflectional Morphology in ASL

Inflectional morphology reflects the relation of the sign to the particular syntactic configuration in which it occurs, marking specific grammatical information. In this section temporal aspect and other verb inflections will be described.

1.4.2.6.1 Aspect

In ASL Aspect may be realized morphologically (the verb form itself is modulated), or by a separate lexical item. Verb modulation will be discussed in this subsection. Aspectual information may be expressed through modification of the movement stem of the verb. For example, if a man is looking at a picture, the verb LOOK is signed with a V-handshape, palm facing down, undergoing a unidirectional single movement that starts near the eyes and ends out in neutral space in the direction of the picture. In a case where the signer wants to add aspectual information to show that the action took place over a long time, the production of the verb is modified to incorporate a rhythmic, reduplicated circular movement that conveys information of "continually" (usually the movement occurs 3 times in a row to indicate this aspectual information (Klima and Bellugi, 1979; Newkirk, 1979)). In this aspectually marked form, the handshape

remains the same as for the unmarked verb form. The only difference is in how the movement is executed. In another situation, if you wanted to show that the man just stared at the picture, the sign will have another kind of modification in the movement: the sign LOOK will have the same handshape, location, and palm orientation as described above, but the "movement" will involve a stationary hand position. This aspectual modulation is called "protractive." Klima and Bellugi (1979) first reported these and other kinds of movements that express different aspects in ASL. Furthermore, they described different adjectival inflections marked by a similar type of movement modification.

1.4.2.6.2 Agreement

In ASL, there are different kinds of verb agreement. ASL is very rich in "agreement" morphology: subject-verb agreement, verb-object agreement, number agreement, and reciprocal inflection. For example the sign GIVE may incorporate information about subject and object (the goal object) agreement. The place where the sign begins is usually at the location of the subject (source) and the place it ends is at the location of the goal object. Thus these verbs agree spatially with the locations of the subject and object. If Jack is

located at point A and Jill is located at point B, then to show that Jack

gave Jill a card, the sign for GIVE will originate at point A and end at

point B. This type of morphological expression of agreement

information is possible only with a certain morphological class of

verbs (Padden, 1983, 1988),[13] and will be addressed in more detail

in Chapter 3.

Klima and Bellugi (1979) described a set of different inflections

for number (e.g., dual, exhaustive, multiple, etc.). The verb's

movement stem will have path changes to incorporate information

about number. In the situation of a pollster going around and asking

different people for their opinion, the sign ASK, which has a

unidirectional single movement from the subject to object, will

incorporate an exhaustive verb inflection. This involves multiple

iterations and smaller movements of the verb as it is articulated in a

sweeping motion along an arc. ASK$_{[exhaustive]}$ conveys the meaning

of asking each person a question.

In ASL, when one wants to express the idea that a mutual or

---

[13] Padden identified three morphological classes of verbs: plain, agreeing, and
spatial. Plain verbs do not show morphological agreement.

reciprocal action occurred, where some other languages would use "each other," this idea can be incorporated into verbal inflection. The signer can express reciprocality by taking advantage of space and using two one-handed signs. For example if the signer wants to describe two men in a duel shooting each other, this can be done in one "frame" by signing with two hands SHOOT$_{[reciprocal]}$. The sign SHOOT is made by aiming the L hand and moving the thumb inward to denote the firing of the gun. The reciprocal form has both hands "shooting" at each other at the same time.

1.4.3 Syntactic Structure

ASL word order is generally believed to be SVO (Fischer, 1974; Liddell, 1977; Padden, 1983, 1988; Aarons, Bahan, Kegl and Neidle [ABKN], 1992; Aarons, 1994; see, however, Bouchard and Dubuisson, 1995, as well as the reply by Kegl, Neidle, MacLaughlin, Bahan, and Hoza [KNMBH], 1996).[14] Disturbances to the basic word order are often shown by non-manual signals, such as raised or lowered eyebrows or body position, or by prosodic marking, such as pausing.

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[14] Throughout this dissertation, works by Aarons, Bahan, Kegl, MacLaughlin, Neidle, and Hoza will be cited by authors' initials, as is done here.

The basic clause structure of the ASL sentence will be discussed here.

1.4.3.1 IP Structure

ABKN (1992, 1994, 1995) have put forward a detailed proposal about the constituent structure of the clause in ASL. Many of the conclusions reached by ABKN about the constituent structure of ASL were based in part on evidence from the spread of non-manual grammatical marking, marking on the head (which may include headshake, raised or lowered eyebrows, etc.) that accompanies manual signs and spreads optionally over the c-command domain of the node with which it is associated. Such non-manual marking is indicated in the glosses by a line that extends over the domain of the marking. Non-manual marking is discussed in more detail in Chapter 2. The major conclusions of their analysis are presented below, and further in subsequent chapters.

IP, or "Inflection Phrase" refers, in the recent syntactic literature, to what had traditionally been labeled "S," the basic Sentence node. This node has been reanalyzed as a projection of inflectional material (including Tense, Agreement, etc.), and thus as an Inflection Phrase. More detailed analyses (e.g., Pollock, 1989; Chomsky, 1991) further decompose the inflectional system into

separate functional projections of categories such as Tense and

Agreement. This is the approach adopted by ABKN, who argue that,

in fact, Tense heads the basic sentence in ASL, as shown below. [15]

Figure 4

The Structure of IP in ASL

```
        TP
       /  \
     NP    T'
          /  \
         T   Neg
             P \
              Neg'
             /  \
          Neg    AspP
                 Asp'
                /   \
             Asp   AGR_S P
                    AGR_S '
                   /      \
               AGR_S    AGR_O P
                         AGR_O '
                        /     \
                    AGR_O      VP
```

_____
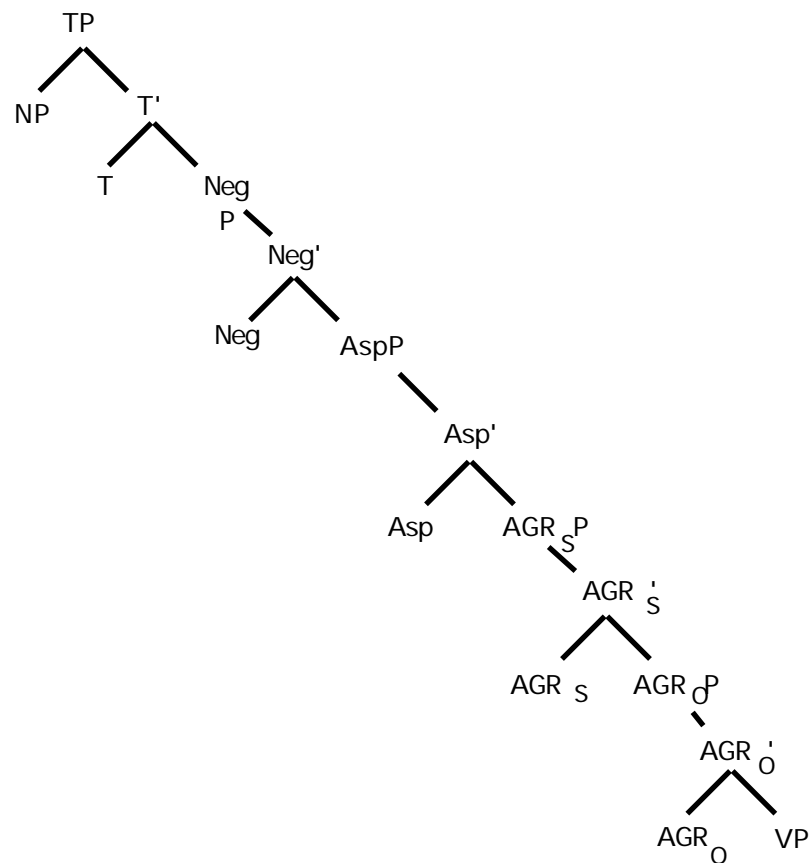
[15] This is essentially the tree proposed in ABKN (1992), with two exceptions. First, as will be discussed in Chapter 4, what was analyzed as "role prominence" in ABKN (1992) is analyzed differently here. Second, the relative order of Aspect and AGR-S are reversed in this tree, an ordering that will be justified later. (The correct relative ordering became apparent only when the phenomena that had previously been interpreted as "role prominence" came to be further analytically decomposed.)

This is a view of ASL syntax that departs significantly from previously held beliefs. It had previously been claimed that ASL lacks Tense as a grammatical category (Perlmutter, 1991, e.g.; see also brief discussion in Schermer and Koolhof, 1989[16]) and that structural Subject-Verb agreement was present only in a subclass of ASL sentences (Lillo-Martin, 1986, e.g.; counter-arguments to this claim are summarized in Chapter 3). ABKN (1992, 1995) argue that Tense is structurally present, and is the node under which a modal (such as SHOULD, MUST, or CAN)[17] or a lexical tense marker (such as FUTURE-TENSE, RECENT-PAST-TENSE, #ex, and PAST-TENSE) appears.[18] Their arguments are summarized below.

This tense node can be occupied by at most one lexical item from the class of modals and lexical tense markers, as shown in (2)-(5).

---

[16] In fact Jacobowicz and Stokoe, 1988 were the first to suggest that, contrary to the claim that ASL lacks tense, some verbs do show morphological tense inflection.

[17] For discussion of modals in ASL, see, for example, ABKN (1995).

[18] ABKN (1995) show that, contrary to previous claims that time relations are expressed adverbially, lexical tense markers are distinguishable from morphologically related time adverbials. This distinction is based on a systematic difference in the articulation of a tense marker and the corresponding adverbial, as well as on the much more limited distribution of the tense marker.

(2) * RUBEN CAN WILL RENT VIDEO-TAPE

'Ruben can will rent a videotape.'

(3) * RUBEN WILL CAN RENT VIDEO-TAPE

'Ruben will can rent a videotape.'

(4)   RUBEN CAN RENT VIDEO-TAPE

'Ruben can rent a videotape.'

(5)   RUBEN WILL RENT VIDEO-TAPE

'Ruben will rent a videotape.'

Tense in ASL precedes Negation, while Verbs normally follow Negation. This is illustrated in the following examples, where (6) and (7) are not grammatical[19] but (8) and (9) are fine:

(6) * GINGER NOT SHOULD EAT BEEF

'Ginger should not eat beef.'

---

[19] These sentences are wrong irrespective of non-manual markers.

(7) * GINGER NOT FUTURE-TNS EAT BEEF

    'Ginger will not eat beef.'

                            <u>   </u>neg

(8)   GINGER SHOULD NOT EAT BEEF

    'Ginger should not eat beef.'

                            <u>   </u>neg

(9)   GINGER FUTURE-TNS NOT EAT BEEF

    'Ginger will not eat beef.'

Further evidence for the position of Tense relative to Negation comes from the possibilities of contraction. Thus we can have (10) and (11) which show contraction, one with a lexical tense marker and negation, and the other with a modal and negation.

                          <u>   </u>neg

(10) SUE FUTURE-TENSE^NOT DRIVE

    'Sue will not drive.'

                          <u>   </u>neg

(11) SUE SHOULD^NOT DRIVE

    'Sue should not drive.'

Although negation follows modals and lexical tense markers, it must

precede verbs, as seen in (12) and (13).[20]

```
                               neg
(12) DEBBIE    NOT  LIKE  WINTER
```

'Debbie does not like winter.'

```
                        neg
(13) * DEBBIE  LIKE  NOT  WINTER
```

'Debbie likes not winter.'

Aspect occurs after the negative element and before the verb.[21]

ABKN (1992) suggest that FINISH is a perfective aspect marker in

ASL indicating completion of the action of the verb. This is illustrated

---

[20] In sentence (12) NOT LIKE is not the negative version of LIKE as in the sign glossed as 'DON'T-LIKE.'

[21] It is important to note, however, that many affirmative sentences with FINISH used as an aspect marker would not normally include the aspect marker in the corresponding negative sentence, precisely because the negative sentence does not imply completion of the action in the same way the affirmative sentence does.

in example (14) below.[22]

<pre>   neg
                         _____
</pre>
(14) DAVE NOT FINISH SEE MOVIE

'Dave did not see (to completion) the movie.'

The position of agreement nodes for subject and object agreement (AGR-S and AGR-O) will be discussed in Chapter 3. ABKN (1992, 1994) do argue, though, that syntactic subject-verb agreement is always present structurally in all main clause sentences. This will also be discussed at greater length in Chapter 3.

1.4.3.2 CP Structure

ABKN (1992), Aarons (1994), and NKBAM (in press) have argued that the Spec of CP occurs to the right of IP, and that wh-phrases in ASL optionally move rightward to that position. Claims

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[22] There are, in fact, two ways for this aspect marker to be realized in ASL. It can either constitute an independent lexical item, or else it can be realized as inflection on the verb. Compare (i) and (ii) below:

(i) TONIGHT TIME^7 JAMIE WILL FINISH SEE MOVIE

'By seven o'clock tonight, Jamie will have seen the movie.'

(ii) TONIGHT TIME^7 JAMIE WILL SEE-FINISH MOVIE

'By seven o'clock tonight, Jamie will have seen the movie.'

that wh-movement is leftward have been made (Lillo-Martin, 1991; Petronio, 1993; e.g.), and are refuted in NKBAM (in press; see that article for further discussion of the controversy). Here, the NKBAM analysis is adopted; the evidence supporting their position is summarized briefly below.

A sentence like (15), in which a wh-object has moved to the left of IP, is ungrammatical,[23] while a sentence like (16), in which a wh-subject has moved to the right of IP, is grammatical:


```
                            wh
      _____
(15) * "WHAT"   JOHN   EAT   t
```

         'What did John eat?'


```
                   wh
                 ___
(16)  t   LOVE   JOHN   WHO
```

         'Who loves John?'

---

[23] Unless there is additional material at the right of the sentence:

```
                               wh
        _____
(i)    "WHAT"   JOHN   EAT   "WHAT"
```
       'What, what did john eat?'

Note that Lillo-Martin and Petronio assign different grammaticality judgments to sentences such as (15). In NKBAM (in press) there is some discussion of subtle non-manual markers that may alter the grammaticality of such examples, but it is unclear whether such markers are actually present in the examples that are claimed to be grammatical.

The case for rightward movement of wh-phrases from object position is more subtle, but examples with IP-final adverbials, first offered by Perlmutter (1991), demonstrate such movement as well, as seen in (17). (The distribution of non-manual marking will be explained in Chapter 2.)

<pre>
                                             _____wh
    (17) JUAN BUY t YESTERDAY   "WHAT"
</pre>

       'What did Juan buy yesterday?'

The crucial data for rightward movement of wh-phrases in object position are provided in (18)-(21).

<pre>
    (18) JUAN BUY BOOK
</pre>

       'Juan bought a book.'

<pre>
                            _____wh
    (19) JUAN BUY   "WHAT"
</pre>

       'What did Juan buy?'

<pre>
    (20) * JUAN BUY YESTERDAY BOOK
</pre>

       'Juan bought yesterday a book.'

(21) JUAN BUY BOOK YESTERDAY

'Juan bought a book yesterday.'

In example (19), we cannot know if the wh-phrase has moved or is in situ. However, the contrast in grammaticality between (17) and (20) provides the crucial test. Sentence (20) shows that an ordinary NP cannot appear to the right of a sentence-final adverbial. So, since (20) is ungrammatical, this means that in (17) the wh-phrase cannot be in situ. The occurrence of the wh-phrase in (17) to the right of the adverbial can only be explained by its having moved to a position external to IP from its d-structure position to the left of the adverbial (marked by "t" in the example).

In ASL there are questions that have two wh-phrases, one at the beginning and one at the end, as illustrated in (22) and (23).

```
                            _____wh
         _____
```
(22) "WHAT" JUAN BUY "WHAT"

'What did Juan buy?'

```
                        _____wh
       _____
```
(23) WHO BUY BOOK "WHAT"

'Who bought the book?'

According to ABKN's analysis, the second (final) wh-phrase in (22) appears in situ or in Spec of CP, while the first wh-phrase is necessarily base-generated in topic position. Thus the sentence has the meaning, "What, what did John buy?" Sentence (23) may either be interpreted as having the first WHO in Topic position and the second in Spec of CP ("Who, who bought the book?"), or else as a sentence with the first wh-phrase in situ and the second in a tag "Who bought the book, who did?" (see section 1.4.3.3.3).

1.4.3.3 Elements Occurring Outside of CP

This section examines elements that occur outside of the CP: topics, right dislocations, and tags.

1.4.3.3.1 Topics

There is a maximum of two topics in an ASL sentence. Topics are left-adjoined to CP (ABKN, 1992; Aarons, 1994). One of the topics can be a constituent moved from within the IP, as in (24). The others can be base-generated, as in (25) and (26).

$$\overline{\qquad \text{tm1} \qquad}$$

(24) BAGELS$_i$, BEN LIKE t$_i$

‘Bagels, Ben likes.’

          <u>   tm2   </u>

(25) VEGETABLES, GEORGE PREFER BROCCOLI

      'As for vegetables, George prefers broccoli.'

          <u>   tm3   </u>

(26) RONALD$_i$, NANCY LOVE IX$_i$

      'You know Ronald, Nancy loves him.'

Each of the examples above has a different type of non-manual topic marker (labeled, following Aarons, 1994, tm1, tm2, tm3). All of these non-manual markings for topics include raised eyebrows. Both types of base-generated topics (tm2 and tm3) include headnods; these examples are discussed further in Chapter 2; see also Aarons, (1994) for detailed discussion. Only certain combinations of topics are allowed, but a maximum of two is allowed per sentence. Crucially, wh-phrases may appear in the topic position, as shown in (22) and (23) (ABKN, 1992).

1.4.3.3.2 Right Dislocations

Just as it is possible to have a base-generated constituent to the left of CP, which refers to another argument within the CP (see above example (26)), it is also possible to have a constituent to the right of CP that refers back to a previous argument, as in French.

(**27**) MARY   LIKE   JOHN$_i$ IX$_i$

‘Mary likes John, him.’

(**28**) Je l’ai vu, lui.   (French)

‘I saw him, him.’

Cases of right dislocation have been included in Padden's (1983, 1988) description of what she called "subject pronoun copy," but, as the above example makes clear, it need not be the subject pronoun that occurs, repeated, to the right. It is also important to distinguish this construction from one manifestation of the ASL tag, in which the pronoun alone occurs in a tag that appears after the main clause. The tag construction can, in fact, be distinguished by the distinctive headnod that occurs in such constructions, as will be discussed below.

Right dislocation

(29) MARY$_i$ SAW JOHN, IX$_i$

   'Mary saw John, she.'

Tag

                              $\underline{\text{hn}}$
(30) MARY$_i$ SAW JOHN, IX$_i$

   'Mary saw John, she did.'

1.4.3.3 Tags

The tag construction in ASL was first discussed by Liddell

(1977, 1980), and was further discussed by ABKN (1992, 1995).

ABKN's analysis follows the basic idea presented in Liddell, but they

formalize the configuration of the tag clause. According to ABKN, the

tag is a repetition of the basic clause structure found in the main

clause, but many of the constituents may be non-overt. The tag

must, however, be compatible in major syntactic characteristics

(tense, question status, etc.) with the main clause. The tag minimally

consists of an instantiation of the head constituent of the sentence,

Tense, and often contains a subject pronoun as well. Because the

material from the VP is normally not lexically instantiated, the Tense

node bears the affirmative headnod that Liddell observed to be associated with constructions in which the Verb is not overt. The following sentences provide some illustrations of typical tag constructions:[24]

(31) JOHN   WILL   BUY   CAR

'John will buy a car.'

                                 _____hn

(32) $JOHN_i$ WILL   BUY   CAR,   WILL IX_i

'John will buy a car, he will.'

                                 ___hn

(33) JOHN   WILL   BUY   CAR,   WILL

'John will buy a car, he will.'

                              _hn

(34) $JOHN_i$ WILL   BUY   CAR, IX_i

'John will buy a car, he will.'

---

[24] Note that the headnod is associated with the Tense node, and it normally spreads over its c-command domain, i.e., the VP. However, when the CP tag contains nothing but the IX in subject position, the headnod co-occurs with the only manual material available inside the CP, as shown in (34). This will be discussed further in Chapter 2.

<div style="text-align:center">

                        <u>   wh</u>
</div>

```
                                    wh
                                  shake
(35)  WHO   WILL   BUY   CAR, WHO
```

'Who will buy a car, who will?'

```
                                      wh
                                   shake
(36)  WHO   WILL   BUY   CAR, WILL WHO
```

'Who will buy a car, who will?'

The head shake indicated over the word WHO in (35) and (36) above is discussed in Aarons (1994), where she suggests that this particularly sharp, more intense head shake (first described by Petronio) found in wh-tags is a reflection of the same headnod found in the other examples illustrated above.[25]

1.4.3.4 Conclusion

This concludes the basic description of the clausal structure for ASL that will be assumed in subsequent chapters. In particular, this dissertation will focus in on the Agreement projections, and consider especially the non-manual expressions of syntactic agreement in

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[25] The explanation of the distribution of the head shake in (36) is a bit more complicated, and may well involve some kind of assimilation between the headnod normally associated with the Tense node and the head shake normally associated with the Wh-phrase.

ASL. First, Chapter 2 will present basic information about non-

manual grammatical marking in ASL, and then Chapter 3 will focus

on syntactic agreement in ASL.

CHAPTER TWO

NON-MANUAL GRAMMATICAL MARKING IN ASL

This chapter will discuss in some detail the way in which certain grammatical information is expressed non-manually in ASL, providing background information crucial to the analysis that will follow in subsequent chapters. Specifically, this chapter will consider the use of non-manual grammatical marking generally, in preparation for more specific discussion of the use of eye gaze and head tilt for grammatical purposes. The following chapter will discuss agreement, both in terms of its syntactic distribution and morphological expression in ASL.

When ASL signers engage in face to face communication, the addressee tends to fixate his eyes on the signer's face.[1] Most of the signs in ASL are produced in the area of the face, either on the face or just off the area of the face. Battison (1978) randomly selected

---

[1] Contrary to what many people not knowledgeable about sign language would assume, the addressee does not gaze all over the place following the hand movement of the signer. The only time an addressee would normally follow the hands is when the signer is fingerspelling. In this case the addressee's gaze leaves the face and watches the fingerspelled word, then returns to the speaker's face at the region of the eyes and mouth (Siple, 1978).

606 signs out of Stokoe, Casterline and Croneberg's (1965) Dictionary of American Sign Language and found that 75% of the signs were produced around the region of the face (i.e., head, face and neck). It may be because signs produced in this area are the easiest to perceive (Siple, 1978; Baker and Cokely, 1980). However, it can be argued that another significant contributing factor is that this places the manual signing as close as possible to the facial expression of grammatical and morphological information, since the face and upper body play an extremely important role in the expression of certain types of grammatical information.[2] Essential grammatical information is conveyed by a variety of facial expressions. The brows may be raised, lowered, narrowed, etc.; the cheeks may puff or be concave; the lips may raise, purse, etc.; the nose may contort, wrinkle, etc.; the head may tilt sideways, forward, or backward; the torso may also lean forward, backward, or sideways; and the eyes may blink, close, or open widely, as well as gaze in specific directions.

---

[2] If one assumes that the eyes fixate to a maximally central location for best perception of signing, then one might expect that the eyes would gravitate to the chest area. Yet, they do not; they focus instead on the face. This may very well be because of the importance of the grammatical information that is expressed by the face and upper body (see also Baker-Shenk, 1983).

For a very careful micro-analysis of the articulation of some non-manuals in ASL, see Baker-Shenk (1983).

There are two general types of functions of non-manual signals: lexical and grammatical (Baker and Cokely, 1980; Baker-Shenk 1983, 1985b; Liddell, 1980). With respect to lexical functions,[3] non-manual marking may convey adjectival or adverbial information. Baker (1979; see also Baker and Cokely, 1980; Baker-Shenk, 1985b) suggests that there are approximately 20 such non-manual modifiers. One example is the non-manual adverb ('th'), which is articulated by putting the tongue between the teeth (also described in Liddell, 1980). When this occurs simultaneously with the signing of a verb, it conveys the meaning that the verb is performed carelessly or lazily. Compare the two examples below. The first example is a simple statement accompanied by a neutral expression over 'JOHN WRITE LETTER.' The following sentence includes the non-manual adverbial expression (__'th') over the verb.

---

[3] Other lexical uses of non-manual marking proposed by Baker-Shenk are discussed in Chapter 5 (with respect to eye gaze associated with specific lexical items, according to her analysis), where a slightly different perspective on this specific use of eye gaze is proposed.

(1)   JOHN WRITE LETTER

'John writes a letter.'

```
        th
```
(2)   JOHN   WRITE   LETTER

'John writes a letter carelessly.'

Face, head, torso, and eye behaviors also play an essential role in the syntax of ASL. Information that marks a clause as a question, assertion, direct speech, negation, or conditional clause is expressed using the head and upper body. This type of non-manual marking is discussed in section 2.1.

2.1 Realization of Non-manual Grammatical Marking

There have been several descriptive studies and one detailed micro-analytical study (i.e., Baker-Shenk, 1983) investigating non-manual grammatical marking in ASL, such as negation, yes-no questions, topics, wh-questions, and rhetorical questions. See, for example, Baker (1980a, 1980b), Baker-Shenk (1983, 1985b), Baker and Cokely (1980), Baker and Padden (1978), Liddell (1978, 1980). These studies report that specific non-manual markers co-occur with a sentence, thereby marking the type of sentence uttered. Take sentence (3) as an example. It is produced with a neutral expression,

thereby making it a straightforward declarative. If the same sentence co-occurred with raised eyebrows and a slight forward lean of the head and torso, then it would become a question (of the yes-no type, marked in the gloss as: __q), as in sentence (4).

(3)   JOHN LIKE MARY

       'John likes Mary.'

                                        q

(4)   JOHN LIKE MARY

       'Does John like Mary?'

Figure 1 demonstrates the non-manual marking described above (reported in Stokoe, 1960; Stokoe, et al., 1965; Bellugi and Fischer, 1972; Baker 1976b and 1976a; Baker and Cokely, 1980; Baker-Shenk, 1983, 1985b; Liddell, 1980). The last sign in this type of question is usually held for some duration. For example, the last letter in the fingerspelled word MARY in sentence (4) is held stationary for some duration (Baker and Cokely, 1980; Baker-Shenk, 1983).

Figure 1

Yes-no Question
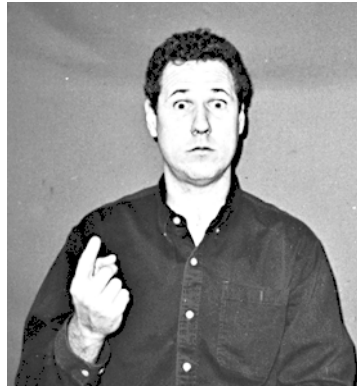
$$\overline{\qquad\qquad\text{q}}$$
UNDERSTAND

'Do you understand?'

In negative sentences, specific lexical negative signs may be used, e.g., NOT, NOT-YET, NEVER. These are often accompanied by specific non-manual markings for negation, which have been described by many people (e.g., Stokoe, 1960; Bellugi and Fischer 1972; Baker 1976b, 1976a; Liddell, 1980; Baker and Cokely, 1980; Baker-Shenk, 1983, 1985b; Wilbur, 1979; ABKN, 1992). In negative sentences, the non-manual correlate of negation is a side-to-side head shake, lowered eyebrows, and squinting eyes; see, for example, Figure 2 and example (5).

Figure 2

Negative
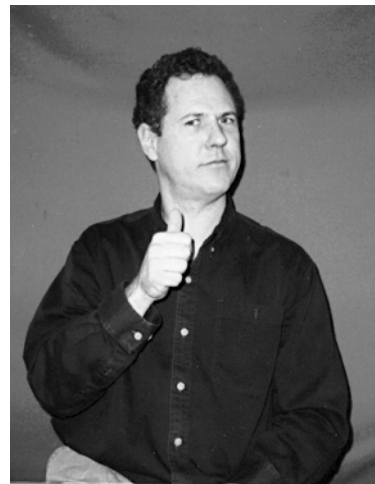

```
                        neg
(5)   JOHN   NOT   LIKE   MARY
```

'John does not like Mary.'

There are situations where two different non-manuals can combine in one sentence. For example, it is not unusual to see the combination of 'Yes-No' questions and negative to produce a negative 'yes-no' question (Baker and Cokely, 1980). When this occurs, there is a combination of non-manuals that involves the eyebrows raising, the gap between brows narrowing, the head and torso leaning slightly forward with a side to side head shake, and raised upper lip.

This is found in the region covered both by the "q" and "neg" lines in example (6) below.

$$\overline{}^{\text{q}}$$

(6)   JOHN   NOT   LIKE   MARY

    'Doesn't John like Mary?'

Another type of non-manual marking accompanies wh-questions in ASL: lowering and squinting of the eyebrows and forward tilting of the head and torso. In some cases, in addition to this non-manual wh-marking, there is a side-to-side head shake as well (e.g., Liddell, 1980; Baker-Shenk, 1983; NKBAM, in press).[4] These non-manuals commonly occur over the entire question; the scope of this particular non-manual marking will be discussed in section 2.2. Figure 3 and example (7) show the non-manual correlate of wh-questions.

---

[4] This head shake is found in wh-questions to differing degrees and is not perceptible in all wh-questions.

Figure 3

Wh-Question
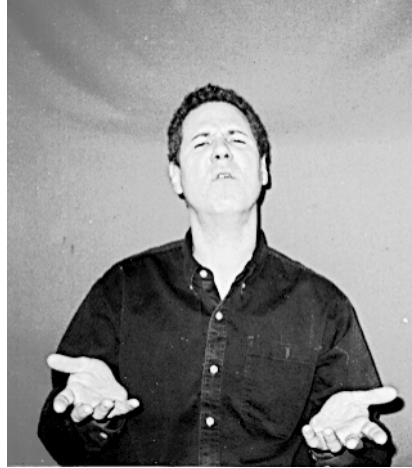
<u>   wh </u>
"WHAT"

<u>   whq</u>

(7)   WHO   LIKE   MARY

     'Who likes Mary?'

A "rhetorical question" involves a signer asking a question and then immediately answering it. This type of "question" is accompanied by certain non-manual grammatical markers: raised brows, slight backward tilt of the head, and side-to-side head shake. Figure 4 and sentence (8) show rhetorical questions in ASL.

Figure 4

Rhetorical Question

<pre>
  rhq
HOW
</pre>

<pre>
                        rhq
(8)   LIKE   MARY   WHO   JOHN
</pre>

'Who likes Mary?   John.'

Similarly, sentence (9) shows that rhetorical questions can also occur

with a 'yes-no' type question and reply. [5]

---

[5] In fact, there is a subtle difference in the marking of rhetorical questions, depending on whether the question is a wh or yes-no question. According to Hoza (personal communication), rhetorical yes-no questions also include an upper eyelid raise and a head tilt which are not present in wh-rhetoricals. These features are also present in non-rhetorical yes-no questions; thus it looks like rhetorical yes-no questions include a combination of those non-manuals associated independently with yes-no questions and rhetorical questions. A difference between these two types of rhetorical questions is also noted by Baker-Shenk (1983). See HNMKB (in prep.) for further details.

```
                       rhq
      _____
(9)   JOHN   LIKE   MARY      YES
```

'Does John like Mary? Yes.'

In ASL, topics are used frequently. The literature (Fischer, 1975; Baker and Cokely, 1980; Liddell, 1980; Baker-Shenk, 1983) has described topic marking as involving the raising of eyebrows and a slight backward tilt of the head, as demonstrated in Figure 5.

Figure 5
Topic
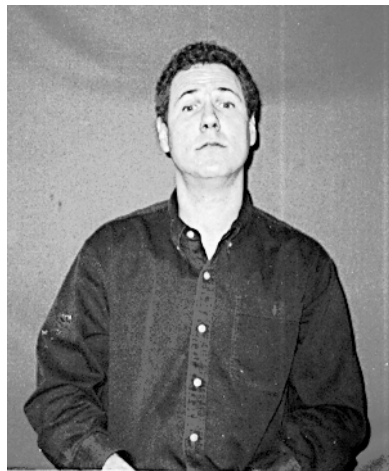
However, more recently, Aarons (1994) identified three different kinds of topics, which involve different forms of non-manual marking in addition to raised eyebrows: 1) a slight backward head

tilt (called topic marking 1, or tm1, by Aarons), 2) a single head

movement that begins with a slight backward tilt followed by

forward movement (tm2), and 3) a rapid headnod over the topic

clause (tm3). These are found in the following three sentences.

      <u>   tm1   </u>

(10) ELEANOR$_i$, JIM LIKE t_i

      'Eleanor, Jim likes.'

      <u>   tm2   </u>

(11) FLOWERS , NANCY PREFER T-U-L-I-P-S

      'As for flowers, Nancy prefers tulips.'

      <u> tm3   </u>

(12) MARY$_i$, RICHARD LOVE IX$_i$

      'You know Mary, Richard loves her.'

Aarons (1994) suggests that these different non-manual

markings correspond to certain important syntactic distinctions. In

particular, when topicalization results from syntactic movement of a

constituent to a pre-CP topic position, this is marked non-manually

by topic marking 1. In contrast, base-generated topics are realized

by topic marking 2 or 3. (See Aarons for further discussion of the

syntactic and semantic differences between topic marking 2 and 3.)

As discussed previously (cf. sentence (6)), different non-manual markings frequently combine. ABKN (1992) and Aarons (1994) describe another combination of non-manual grammatical markers: topic marking co-occurring with wh-marking. Figure 6 shows that this non-manual marking involves slightly lowered brows associated with wh-marking, tightening of the cheek muscles and a backward head tilt found with topic marking.

Figure 6

Wh-Topic

The non-manual markings described in this section are used to signal the type of utterance. There are specific restrictions with

respect to the distribution of these markings, which will be discussed in the following section.

2.2 Syntactic Distribution of Non-manual Grammatical Marking

As stated in 2.1, most of the work on non-manual grammatical markings in ASL has generally been descriptive. The syntactic distribution of non-manual marking was first addressed by Liddell (1980), although he focussed specifically on negation. In their studies of wh-questions, Lillo-Martin and Fischer (1992) suggest that the non-manual marking associated with wh-questions must co-occur with manual material. ABKN extend this claim to non-manual grammatical markings in general (although there are exceptions)[6], and propose that such markings generally spread over the c-command domain of the node with which they are associated (an

---

[6] For example, the affirmative headnod found in tags does not require manual material, but can occur on its own. In addition, the negative head shake in tags can occur without manual material. (Thus it would appear that if there is no manual material in CP over which the non-manual marking can spread in order to find manual material, then it can, in fact, occur on its own.) Thus, the generalization would be that non-manual material obligatorily spreads over its c-command domain in order to find manual material with which it can be articulated, if this is possible.

idea implicit in Liddell's description of the spread of negative marking and in Lillo-Martin and Fischer's account of the spread of wh-marking).[7]

The basic proposal put forth by ABKN (1992, 1994) and NKBAM (in press) (see also Aarons, 1994)[8] is that non-manual grammatical marking is frequently associated with syntactic features postulated to reside in the heads of functional projections. These features include, for example, the +wh feature in C, or the +neg feature in Neg. These non-manual markings must generally be borne by manual material, and may optionally spread over the c-command domain of the node with which the non-manual marking is associated (unless this spread is obligatory in order for the non-manual marking to be borne by manual material). This is the generalization ABKN proposed for non-manual grammatical marking in general.[9]

---

[7] However there are problems with Lillo-Martin and Fischer's analysis, specifically in their account of (leftward) moved vs. in situ wh-phrases with respect to distribution of non-manual wh-marking. See NKBAM (in press) for details.

[8] See Petronio (1993) for a different account.

[9] Stewart (1995) reports that in the Edo language, spoken in Nigeria, grammatical information about verb tense is expressed by tone, and that there is autosegmental spread of this tonal marking over specific syntactic domains. While this may not work exactly as in ASL, it is interesting to find another case where syntactic information is expressed on an autosegmental tier and where spreading occurs over well-defined syntactic domains.

Consider, for example, the distribution of the wh-marking. ABKN use solid lines to show the location with which the non-manual marking is associated and dotted lines to indicate the domain over which it may spread. Sentence (13) below shows the domain over which the non-manual marking may spread, and sentence (14) illustrates the case where the wh-marking does not spread.

```
                                          ___wh
 -----------------------------
(13)  BEVERLY   SEE   t_i   YESTERDAY    WHO_i
```

'Who did Beverly see yesterday?'

```
                                        ___wh
(14)  BEVERLY   SEE   t_i   YESTERDAY    WHO_i
```

'Who did Beverly see yesterday?'

Sentences (13) and (14) illustrate a case where the wh-phrase has moved rightward to Spec, CP.

Notice that wh-questions do not require syntactic movement of the wh-phrase, which may occur in situ.   However, in the case where wh-movement has not occurred, there is no manual material outside of IP to bear the non-manual marking associated with the +wh

features in Comp; thus the spread of the wh-marking over the c-command domain of Comp, i.e., IP, is obligatory:

```
         ---------------____wh
(15)  WHO   BUY   BOOK
```

'Who bought the book?'

```
        __wh
(16) * WHO   BUY   BOOK
```

'Who bought the book?'

The optional spread of non-manual marking over the c-command domain of the node with which the non-manual is associated is also illustrated by yes-no questions. There is a manual sign that may be used to mark yes-no questions. This is the QM-wg[10] sign which occurs to the right of IP, presumably in Comp. However, this manual sign is not required for yes-no questions. When the sign is present, however, it may be the sole bearer of the yes-no non-manual marking, which may also optionally spread over the IP to its left. However, if the QM-wg is absent, then the spread becomes

---

[10] This sign involves the index finger wiggling: alternating between a straight and crooked position.

obligatory, to ensure that the yes-no marking is borne by manual material.

<pre>
                      _____q
(17) HAL   SEE   SIS
</pre>

'Did Hal see Sis?'

<pre>
                            _____q
(18) HAL   SEE   SIS   QM-wg
</pre>

'Did Hal see Sis?'

<pre>
      ----------------_____q
(19) HAL   SEE   SIS   QM-wg
</pre>

'Did Hal see Sis?'

The same generalization about the distribution of non-manual marking applies to negative marking. The non-manual marking associated with the +neg feature is associated with Neg and spreads over its c-command domain. Sentence (20) shows the case where the negative marking has spread over the c-command domain of Neg, and (21) shows the case where the marking has not spread.[11]

---

[11] The spread would normally occur in this case, except when the negative is emphatic.

```
                         _____neg
(20)  TINA NOT   SEE   JOE
```

'Tina does not see Joe.'

```
              __neg
(21)  JOE   !NOT!   SEE   TINA
```

'Joe does not see Tina.'

In cases without the presence of lexical negation (e.g., NOT), the sentence still can convey negation with non-manual marking alone, as demonstrated in sentence (22), and in such cases the spread of the non-manual marking over the c-command domain is obligatory.

```
                   _____neg
(22)  SAM   SEE   ROBIN
```

'Sam does not see Robin.'

```
              neg
(23) * ROBIN      SEE   SAM
```

'Robin does not see Sam.'

It is important to notice that the claim made here about the distribution of non-manual negative marking is inconsistent with Petronio's (1993) claim that non-manual marking is strictly associated with Comp; furthermore, she claims the above sentence,

with the negative marking spreading over the VP, is ungrammatical.[12]

Unlike the various non-manual grammatical markings just discussed, Topic marking is not associated with the head of a functional projection, and the non-manual topic marking does not extend outside the topic phrase. As discussed previously, topics occur adjoined to CP. Sentences (24) and (25) show the domain of topic marking; this marking cannot extend over CP.

```
            ____tml
(24)   CAROL_i , JUDY   SEE   t_i
```

'Carol, Judy sees.'

```
        _____tml
(25) *  CAROL_i , JUDY   SEE   t_i
```

'Carol, Judy sees.'

---

[12] The weakness of Petronio's claim is that it does not account for the association of negative marking with the Neg node, nor its spread over the c-commanded VP. Her claim also could not be extended to account for the agreement facts described in much of the remainder of this dissertation.

2.3 Perseveration

Perseveration occurs in cases where a specific articulation occurs once, and then will recur at a later point in the sentence. In certain kinds of cases, the articulator obligatorily remains in place throughout the intervening period. "This is a kind of harmony process that occurs both manually and with facial expressions." (NKBAM, in press)

Perseveration of manual material is quite common, as illustrated in sentence (26), where the sign "WHAT" made with two hands has one hand (the non-dominant hand - coded as 'nd') persevere throughout the sentence.

```
                     t
             wh                                              wh
(26)    d: "WHAT",    BOSWELL   SEE   YESTERDAY   "WHAT"
        nd: "WHAT"---------------------------"WHAT"
```

'What, what did Boswell see yesterday?'

Rather than dropping, the non-dominant hand stays in place until it is used again with the final "WHAT."

In fact, this kind of perseveration happens systematically in ASL, in a variety of different types of contexts. Another kind of

example of perseveration with the non-dominant hand associated with a classifier was discussed in Shepard-Kegl (1985).

Sentence (26) also illustrates perseveration of non-manual material. Notice that there is wh-marking both associated with the topic phrase left-adjoined to the main clause CP question, and also internal to the CP associated with the +wh Comp node. In such cases the non-manual wh-marking is held in place between the two nodes. The wh-marking perseverates obligatorily (as shown by the ungrammaticality of the sentence shown below, in contrast with the grammaticality of (26), where the spread continues between the two wh-phrases).

```
          _____t
          ____wh                              ____wh
(27) *  "WHAT"  TODD  SEE  YESTERDAY "WHAT"
```

'What, what did Todd see yesterday?'

Other examples of perseveration of non-manual material will be discussed in Chapters 4 and 7, as well as in the following section.

2.4 The Intensity of Non-manual Grammatical Marking

The maximal intensity of the non-manual signal occurs over the node with which it is associated, and diminishes as distance from

the source increases. "Intensity" is manifested differently for each of the non-manual markings, but the generalization holds. For example, for negation, which consists of a side-to-side head shake and brow squint, the greatest intensity correlates with the greatest amplitude of the movement, i.e., angle of the headturn, the maximal degree of brow squint, and the greatest frequency of the headturning. For wh-questions, intensity corresponds to the greatest extent of brow furrow, side-to-side head shake, and tilting of the head.

Various non-manual markings will now be considered, with respect to the intensity of the marking. In each case, it will be shown that the maximal intensity occurs over the node with which the non-manual marking is associated, and diminishes as distance from that node increases.[13]

2.4.1 Negation

The non-manual marking of negation is illustrated in sentence (28). If the neutral position of the head is considered to be at a 0 degree angle, then, in preparation for the head shake, the head turns

---

[13] We will also discuss a case in which this declination does not occur: namely if there is perseveration of the articulation between two maximal realizations of a particular articulation.

about 45 degrees to the left immediately prior to the articulation of

the manual negation sign. The first head shake involves the

movement of the head from that position through the neutral 0

degree position and continuing to the right until another 45 degree

angle rotation in the opposite direction has been completed.

Interestingly, the starting point of that first head shake, the 45

degree position, coincides with the articulation of the manual

negative sign (in this example, NOT). This means that the head

actually turns prior to the articulation of the manual sign NOT, so as

to be in position for the negative head shake to begin simultaneously

with the thumb brushing under the chin to form the sign NOT.[14]

This kind of anticipation of the beginning of non-manual articulation

is consistent with Baker-Shenk's (1983) description of non-manuals

---

[14] Thus, there is some anticipatory movement of the head, which could
conceivably account for discrepancies in claims about data, such as Petronio's
claim that the negative head shake cannot occur solely over the Negative and
the VP. Confirmation that the head movement just described really is simply
anticipatory of the negative head shake that begins with NEG is provided by
examples with additional material intervening between the subject and Neg.
This is seen, for example, in a sentence like (i),

$$\overline{\hspace{3cm}\text{neg}}$$
(i)   JOHN MAYBE NOT BUY BOOK

       'John may not buy a book.'

where it is quite clear that the head does not begin moving until the very end
portion of MAYBE, and certainly does not begin over JOHN.

in general; Liddell (1980) also notes this anticipation.

The rotation of the head from side to side continues throughout the duration of the VP, but the amplitude progressively decreases and the frequency of the head turning diminishes gradually. This is illustrated in the diagram by the curve over the gloss.

<div style="text-align:center">

HEAD SHAKE   right
neutral
left

neg

(28)   DAWN NOT LIKE MARY

'Dawn does not like Mary.'

</div>
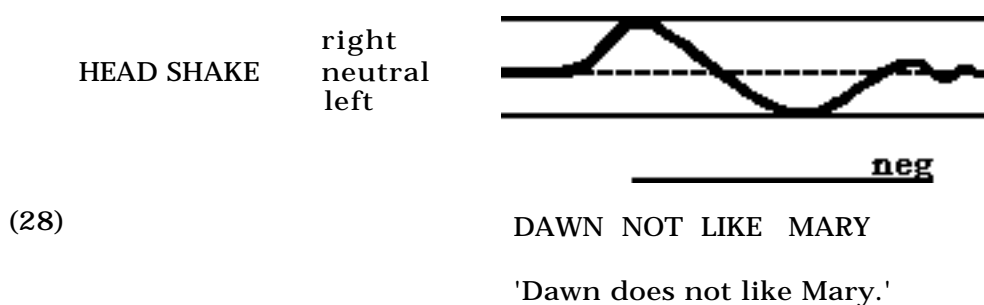
2.4.2 The Affirmative Headnod

Another movement of the head having grammatical significance is the up and down headnod that was called by Liddell (1980) the "affirmative headnod". (See also Baker and Cokely, 1980; Baker-Shenk, 1983.) This kind of headnod has a distinct grammatical role, discussed in Liddell (1980) and in ABKN (1992 and 1995). According to Liddell, this type of headnod (coded as _hn) consists of a slow deep downward nod and then a return to the same

position. This headnod marks constructions that involve null

material within the VP (cf. Liddell, 1980). ABKN argue that hn is

associated with the Tense node and, like other non-manual markings,

this affirmative headnod may spread over its c-command domain

(i.e., VP), and if the headnod is present, its spread is obligatory in the

absence of manual material in Tense. Sentence (29) shows the

domain over which it spreads; it is clear that the intensity of the

headnod—again measurable in terms of the angle and frequency of

head movement—diminishes as distance from the Tense node

increases. Again, the head raises, by approximately a 30 degree

angle, from neutral position, such that the head is already in this

position at the point when the first manual sign in the headnod

domain is articulated, so that the headnod can begin from that

position as the first manual sign is made. The head continues

downward to about a 30 degree angle below the neutral position, and

then raises again, but to a lesser angle. This continues although with

diminishing amplitude and frequency until the end of the VP is

reached.

HEADNOD   up
                 neutral
                 down

hn

(29)   JACK   SEE   MOVIE

'Jack saw a movie'
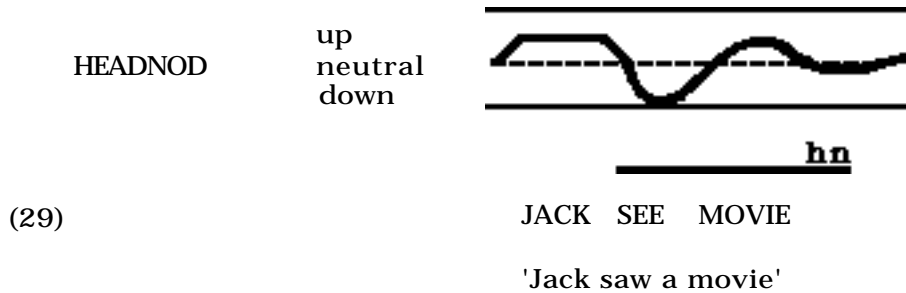
As discussed by Liddell (1980), ABKN (1992 and 1995), and Aarons (1994), this headnod is found productively in the Tag construction, precisely because the tag is a reduced clausal copy which frequently omits repetition of the main clause VP. The affirmative headnod may occur in both the main clause and in the tag portion, as is illustrated in (30). Interestingly, these two headnods have two separate and identifiable maximum points of articulation—one correlated with the Tense node in the main clause, and a second correlated with the Tense node in the tag.

HEADNOD   up
                 neutral
                 down

hn   **hn**

(30)   JANEY   SEE   MOVIE,   IX

'Janey saw a movie, she did.'
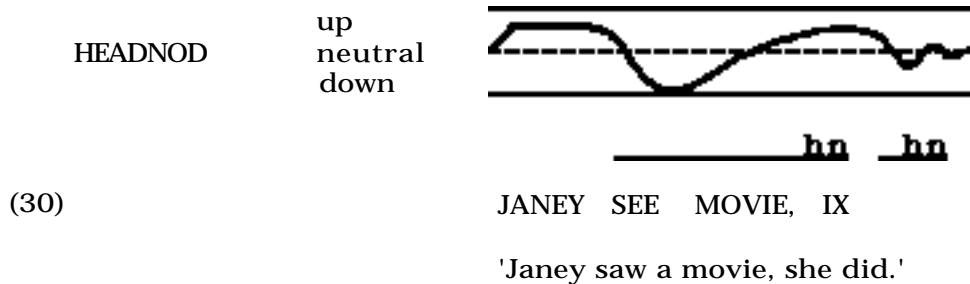
2.4.3 Wh-marking

Sentence (31) shows a wh-question in which the wh-phrase has moved rightward to Spec, CP. Notice that the brow furrowing and frequency of the side-to-side head shake are most intense over the node associated with the +wh feature, and that this intensity occurs external to IP (over the manual sign "WHAT" in Spec, CP).

<table>
<tr><td>HEAD SHAKE</td><td>right
neutral
left</td><td></td></tr>
<tr><td>EYE BROWS</td><td>max frown
reg frown
neutral</td><td></td></tr>
</table>

(31)

BOBBY BUY YESTERDAY "WHAT"

'What did Bobby buy yesterday?'
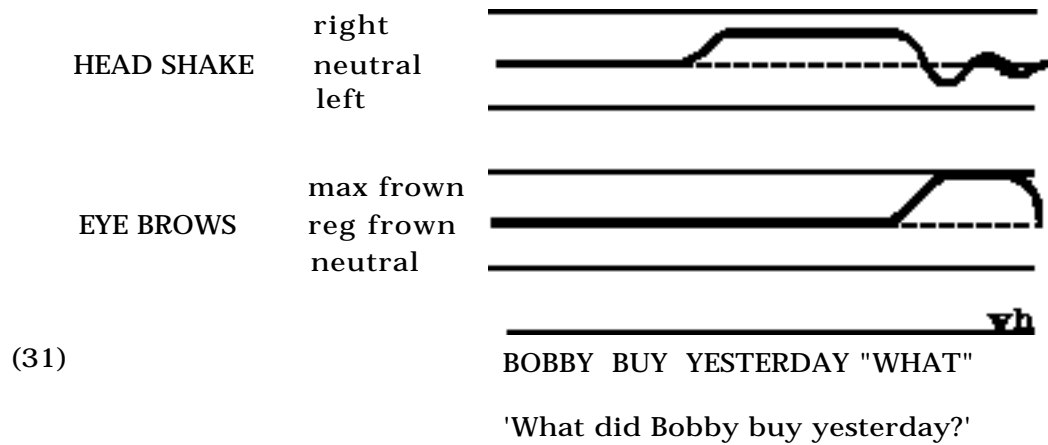
Consider next questions with the wh-phrase in situ, as seen in sentences (32) and (33).

HEAD SHAKE   right / neutral / left

EYE BROWS   max frown / reg frown / neutral

                                                                                           wh

(32)   JANIS   BUY   "WHAT"   YESTERDAY

                              'What did Janis buy yesterday?'

EYE BROWS   max frown / reg frown / neutral

                                            wh

(33)   WHO   SEE   TRUDY

                              'Who sees Trudy?'
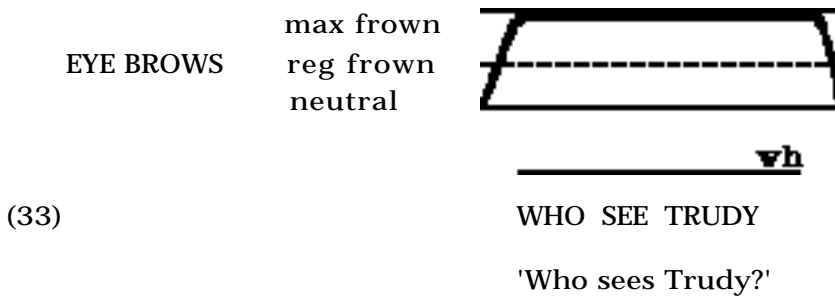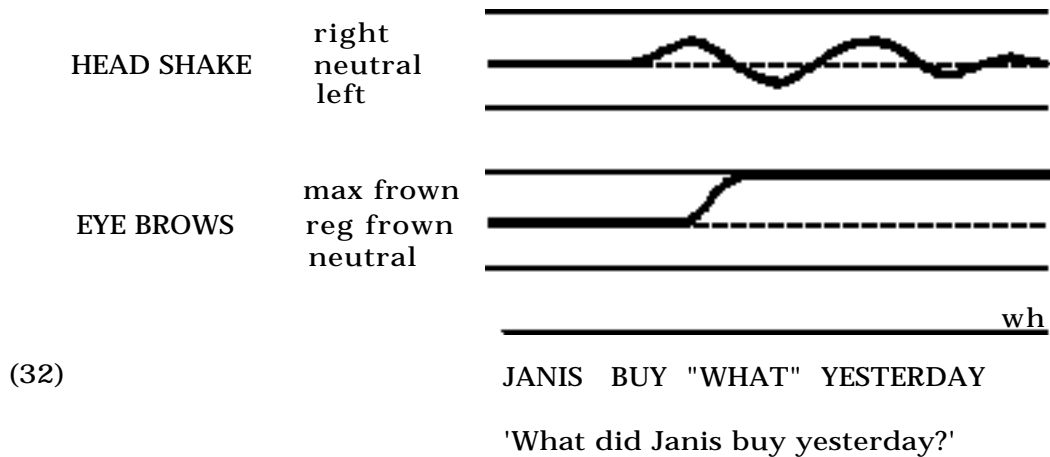
In these cases, there are actually two nodes associated with the +wh feature: both the Comp node in which the +wh features resides, and the node in which the intrinsically +wh element is base-generated. In such cases, we would expect maximal intensity to be found over both of these positions. This is, in fact, the case, although, as would be expected from the perseveration facts considered in section 2.3,

the maximal intensity remains in place in between those two positions.

Data presented in this section suggest something somewhat different from what Baker-Shenk (1983) described. Baker-Shenk noticed that non-manual marking (e.g., brow lowering) reaches maximum intensity (the apex, in her terms) initially and then stays until the beginning of the offset, which occurs at the end of the sentence, although she did point out that there are differences among signers. However, careful analysis of our videotaped data has revealed that the intensity of the non-manual grammatical marking is maximal over the node associated with the syntactic features expressed by the non-manual marking, and gradually diminishes as distance from that source increases. Notice that this can result in the maximum intensity occurring initially (as for negative marking, which spreads rightward over the c-command domain of Neg) or finally (as is the case for wh-marking, which spreads leftward over the c-command domain of Comp). This kind of evidence also provides support for the kind of analysis of non-manual marking proposed in ABKN (1992, 1994) and NKBAM (in press).

2.5 Optionality of Non-manual Grammatical Marking

It is generally assumed that non-manual grammatical marking is required, where appropriate, for syntactic well-formedness (cf. Liddell, 1980). In fact, however, it is possible to omit non-manual grammatical markings under certain circumstances. Although non-manual markings occur quite naturally and frequently, it is possible in almost any case to sign a sentence devoid of non-manual marking. This may be done in the event of a "controlled" response; for example if the signer wants to downplay the extent of negative feeling, the negative non-manual may deliberately be suppressed. Ironically, sometimes that suppression has the opposite effect, of magnifying the negativity that is conveyed. This is illustrated by the following sentence, which might be signed slowly and without having non-manual negation present.

    (34) IX-1p NOT LIKE$_j$ e$_j$

        'I do not like (it).'

In addition, non-manual grammatical marking may be missing from the face if the face is "taken over" by affective expression, and where affective expression may, in a sense, over-write the

grammatical expressions that would otherwise have been manifested on the face. For example, a facial expression corresponding to some intense emotion, such as surprise, may occur in lieu of grammatical marking. Consider sentence (35) uttered in a situation where John is very surprised that Mary shows up when she has already told him she had no way of coming. The normal non-manual wh-marking may be lacking.

                       <u>   surprise</u>

(35) `HOW   COME   YOU   "WHAT"`

        'How, how did you get here?'

It is not always the case that the absence of non-manual grammatical marking has some identifiable external discourse motivation. Sometimes a native signer might just sign a sentence without non-manual marking, and in such case would still be understood. This shows that the markings themselves are optional, although usually strongly favored. However, this optionality requires the presence of manual material; non-manual marking cannot be deleted if the corresponding manual material is absent.

2.6 Summary

This chapter has described the basic articulation of several non-manual grammatical markings and syntactic distribution of non-manual markings in general. The basic generalization is that non-manual marking associated with grammatical features that occur in functional heads spreads optionally over its c-command domain. However, this spread in essence becomes obligatory if it provides the only way for the non-manual marking to co-occur with manual material. We have also argued that the maximal intensity of a non-manual marking coincides with the node associated with it, and, in cases where the marking has spread, diminishes as distance from the node of origin increases.

CHAPTER THREE

AGREEMENT IN ASL

Most of the previous research on agreement in ASL has focussed on the morphological realization of subject and object agreement. There has been relatively little analysis of syntactic agreement, and the syntactic status of agreement in ASL has been disputed (see Lillo-Martin, 1986, 1991; ABKN, 1992, 1994).

Up until recently, when people have written about agreement in ASL they have been referring to the overtly realized morphological agreement that appears on certain classes of verbs (Fischer and Gough, 1978; Friedman, 1976; Klima and Bellugi, 1979; Padden, 1983, 1988; Johnson and Liddell, 1987). More recently, research has shifted to investigation of syntactic agreement (Lillo-Martin, 1986, 1991; ABKN, 1992, 1994).

This chapter will focus on the the relation between syntactic agreement in ASL and its morphological expression. However, first it is necessary to show how ASL manifests person features generally, so that person agreement in this language can be understood.

3.1 Phi-features

3.1.1 Phi-features Defined

The features relevant to syntactic agreement have been called "phi-features" (see, e.g., Chomsky, 1981). This includes features for number, person, gender, etc.. Different languages make productive use of different subsets of these features. In particular, ASL expresses person and number features,[1] but not gender.

It has been suggested in Chomsky (1991) and assumed in much of the recent syntactic literature[2] that clauses include syntactic projections headed by agreement, projections for both subject agreement (AGR-S) and object agreement (AGR-O), and that phi-features are contained in the heads of these projections.

---

[1] For a good review of the literature dealing with expression of "person" in ASL, see Berenz (in prep.), who also offers formal arguments for grammatical person marking in ASL.

[2] It should be noted, however, that M. Baker (1996) does not assume the existence of agreement projections; nor does Chomsky in his most recent work, his minimalist program (1995). The status of agreement projections is currently quite controversial. As will be argued in Chapter 7, we believe that the data from ASL in fact provides motivation for the linguistic reality of such projections.

Furthermore, not only are these phi-features found in the functional projections that are at the heart of IP, but it has also been claimed (see, for example: Abney, 1987; Hellan, 1986; Ouhalla, 1991; and Szabolcsi, 1987) that nominal phrases are in fact best analyzed as Determiner Phrases (DP's), which many linguists also believe to contain agreement projections, and therefore that phi-features are also at the heart of nominal phrases. The structure of DP will be addressed in Chapter 8, where we will argue that, specifically with respect to ASL, there is interesting evidence for a structural parallel between DP and IP that is reflected by the non-manual correlates of these phi-features.

3.1.2 Expression of Phi-features in ASL

It has been argued that person reference in ASL does not involve a grammatically significant distinction between 2nd and 3rd person (Meier, 1990), but that it does have an enriched system for representing person features, since distinct referents are associated with distinct points in the signing space.

Because of the possibilities afforded by the visual-gestural modality, individual positions in the signing space can be assigned to

unique referents, thus providing the possibility of setting up multiple

distinct referents in the signing space that are associated with

distinct referential features.[3] NMKBA (1995) have interpreted these

as an enriched set of phi-features (as compared to the standard

distinctions of 1st, 2nd, and 3rd person in spoken languages). In

other words, since these points in space convey information

sufficient to uniquely identify a referent, information which can then

partake in agreement morphology, pronominal reference, etc.—

precisely those phenomena in which person features partake—we

interpret this referential information to constitute the "person"

feature.[4]

Thus, NMKBA (1995) have suggested that these points in space

used for person reference are in fact instantiations of the person phi-

features, and that these play a crucial role in many aspects of ASL

---

[3] See Gee and Kegl (1982) for a detailed discussion of the use of points in the signing space for marking reference. The current view is an outgrowth of that original work, although the observations contained in that article are now interpreted a bit differently.

A similar idea about person agreement features seems to be implicit in Supalla (in prep.).

[4] ASL also encodes number grammatically in certain cases for subject agreement. Number agreement will be discussed later in the dissertation, where it is relevant. In general, however, plurality is expressed by referencing multiple points in the signing space, although there are several different ways of conveying this information.

grammar. For example, NMKBA (1995) have argued that nominal

projections are in fact headed by phi-features, which may be

expressed by the Determiner (an index sign pointing to the location

in space associated with the relevant phi-features). This index

Determiner may occur without additional material, to express

pronominal reference. Similarly, these spatial locations are used for

expression of morphological inflectional agreement affixes for subject

and object agreement of "agreeing" verbs. This will be described

later in this chapter.

In chapters 4 and 5, we will suggest that, just like other

syntactic features residing in the heads of functional projections (as

discussed in Chapter 2), phi-features may also have non-manual

correlates in ASL, and that these show essentially the same

distribution that characterizes non-manual grammatical markers

generally. Specifically, we will propose that the phi-features

associated with subject and object agreement may be expressed non-

manually by head tilt and eye gaze, respectively, toward the points

in space associated with those phi-features.

In summary, the claim is that in ASL phi-features are associated with a specific spatial location. This location may be referenced in a variety of ways: 1) by an index sign pointing to that location, having a determiner function or used for pronominal reference; 2) by such an index point occurring as a verbal affix, corresponding to subject or object agreement inflection; or 3) by non-manual markers, such as head tilt or eye gaze, pointing to that location, as will be discussed in Chapters 4 and 5.[5] In addition, the articulation of a noun or adjective may be modified, so that it is articulated not in neutral signing space but instead in a position oriented toward the locus associated with the referent's phi-features.

3.2 Morphological Expression of Agreement

There is a general consensus that there are three morphological classes of verbs in ASL,[6] following Padden (1983, 1988): plain verbs,

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[5] It is interesting that there may be creative ways to point to the location in space associated with the phi-features. For example, James Bahan (the author's father), makes productive use, in his own idiolect, of a process borrowed from Puerto Rican gestures that involves pursing the lips to point to a location in space. James Bahan has generalized that use for linguistic purposes, and he uses such lip pointing for pronominal reference and so on.

[6] However, see Janis (1995) for a different perspective. She claims that it is not necessary to subdivide ASL verbs into distinct morphological classes, but rather that the differences in agreement marking can be made to follow from other considerations.

spatial verbs, and agreeing verbs. Padden defined plain verbs to be
those that do not exhibit person and number agreement for subject
and object, although they may inflect for aspect. Examples Padden
gives of plain verbs include: ACCEPT, ANNOUNCE, CELEBRATE,
INTERPRET, LIKE and LOVE. Spatial verbs (also called verbs of
motion and location; see Supalla, 1982, 1986), are defined as a class
of verbs, including classifier predicates, that use space to deal with
the location of a noun entity. Examples she gives of spatial verbs are:
MOVE, WRITE, GO, and BRING. The third class of verbs consists of
agreeing verbs, which may inflect for person and number as well as
aspect. Examples of verbs in this class are: ASK, GIVE, INSULT, TELL,
PAY, and SEND. It is this last class to which people traditionally refer
when they talk about the existence of person agreement in ASL.
Over time this class of verbs in ASL has been much discussed, in
particular because of its ability to express subject and object
agreement. Different researchers have given this class of verbs
different names: directional verbs (Friedman, 1975; Baker and
Cokely, 1980); inflecting verbs (Padden, 1983); and agreeing verbs
(Johnson and Liddell, 1987).

The class of verbs called "agreeing verbs" takes advantage of space to mark person agreement. Without the incorporation of person agreement in the verb stem, the sign GIVE looks like what is shown in Figure 1.

Figure 1

Citation Form of GIVE

When a signer wants to mark subject and object agreement, he may assign the subject to location A and the object to location B. When the verb is articulated, the basic sign form, as seen in Figure 1, changes to incorporate the locations assigned to the subject and object. So the signer will initiate the sign at spatial point i associated

with the subject; the path then traces from point i and ends at point j associated with the object. This can be seen in Figure 2.

Figure 2

¡GIVEj - with Person Agreement

The example above illustrates person agreement as manifested for agreeing verbs. The subscripted indices represent the agreement inflections' spatial reference points, and can be interpreted as an agreement prefix and suffix, respectively (Shepard-Kegl, 1985).

Plain verbs do not have the capacity to use space in the way just described. These verbs are articulated in the same way,

regardless of the choice of subject and object arguments, as shown in the following sentence.

(1)   IX$_i$ LOVE   IX$_j$

    'S/he loves him/her.'

In sum, morphologically, ASL verbs can be subdivided into several morphological verb classes based on the way agreement is or is not realized overtly.

3.3 Syntactic Analyses of Agreement

In recent years, there has been some controversy about the analysis of syntactic agreement in ASL. The question has involved the relation between the overt manifestation of agreement morphologically on verbs and the existence of syntactic agreement projections. Lillo-Martin (1986) has claimed that syntactic agreement projections occur if and only if the main verb overtly displays agreement morphology[7] while ABKN (1992, 1994) have

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[7] This idea, based on a strong form of Taraldsen's Generalization (1980), appears first in Shepard-Kegl (1985). While Kegl did first espouse this position, her own view has since changed, especially as a consequence of her joint work with Aarons, Bahan, and Neidle. Lillo-Martin, on the other hand, continues to adhere to this premise.

suggested that syntactic agreement projections occur uniformly with verbs of all classes, and that it is only the difference in expression of syntactic agreement that depends on the morphological properties of the verb.

The distribution of non-manual correlates of agreement examined in this chapter will provide evidence in favor of ABKN's view. Non-manual markers of syntactic agreement occur with verbs of all morphological classes, including plain verbs. This constitutes a strong argument that syntactic agreement is present in main clause sentences regardless of whether or not it is overtly realized morphologically on the verb.

3.3.1 The Hypothesis that Syntactic Agreement Exists Only in the Presence of a Verb Overtly Marked for Agreement Morphologically

The fundamental claim that underlies Lillo-Martin (1986, 1991) is that syntactic agreement in ASL is not found uniformly in main clauses, but is restricted to sentences containing verbs that overtly display agreement morphology. It is worth noting, however, that the direct correlation between morphological and syntactic agreement is implicit in Lillo-Martin's work, but not argued for.

One might expect that Lillo-Martin's purported difference in the syntactic structure of sentences with plain vs. agreeing verbs would entail that null subjects (analyzed in many languages, such as Italian, as being licensed by Agreement) might be possible with agreeing verbs, but not with plain verbs. However, this is not the case in ASL. Null subjects are, in fact, possible in sentences with all morphological classes of verbs. Lillo-Martin (1986, 1991), following an idea first presented in Shepard-Kegl, 1985,[8] is therefore obliged to provide entirely separate mechanisms for the licensing of subjects of plain verbs and agreeing verbs in order to reconcile the syntactic structure she assumes with the facts about the distribution of null subjects. She therefore suggests that for sentences with agreeing verbs, null subjects are licensed, as in Italian, by Agreement, but that in sentences with plain verbs, null subjects are licensed, as in Chinese, by Topic. She does not, however, explore the syntactic consequences of such a proposal. ABKN (1992) disconfirm several predictions that would follow from her analysis.

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[8]In fact, the idea suggested by Shepard-Kegl (1985) and Lillo-Martin (1991) is based on a purported analogy with a phenomenon in Chinese analyzed by Huang (1982). ABKN (1992) show, however, that ASL and Chinese are different in crucial respects, and that the analogy just does not hold.

3.3.2 Syntactic Agreement is Present Across the Board

ABKN (1992, 1994) argue, contrary to Lillo-Martin, that

syntactic agreement is present across the board. They present two

general arguments for this position. The first argument is based on

the existence of a marker that appears optionally to identify the

grammatical subject of the sentence, which they call (following

Shepard-Kegl, 1985)[9] a Role Prominence Marker. When this marker

is used, its physical realization "is established relative to the spatial

realization of the S-structure subject: there is a slight shift in the

signer's head and/or torso that attributes role prominence to the

referent at the target location (ABKN, 1994, p 16)." Thus, these

markers, which ABKN claim to occur optionally, manifest subject

agreement even with verbs that do not overtly carry subject-object

agreement (i.e., plain verbs). These markers are analyzed somewhat

differently in this dissertation, but the crucial observation is that

non-manual evidence of syntactic subject agreement is detectable

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[9] In Kegl's own work, however, she treats the Role Prominence Marker as a clitic occurring in a LOC_i position inside of the verb, constituting the theme argument (in the same way that classifiers do). For her, then, the Role Prominence Marker corresponds to the upper torso and head, and it occurs in the theme slot of a locative verb, functioning as a clitic. The account of these markers offered in this dissertation differs significantly from Kegl's analysis.

with sentences containing verbs of all morphological types, thus

disconfirming the suggestion that syntactic subject agreement is not

present in sentences with plain verbs.

ABKN's second argument concerns Lillo-Martin's claim that null

subjects of sentences with plain verbs (assumed to lack syntactic

agreement) are necessarily licensed by a different mechanism,

namely that invoked to account for the distribution of null

arguments in Chinese, licensing by topic. While the hypothesis may

be an interesting one to explore, it becomes apparent, upon testing

its consequences, that the distribution of null subjects in ASL

sentences with plain verbs differs significantly from what is

observed for Chinese. Consider the following sentence in ASL, which

contains a plain verb (and thus, according to Lillo-Martin, no

syntactic subject-verb agreement to license the null subject).

```
                  tm2
     _____
(2)   VEGETABLE ,   e    LOVE   CORN
      'As for vegetables, (he) loves corn.'
```

In this sentence, the null subject does not refer to the topic.

One might reasonably suggest, however, since ASL allows two topic positions potentially, that there is a second non-overt topic that could conceivably be licensing the null subject in this case. However, even in sentences that contain two overt topics (thus occupying the maximum number of available topic positions), the null subject of a plain verb[10] can still be disjoint in reference from either topic.[11] ABKN (1992) present such examples.

```
              tm2      tm2
(3)   VEGETABLE,  BOBᵢ,  e  KNOW  IXᵢ  PREFER  CORN
```

    'As for vegetables, as for Bob, I know he prefers corn.'

In sentence (3) above, the empty category is not coreferent with either VEGETABLE or BOB, thus providing a counter-argument to Lillo-Martin's assumption that null subjects of plain verbs are obligatorily licensed by an NP in topic position.

The analysis proposed in this dissertation for the non-manual correlates of subject agreement (involving a revision of Shepard-

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[10] The licensing of such null subjects will be discussed later. Note that these sentences are not fully transcribed for non-manual behaviors.

[11] This is significantly different from the case in Chinese. In Chinese, when there is no available Topic to serve as an antecedent for the null subject, the sentence is ungrammatical. See ABKN (1992) for further discussion.

Kegl's 1985 notion of Role Prominence, employed also by ABKN,

1992) provides additional evidence for ABKN's view that subject

agreement is present syntactically in main clause sentences

regardless of the differing morphological expression of Agreement by

different verb classes. The finding of this dissertation that non-

manual correlates of syntactic subject agreement are detectable with

verbs of all morphological classes confirms this claim.

3.4 Agreement within Infinitival Clauses

It is important to note that ASL differs from English in allowing

syntactic agreement both in tensed and infinitival clauses (as does

Portuguese, for example). Before this can be addressed, it is

necessary to present some background about infinitival clauses in

ASL, and, therefore, about Tense in general in ASL.

3.4.1 Tense in ASL

It had been claimed and generally assumed in the literature

that there is no grammatical tense in ASL (see, for example, Fischer

and Gough, 1978; Perlmutter, 1991, etc.).[12] However, ABKN (1995)

have demonstrated that grammatical Tense is, in fact, "alive and

well" in ASL, and they have proposed that Tense is actually the head

of the ASL clause (i.e., that IP in ASL is really a projection of Tense,

therefore, TP).

ABKN (1995) present a number of arguments in support of

their claim. First, they show, contrary to other claims that time is

expressed in ASL only with adverbials, that it is possible to identify a

class of lexical tense markers which differ morphologically from

related time adverbials, and which have the same distribution as

modals in ASL: occurring in the position canonically reserved for

modals and tense markers in many languages, a position following

the s-structure subject and preceding sentential negation. They also

show that these modals and lexical tense markers may contract with

a following negative item. Furthermore, they show that at most one

element from the class of modals and lexical tense markers can

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[12] There is, however, in the literature, a claim that tense can be marked on ASL
verbs: Jacobowitz and Stokoe (1988). However, they are referring to a specific
instantiation of tense information of particular verbs, rather than a general
claim about the syntactic organization of ASL, and do not carefully distinguish
between tense and aspect information.

appear in this position, and that a very frequent syntactic "tag" construction, consisting of a reduced version of the main clause, repeated, frequently includes a modal or lexical tense marker. They show, however, that lexical tense markers and modals are restricted to finite clauses, and that they cannot occur in infinitival complement clauses.

3.4.2 Infinitivals in ASL

The identification of infinitivals in ASL is, however, a bit more difficult than it is in English. This is because while, in English, tensed and tenseless clauses differ in that the former normally have an overt subject while the latter normally do not, in ASL, overt subjects are not required in tensed clauses (as discussed earlier). Thus, while in general, if an ASL clause contains an overt subject[13] or a modal or Tense marker, it can be identified as a finite clause, the absence of

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[13] For the moment, we are excluding consideration of Exceptional Case Marking constructions in ASL, although there are instances of this construction. In such cases, while an overt subject is found in the embedded clause, modals and tense markers are ungrammatical. Consider:

(i)   JOHN WANT MARY SEE BILL
      'John wants Mary to see Bill.'

(ii) * JOHN WANT MARY WILL SEE BILL

those two does not guarantee that the clause is non-finite. It is,

however, clear that there are verbs that subcategorize obligatorily

for tenseless clausal complements. In such cases the clausal

complement cannot contain an overt subject and it cannot contain a

modal or lexical tense marker. This is the case, for example, with the

verb TRY:

    (4)   `ELLEN   TRY   WORK`

        'Ellen is trying to work.'

    (5) `* ELLEN (FUTURE-TNS) TRY FUTURE-TNS WORK`

        'Ellen [is trying/will try] will work.'

    (6) `* ELLEN (FUTURE-TNS) TRY IX (FUTURE-TNS) WORK`

        'Ellen [is trying/will try] she (will) work.'

As in other languages, ASL appears to have verbs that can take

either tensed or tenseless clausal complements, but it is harder to

identify such tenseless clausal complements, because of the potential ambiguity.[14]

    (7)   `JIMMY  HOPE   PRO   FINISH  WORK  EARLY`

           'Jimmy hopes to finish work early.'

    (8)   `JIMMY  HOPE   [pro]   FINISH  WORK  EARLY`

           'Jimmy hopes he finishes work early.'

However, sentences such as the following, which contain modals or lexical tense markers or overt subjects, necessarily involve finite clauses.

    (9)   `JIMMY  HOPE   [pro]   WILL  FINISH  WORK  EARLY`

           'Jimmy hopes (he) will finish work early.'

---

[14] There is confirmation for the suggestion that such sentences really do have an infinitival reading from the fact that there are certain kinds of syntactic behavior restricted to infinitival clauses, and such sentences (involving, for example, verbs that obligatorily subcategorize for tenseless complements) do pattern with other clear-cut cases of infinitivals with respect to such phenomena. One example of this is provided in Chapter 5, where it is shown that ASL has an analog to "clitic climbing" that occurs only with infinitival complements, and such constructions can undergo this process.

(10) JIMMY HOPE GAIL FINISH WORK EARLY

'Jimmy hopes Gail finishes work early.'

In summary, while some verbs subcategorize strictly for infinitival complements, which predicts that the complement clause can never contain an overt subject or a tense marker, other verbs may take either tensed or tenseless clausal complements.

3.4.3 Agreement within Infinitival Clauses

It is important to note that in ASL, tense and agreement do not always occur together, i.e., that agreement may be marked both in tensed and tenseless clauses. Verbs that exhibit morphological agreement may do so both in tensed and tenseless clauses, as illustrated by the following examples:

(11) IX_i $_iGIVE_j$ $STEVE_j$ BOOK

'S/he gives Steve the book.'

(12) IX_i TRY $_iGIVE_j$ $STEVE_j$ BOOK

'S/he is trying to give Steve the book.'

3.5 Two Kinds of Subject Agreement

The use of space to realize morphological agreement on verbs

that exhibit subject and object agreement overtly has been described

extensively in the literature (see, for example, Padden, 1983, 1988;

Baker and Cokely, 1980; Wilbur, 1979; Klima and Bellugi, 1979;

Friedman, 1975; Shepard-Kegl, 1985; Kegl, 1990; Fischer and Gough,

1978; Liddell, 1980; Lillo-Martin, 1991; Meier, 1982; Supalla, in

prep.). This is shown in the following example, with the verb GIVE.

(13) DAVID$_i$ $_i$GIVE$_j$ BETTE$_j$ BOOK

'David gives Bette a book.'

In this case, the spatial locations established for subject and object,

are attached as a prefix and suffix to the verb as well (as indicated

by the coindexation of the starting and ending point of the verb with

the subject and object), resulting in spatial subject and object

agreement of the verb.

However, a phenomenon that has received considerably less

attention is the possibility that morphological subject agreement may

optionally be realized in a different way: through the use of a kind

of neutral, default prefix, similar in realization to the 1st person agreement form, as illustrated in the following example sentence.

(14) JIM$_i$ $_{\text{neutral-position}}$GIVE$_j$ JILL$_j$ BOOK

'Jim gives Jill a book.'

While there have been references to this kind of construction in the literature (Meier, 1981, 1982; Padden, 1983, 1988; Janis, 1995; and Supalla, in prep.),[15] with the exception of Supalla's recent discussion of this phenomenon, this construction has not been the focus of close analysis. Some older work appears to have described this as involving the use of the "citation form" (Baker and Cokely, 1980), which would imply the use of the sign GIVE without any of its agreement affixes.

There are two arguments against the claim that (14) contains the citation form of GIVE and that subject agreement is lacking totally in such examples. The first is based on the obligatory manifestation of object agreement (thus disconfirming that the

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[15] Kegl (1976) also discusses this phenomenon; there, she talks about "neutral pronouns".

citation form is involved). The second is based on the overt

manifestation of number agreement with such examples,

disconfirming that subject-verb agreement is totally lacking.

First, while GIVE can have the appearance of being unmarked

for subject agreement, if GIVE is also totally unmarked for object

agreement, then the sentence is ungrammatical. Therefore, GIVE in

(14) above cannot simply be the uninflected stem form. Rather,

what we will propose here is that there are two possible

morphological realizations of subject person agreement: a marked

and an unmarked (1st-person-like) form. [16]

In this regard, it is interesting to note that, while object

agreement cannot be totally absent from the verb GIVE in sentences

like (14), there are in fact two possible ways in which object

agreement may be realized morphologically. In addition to the kind

of spatial agreement previously described, there is a different kind

of agreement that occurs if the object is non-specific (and therefore

not associated with any fixed location in the signing space). In this

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[16] See also Padden (1983, 1988) and Shepard-Kegl (1985). Supalla (in prep.) also observes this phenomenon, i.e., that the spatial subject agreement is not always required with so-called subject-agreeing verbs, and discusses it in more detail than had been provided in earlier work.

case, a special location (usually in front of the signer's body, and with a little higher than normal end point associated with object spatial location) is used to express agreement with a non-specific object. This is found in sentence (15).

(15) JACK _{neutral-pos}GIVE_{neutral-slightly-up/left} SOMEONE BOOK.

'Jack gives someone [non-specific] a book.'

In this case, in fact, while GIVE begins with the fingers and thumb together (as they would normally remain, when the verb co-occurs with a specific object), by the end of the articulation of GIVE in (15), the fingers and thumb have spread out slightly.

This form of object agreement is used in the case where there is a non-specific object. Crucially, however, the verb GIVE cannot completely lack inflection for object person agreement, nor can this non-specific agreement form be used in lieu of a place in the signing space that has been established for a specific object NP. In this respect, object agreement differs in an important way from subject agreement.

Second, while spatial person agreement with the subject may appear to be neutralized in the construction illustrated by (14) and (15) above, number agreement is nonetheless operative, as shown in the following set of examples. Sentences (16) and (17), with plural subjects, involve an inflection on the verb (glossed as "2h alt," meaning 2 hands alternating) that marks agreement with a plural subject. Note that this inflection co-occurs with both the overt manual agreement found in (16) and the unmarked spatial position used in (17).

(16) PEOPLE GROUP$_i$ (2h alt)$_i$GIVE$_j$++ JANA$_j$ TOY

'A group of people gave Jana toys.'

(17) MANY PEOPLE $_{neutral-position}$(2h alt)GIVE$_j$++ JANA$_j$ TOY

'Many people gave Jana toys.'

So, what is happening in this construction? Clearly this does not involve a complete lack of subject-verb agreement, since number agreement is overtly manifested. The approach that will be adopted here will be to consider the "spatial default" person agreement prefix

to be a kind of unmarked subject-agreement form, in the

Jakobsonian sense of markedness. The claim is that while 3rd person

functions as the unmarked person form in many languages, for

reasons that may involve the systematic use of the signer's body for

signs in ASL, the unmarked morphological form in ASL corresponds

systematically to 1st person. Thus, for example, for "plain" verbs,

which do not overtly realize spatial agreement, the morphological

forms used in the absence of overt person marking are essentially

1st person-like, making use of the signer's own body as the reference

point for articulation.

The general approach taken here is similar to conclusions

reached independently in Supalla (in prep.), where he likewise

distinguishes between a "full agreement" form for verbs like GIVE

and a form in which subject agreement is "unmarked".[17]

So, this suggests that what has previously been identified as

the citation form of GIVE found in examples like (14) is not, in fact,

devoid of agreement inflection. Rather, this example reflects the

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[17] Notice that the issue of whether subject person agreement is lacking, or
rather whether it is simply unmarked, is a subtle question, to which we will
return in Chapter 6.

unmarked form of subject agreement, which, in ASL morphology, is generally very similar in appearance to 1st person inflection.

What is unusual about ASL from a crosslinguistic perspective, in addition to the use of 1st rather than 3rd person as the unmarked form, is the fact that most languages that use unmarked subject agreement forms do so in one of two situations: 1) when there is no subject specified for person features (as, for example, with an expletive subject), and thus the subject-agreement features are left unspecified; or 2) when there is oblique case-marking on the subject, as with oblique subjects in Icelandic, for example. In contrast, this use of the unmarked subject agreement form in ASL, while it is obligatory in the absence of a subject specified for person features, as would be expected, as in example (18), is nonetheless optional in other circumstances where the subject's number features are specified, as in examples (19) and (20).

(18) NOBODY $_{\text{neutral-position}}$GIVE$_i$ JOHN$_i$ BOOK

'Nobody gives John a book.'

(19) MEGAN $_{neutral-position}$GIVE$_i$ BOBBY$_i$ BOOK

'Megan gives Bobby a book.'

(20) MEGAN$_i$ $_i$GIVE$_j$ BOBBY$_j$ BOOK

'Megan gives Bobby a book.'

The generalization seems to be that if the subject is not specified for agreement features, then the unmarked subject-agreement form is required. Notice that this does not exclude the use of a non-overt subject specified for person features (pro), with the marked agreement forms:

(21) pro$_i$ $_i$GIVE$_j$ MARY$_j$ BOOK

'S/he gives Mary a book.'

We will return to this relationship between the agreement features expressed on the verb and the expression of person features of the subject DP in Chapter 9.

It is interesting to note that these properties of agreement seem to be present systematically in ASL. For example, adjectival

agreement also appears (as first observed by Barss, 1982) to give rise to an overtly agreeing form and to an agreement form that is positioned in neutral space. Sentence (22) shows the type where the adjective is overtly agreeing with the spatial features of the object NP, and an adjective positioned in neutral space is shown in (23).

(22) JOE   SEE$_i$ TALL-loc-rt   TREE-rt$_i$

       'Joe sees a tall tree (located on the right).'

(23) JOE   SEE$_i$ TALL-neutral-loc   TREE$_i$

       'Joe sees a tall tree.'

Similarly, as will be discussed in later chapters, non-manual realizations of subject agreement seem to come in two flavors, an overtly spatially agreeing form, and a form based on a default (1st-person-like) spatial position. The same appears to be true within DP; there appears to be an overtly agreeing form of the definite determiner, matching the spatial location of the main Noun, and an unmarked, neutrally positioned kind of index.[18]

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[18] This "unmarked," default, form of the index, used in the absence of person features specified for the main noun in the DP, was first identified and described briefly in BKMN (1995:10, footnote 7). For further details, see Chapter 8 and MacLaughlin (in prep.).

3.6 Agreement According to Chomsky

Over the past forty years of generative grammar, syntactic

agreement has received a variety of different treatments. In

Chomsky (1957), agreement morphemes were treated as separable

syntactic entities that attached in the syntax to independent lexical

items. In more recent approaches, however, it has been assumed

that lexical entries are inserted fully inflected into the syntax. The

ways in which proper agreement relations have been ensured within

the theory have also varied rather dramatically as syntactic

frameworks have evolved. In the framework of Chomsky (1993),

where syntactic features relevant to agreement morphology (phi-

features) are assumed to reside in the heads of agreement

projections (AGR-S and AGR-O), the proper match of features is

guaranteed by a "checking" mechanism.[19] The fully inflected lexical

items inserted into the syntax need to move to head of the

appropriate agreement projection in order to check the features

associated with their inflectional morphology. This movement can

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[19] Please note that we completely reject as untenable the proposal put forward in Wilbur (1995b) for relating non-manual grammatical marking to "checking domains." Wilbur's proposal will not be discussed any further in this dissertation.

either be overt (if the features are "strong," this requires overt movement) or not (if the features are "weak," this movement can occur at a later stage in the derivation and is thus not directly observable).   It is this basic notion of feature checking that will be assumed: that the inflected verb comes into the syntax with agreement features that must be checked against agreement features contained in the heads of agreement projections. We are making no assumptions about the mechanisms of feature checking,[20] nor do we necessarily adopt any specific Chomskyan framework for accomplishing the feature checking (certainly not that of Chomsky, 1995, which contains significant departures from the ideas just described; there are no longer assumed to be agreement projections at all). We will return in Chapter 7 to consideration of the most recent proposals, and the relevance of data from ASL to controversies about the existence of agreement projections.

In summary, then, this dissertation assumes that there are syntactic projections of AGR-S (subject agreement) and AGR-O (object

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[20] The idea of feature checking, of course, does not originate with Chomsky, and has been used in a variety of other frameworks as well (see, e.g., Hellan, 1986).

agreement). The basic tree structure for ASL argued for in ABKN (1992, 1994, 1995, etc.) was presented in Figure 4 of Chapter 1, and this constitutes a foundation for the analyses contained in subsequent chapters. Fully inflected lexical items inserted into the syntax must check their feature specifications against features contained in AGR-S or AGR-O. As was motivated in this chapter, we will claim that subject agreement morphology in ASL may involve full specification for person features, but it may alternatively take a form unmarked for person features (in which case this form is potentially compatible with any feature value). This possibility of having subject person agreement features that are either fully specified or unmarked will predict both a duality in the possible realizations of subject person agreement in ASL and certain interesting kinds of agreement asymmetries that will be explored in subsequent chapters.

CHAPTER FOUR

NON-MANUAL REALIZATIONS OF SUBJECT AGREEMENT

In examining non-manual expression of Agreement in ASL, it will

be simplest to examine subject agreement (i.e., non-manual marking

associated with features in the AGR-S node) and object agreement

(associated with AGR-O) in separate chapters, although they work in

conjunction with one another. The basic devices available for

expression of agreement non-manually are head tilt and eye gaze to the

location in space associated with the person agreement features. This

chapter and the one that follows will consider how these devices are

used to mark subject and object agreement within IP. Chapter 6

completes the investigation of the non-manual expression of agreement

in IP by providing an overview of transitive constructions and

extending the investigation to intransitive clauses. In Chapter 8, the

same devices for non-manual expression of agreement within IP are

also shown to operate within DP.

This chapter, then, focuses on the non-manual realization of the

person agreement features contained in AGR-S and is divided into four

sections. Section 4.1 discusses the role the signer's head plays in the

non-manual expression of subject agreement within simple sentences.

Section 4.2 looks into the distribution of non-manual subject agreement

marking in complex sentences. Justification for analyzing head tilts as

subject agreement is discussed in sections 4.3 and 4.4. Section 4.5

discusses the distinction between non-manual realization of subject

agreement and role shift.

4.1 Head Tilt as Non-manual Expression of Subject Agreement

This section focuses on the different ways that subject agreement

is manifested non-manually, with particular attention to two types of

head tilting behavior: overt non-manual marking and default non-

manual marking, to be described in Section 4.1.1. These will be argued

to be the non-manual correlates of subject agreement that is fully

specified for person features and subject agreement that is unmarked

for person features, analogous to the two kinds of morphological subject

agreement marking discussed in Chapter 3. Then in section 4.1.2, the

interaction of non-manual and manual forms of agreement is examined.

4.1.1 Realization of Subject Agreement: Marked vs. Unmarked Forms

The two general ways that subject agreement may be expressed non-manually parallel the ways in which agreement may be expressed manually (see Chapter 3). One way involves the overt marking of the location associated with the subject's person features. This is done non-manually by tilting the head in the direction of the position in the signing space associated with those features. The other way involves an unmarked head position, which is very close to the 1st person morphological realization of agreement; that is, the signer's body assumes a kind of 1st person position, thereby not showing overtly the subject's location in the signing space.

This phenomenon, which will be analyzed here as the non-manual expression of subject agreement, was first observed in Shepard-Kegl (1985). Similar phenomena have been reported in other signed languages, such as Italian Sign Language (Pizzuto, 1986) and Danish Sign Language (Engberg-Pedersen, 1993). Pizzuto describes a phenomenon in Italian Sign Language that she claims involves "body person markers," but she offers no real syntactic analysis of this.[1]

---

[1] She does not indicate for Italian Sign Language a distinction between an overt and default form, as is suggested here for ASL.

Incidentally, the type of head tilt described in this section looks a bit like what has been described extensively in the literature as role shift (and more recently as referential shift); see, e.g., Bahan and Petitto (1980), Loew (1984), and Emmorey and Reilly (1995). The head tilts involved in these two different constructions do share some of the same physical characteristics in that the head position, head tilt, and eye gaze are significant. However, there are also extremely important differences that make it possible to differentiate basic non-manual realization of subject agreement from the use of the head and upper body to signal a shift in the signing perspective. Role shift and how it can be differentiated from the non-manual head tilt associated with syntactic agreement will be discussed in section 4.5. To date, Kegl (Shepard-Kegl, 1985, and subsequent work, including ABKN, 1992) has distinguished these two phenomena, while other ASL linguists have not recognized the relevance of these phenomena (e.g., Lillo-Martin, 1991).[2]

_____

[2] Although Supalla (personal communication) has also noticed the existence of a phenomenon independent of role shift that he describes as involving "first person marking" on the verb and mentions this marking in a footnote of his paper (Supalla, in prep.).

4.1.1.1 Overt Non-manual Marking of Subject Agreement

The most explicit non-manual marking of subject agreement involves the head and upper body shifting position by tilting toward the location in space associated with the subject's person agreement features.[3]

This head tilt occurs both with inflecting verbs, such as GIVE in the following example, and with plain verbs, such as LOVE. There is no difference in the head tilt used with these two kinds of verbs.

The head may remain tilted while the VP is articulated.[4] This is illustrated in the following example:[5]

$$\overline{}\text{head tilt}_i$$
$$\overline{}\text{gaze}_j$$

(1) JOHN_i [$]_{\text{AGR-S}_i}$ [$]_{\text{AGR-O}_j\ \text{neu}}\text{GIVE}_j\ \text{MARY}_j\ \text{BOOK, IX}_i$

'John gave Mary the book, him.'

---

[3] The orientation of the head in the direction of the object, which also characterizes this construction, will be considered in Chapter 6.

[4] This is similar to what Shepard-Kegl (1985) labeled as a "role prominence clitic." ABKN (1992) used the term "role prominence marker." This phenomenon is analyzed differently in this dissertation, but the current work builds on Kegl's initial observations and description.

[5] An example with pronominal right dislocation is chosen here, because this suffices to demonstrate that role shift is not involved. The reasons for this will be made clear later in this chapter.

Notice that if the sentence contains a tense marker or modal, then the

head tilt begins afterwards. Similarly, if the sentence contains a

negative element, the head tilt begins after that. However, the head tilt

must begin before the VP is articulated.

$$\underline{\qquad\qquad\qquad\qquad\qquad\qquad\qquad\text{head tilt}_i}$$
$$\underline{\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\text{gaze}_j}$$

(2)   JOHN$_i$ WILL   NOT   [   ]$_{AGR-S_i}$ [   ]$_{AGR-O_j}$ $_{neu}$GIVE$_j$ MARY$_j$ BOOK

   'John will not give Mary the book.'

The head tilt in (1) begins immediately after JOHN is signed; at that

point, the head tilts to the right, followed, in microseconds, by the

shifting of the eyes to the left just prior to signing the VP. [6]

This marking is used for all transitive verbs tested. Figure 1

shows the position of the head, shoulders, and upper body while GIVE is

signed. The head tilts and may remain in that location throughout the

entire VP, although the head may begin returning to the neutral

location over the object NP. (The scope of non-manual agreement

marking will be discussed in Chapter 7.)

---

[6] When there is no line above the gloss indicating eye gaze, this means that the eyes are gazing at the addressee. When there is no line indicating head position, this means the head is in neutral position (unless specified for default marking, discussed later in this chapter).

Figure 1

Overt Non-Manual Subject Agreement Marking

Recall, as discussed in chapter 3, the use of a spatial locus generally for representation of person phi-features. This spatial locus may be pointed to (as with determiners and pronominal reference), may be used as an affix (as with manual morphological agreement), or, in addition, as suggested here, may be signaled by pointing non-manually (in this case, by the tilting of the head) to that same locus. This chapter discusses head tilt toward the locus associated with the subject's phi-features as a manifestation of subject agreement. Chapter 5 describes eye gaze toward the location associated with the object's phi-features, analyzed as an expression of syntactic object agreement.

4.1.1.2 Default/Unmarked Non-manual Marking of Subject Agreement

As is the case with manual marking of agreement (discussed in Chapter 3), non-manual correlates of subject agreement may take one of two forms: either a form overtly displaying spatial agreement with the subject, or a default form associated with a neutral, unmarked spatial position. The unmarked head position used for this second type of agreement marking involves the utilization of the signer's head and upper body, in a neutral position (rather than tilted toward the locus associated with subject, as just shown in Figure 1). Just as the unmarked form for manual agreement was shown to be very close to the form used for 1st person, so this unmarked head position is very close to the 1st person agreement form, as seen in Figure 2 and sentence (3). It is important to note that this neutral head position can still be distinguished from the lack of any marking at all, because it is associated with a particular eye gaze and/or with a specific kind of body position that includes a slight forward lean, which will be described in more detail in Chapter 6.[7]

---

[7] Of the two types of non-manual markings associated with subject agreement, this unmarked type may occur with greater frequency than the overt head tilt described earlier.

Figure 2

Default Non-Manual Subject Agreement Marking

<div style="text-align: right">head tilt<u>neu</u></div>
<div style="text-align: right"><u>gaze</u>j</div>

(3)   JOHNi [ ]AGR-Sneu [ ]AGR-Oj neuGIVEj MARYj BOOK, IXi

'John gave Mary the book.'

Thus, just as there are two ways for expressing manual subject

agreement—both an overtly marked and an unmarked form, the same is

true for the non-manual correlate of subject agreement.

4.1.2 Interactions of Non-manual and Manual Forms of Agreement

This section will consider the interactions among the various

realizations of agreement. First, section 4.1.2.1 considers interactions

between the non-manual correlates of subject agreement (i.e., the phi-features contained in AGR-S) and the manual expression of morphological subject agreement marking on verbs. Then section 4.1.2.2 discusses the cooccurrence of multiple expressions of subject agreement.

4.1.2.1 Interactions between Overt and Unmarked Forms of Manual and Non-manual Marking of Agreement

Let's consider the relation between agreement inflection on the verb and the non-manual correlates of the person features contained in AGR-S. First the facts will be presented as to the compatibility of the manual and non-manual expressions of agreement (the non-overt, unmarked forms vs. the overtly marked forms of each). Then an explanation of this pattern will be offered. Figure 3 shows the cooccurrence possibilities.[8]

_____

[8] With respect to the restriction indicated in line 2 in the table, Chapter 6 discusses further characteristics of the neutral head position that make it possible to identify this neutral head position. When this is taken into account, it becomes apparent that the neutral form of non-manual subject agreement cannot occur with a marked "agreeing" verb. For example, the head and upper body, used to express unmarked subject agreement, can move forward along an axis that is determined by orientation to object. Thus, while the overt head tilt involves an angle along a left-right axis, relative to the signer, the unmarked subject agreement is not tilted leftward or rightward, but can move along a front-back axis relative to the signer. This is the crucial distinction between the two types of subject marking. However, one must be careful to distinguish such cases from a special use of head tilt over a Noun or Verb in ASL for (contrastive) stress.

Figure 3

Cooccurrence of Manual and Non-Manual Expressions of Agreement

		Correlates of AGR-S Realized Non-manually	Morphological Inflection Realized Manually
1.	ok	Unmarked	Unmarked
2.	*	Unmarked	Marked
3.	ok	Marked	Unmarked
4.	ok	Marked	Marked

In this section examples of each of the four logical combinations will be presented and discussed. Consider first combinations 1 and 2. Sentences (4) and (5) below show that when the non-manual expression of person features contained in AGR-S has the unmarked, neutral, form, this same form (rather than the overt spatially marked agreement form) is also required for the morphological expression of agreement (found with "agreeing" verbs).[9]

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[9] Since the remainder of this chapter will focus on Subject Agreement, for ease of exposition, the AGR-O node will often be omitted from the glosses in this chapter. This is not intended to indicate that it is not present in these sentences, but rather to focus attention on the discussion of AGR-S. AGR-O will be discussed in detail in the next chapter.

$$\text{head tilt}_{neu}$$
$$\overline{}$$

(4)   JOHN$_i$ [ ]$_{\text{AGR-S}_{neu}}$ $_{neu}$GIVE$_j$ MARY$_j$ BOOK

'John gave Mary the book.'

$$\text{head tilt}_{neu}$$

(5) * JOHN$_i$ [ ]$_{\text{AGR-S}_{neu}}$ $_i$GIVE$_j$ MARY$_j$ BOOK

'John gave Mary the book.'

However, the overt non-manual head tilt is compatible with either manual form of agreement, either the overt spatially agreeing inflection or the neutral form. This is illustrated in (6) and (7).

$$\text{head tilt}_i$$

(6)   JOHN$_i$ [ ]$_{\text{AGR-S}_i}$ $_{neu}$GIVE$_j$ MARY$_j$ BOOK

'John gave Mary the book.'

$$\text{head tilt}_i$$

(7)   JOHN$_i$ [ ]$_{\text{AGR-S}_i}$ $_i$GIVE$_j$ MARY$_j$ BOOK

'John gave Mary the book.'

In sum, two descriptive generalizations emerge. 1) If the non-manual correlate of AGR-S has the neutral form, then the verb must display the neutral form of subject-verb inflection. 2) If, on the other

hand, the non-manual correlate of AGR-S is overt, then either form of

manual inflection on the verb is compatible with that.

Why should this be? Consider the idea of feature checking as

formulated in Chomsky (1993, e.g.). If we assume that the marked

form of subject agreement correlates with fully specified person

agreement features while the unmarked form corresponds to person

agreement features that are unspecified, unmarked (but compatible

with all person feature values), then an explanation of the apparent

asymmetry emerges. Figure 3 then can be viewed from a slightly

different perspective, as shown below in Figure 4:

Figure 4

Checking of Person Features

		In AGR-S Realized Non-manually	Associated with Verb Inflection Realized Manually
1.	ok	Unspecified	Unspecified
2.	*	Unspecified	Fully specified
3.	ok	Fully specified	Unspecified
4.	ok	Fully specified	Fully specified

If the verb is marked for person features, then these person features

must be checked against features contained in AGR-S, thus entailing

that AGR-S must be fully specified for person features. Therefore, any non-manual correlate of those features will necessarily reflect the full feature specification. However, if the verb is unmarked for person features, then when person features are checked, its person feature values will be compatible with whatever may be contained in AGR-S, whether the person features in AGR-S are specified or not. Thus, in the former case, there will be overt manifestation of the non-manual agreement marking, while in the latter case, the non-manual agreement form will default to the neutral position. This approach then correctly predicts the cooccurrences summarized in Figure 3. Moreover, if our analysis of marked vs. unmarked person features corresponding to the marked and unmarked spatial realization of agreement marking is correct, then this kind of asymmetry provides support for a theoretical account of agreement in terms of feature checking.[10]

---

[10] Notice that other alternative approaches to matching syntactic feature values with morphological inflection might make incorrect predictions. For example, if feature values needed to match exactly those features that are marked morphologically, then this would predict the ungrammaticality of row 3 in the previous figures (i.e., the possibility of having overt realization of non-manual agreement features but non-overt realization of manual agreement features). Thus, this kind of distribution supports a feature checking approach along the lines outlined above.

4.1.2.2 Multiple Overt Expressions of Agreement

As just discussed and illustrated in (7), it is possible to find cooccurrence of overt non-manual correlates of subject-verb agreement and overt manual expression of agreement. However, it is interesting to note that in such a case there is a reduction in the extent of the realization of manual subject agreement on the verb. That is, when the signer uses head tilt to express non-manual subject agreement, there is a reduction in the scale of the manual expression of subject agreement, i.e., in the extent of the manual motion toward the locus where the subject is set up in space. This is illustrated with the verb GIVE in Figures 5-7. Figure 5 shows the overt non-manual agreement marking (head tilt) with the neutral morphological subject-verb agreement marking on the verb (cf. sentence (6)). Figure 6 shows overt manual agreement marking on the verb. Finally, Figure 7 shows the combination of the two forms: both overt non-manual and manual agreement marking on the verb (cf. sentence (7)).

Figure 5

Overt Agreement Marking with ₙₑᵤGIVEⱼ

$$\overline{\phantom{\text{AGR-S}_i\ }\text{\underline{head tilt}}_i}$$
$$\text{AGR-S}_i\quad \text{neuGIVE}_j$$

Figure 6

ᵢGIVEⱼ produced with Full Manual Agreement
(no overt non-manual agreement)
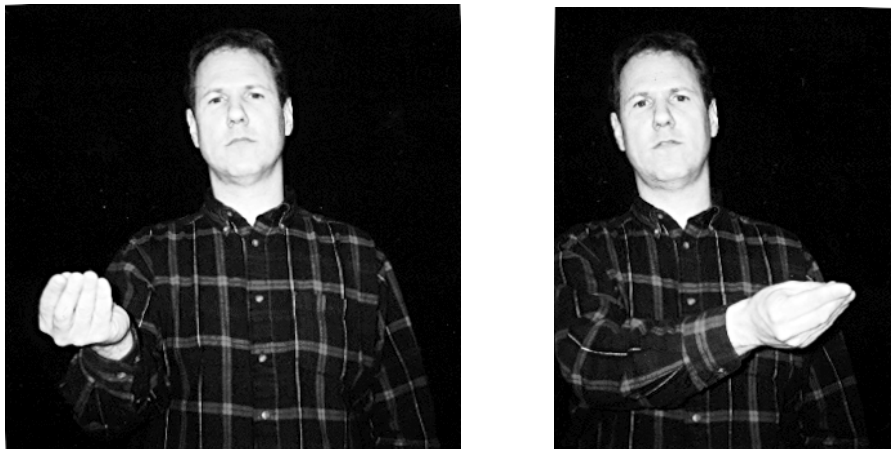
Figure 7

Overt Non-manual & Overt Manual Marking


```
                head tilt_i
_____
AGR-S_i        _iGIVE_j
```

The reduction of the manual element may be easier to see with a

bird's eye view, the perspective taken from above looking down onto

the signer and the space in front of him. Figure 8 shows the same

construction as Figure 6 but from above, that is, the extent of the spatial

movement that marks the overt morphological manual agreement on

the verb GIVE (where X indicates the subject marking and Y indicates

the object marking). This contrasts with Figure 9, which corresponds to

Figure 7 and shows the reduction in the expression of manual

agreement marking when overt non-manual agreement marking

cooccurs with manual marking.[11] Note in Figure 9 that there is

movement of the body and head, and this has the effect of moving the

body closer to the location associated with the subject person features,

thereby, in some sense, shrinking the distances required to show

manual agreement.

Figure 8

Overt Manual Agreement
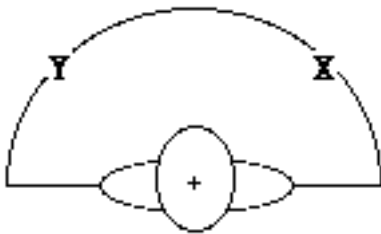
Figure 9

Cooccurrence of Overt Non-manual
and Overt Manual Agreement
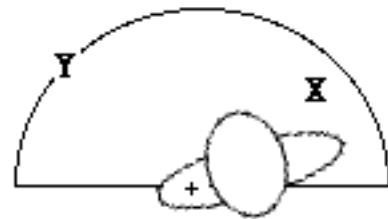
This kind of reduction in the manual articulation of the verb in

the presence of overt non-manual markings is not found with verbs

that do not express subject agreement manually (e.g., LOVE and SEE). A

similar interaction is found between manual and non-manual

expressions of object agreement and will be discussed in Chapter 5.

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[11] In both of the figures the signer is schematically represented, and the shift in position with respect to the original center of the signing (marked by +) is visible by comparing the signer's position in 8 and 9.

4.2 Non-manual Subject Agreement Marking in Embedded Clauses

In this section the use of non-manual subject agreement marking in complex sentences is investigated. Section 4.2.1 looks at the distribution of non-manual subject agreement marking in embedded clauses. Section 4.2.2 examines the interaction between agreement marking in the matrix and embedded clauses.

4.2.1 Distribution of Non-manual Agreement Marking in Embedded Clauses

Basically, the non-manual marking of subject agreement spreads over the VP of the clause associated with the given subject. However, if the main clause VP contains embedded within it a clause that has a subject distinct from the subject of the main clause, then the subject agreement marking does not extend over the embedded clause.

The subject agreement marking in the embedded clause and that found in the main clause are, for the most part, independent. It is possible to find non-manual expression of subject agreement only in the matrix clause or only in the embedded clause, as illustrated in the following two examples, respectively.

$$\overline{\quad\quad\quad\text{tilt}_i\quad\quad\quad}$$

(8) BILL$_i$ [ ] $_{\text{AGR-S}_i}$ WANT NOAH   HIT$_j$ JESSE$_j$

'Bill wants Noah to hit Jesse.'

$$\overline{\quad\quad\quad\quad\quad\quad\text{tilt}_i\quad\quad\quad}$$

(9)   BILL WANT NOAH$_i$ [ ]$_{\text{AGR-S}_i}$ HIT$_j$ JESSE$_j$

'Bill wants Noah to hit Jesse.'

It is also possible to find independent agreement marking in the two clauses.[12]

$$\overline{\quad\text{tilt}_i\quad}\qquad\qquad\overline{\quad\quad\text{tilt}_{\text{neu}}\quad}$$

(10) JOHN$_i$ AGR$_{\text{S}_i}$ EXPECT MARY$_j$ [ ]$_{\text{AGR-S}_{\text{neu}}}$ HIT$_k$ BILL$_k$

John expects Mary to hit Bill.

---

[12] Note, however, that while embedded clauses may contain overt head tilt corresponding to non-manual marking for subject agreement, as illustrated in (i), it is not possible to find overt head tilt with one subject in the main clause and then a different head tilt to agree with a different subject in the embedded clause. We have no syntactic explanation for this; it may involve the physical difficulty of producing those successive articulations.

$$\overline{\quad\text{tilt}_{\text{neu}}\quad}\qquad\qquad\overline{\quad\quad\text{tilt}_j\quad}$$

(i)   BILL$_i$ [ ]AGR-S$_{\text{neu}}$ WANT   NOAH$_j$ [ ]AGR-S$_j$ $_j$HIT$_k$ JESSE$_k$

'Bill wants Noah to hit Jesse.'

Thus, the following possibility, which might be predicted on the basis of what had been said so far, does not occur:

$$\overline{\quad\text{tilt}_i\quad}\qquad\qquad\overline{\quad\quad\text{tilt}_j\quad}$$

(ii) * BILL$_i$ [ ]AGR-S$_i$ WANT   NOAH$_j$ [ ]AGR-S$_j$ $_j$HIT$_k$ JESSE$_k$

'Bill wants Noah to hit Jesse.'

In the case where the main clause subject and the embedded clause subject are coreferent, as is the case with many infinitival complements, then the subject agreement marking may extend.

$$\underline{\hspace{6cm}\overline{\text{tilt}_i}}$$

(11) BILL$_i$ [ ]$_{\text{AGR-S}_i}$ WANT HIT$_j$ JESSE$_j$.

'Bill wants to hit Jesse.'

However, it is not possible for the subject agreement marking associated with the main clause subject to extend over the clause having a subject disjoint in reference from the main clause subject.[13]

---

[13] Again, the overt non-manual subject agreement marking may occur solely over the embedded clause.

$$\overline{\text{tilt}_i}$$

(i)   BILL$_i$ WANT [ ]AGR-S$_i$ $_{\text{neu}}$HIT$_j$ JESSE$_j$

'Bill wants to hit Jesse.'

However, if the non-manual agreement marking begins in the main clause, there is a very strong preference to extend it over the embedded clause as well, if the embedded clause subject is coreferential with that of the matrix clause.

$$\overline{\text{tilt}_i}$$

(ii) * BILL$_i$ [ ]AGR-S$_i$ WANT $_i$HIT$_j$ JESSE$_j$

'Bill wants to hit Jesse.'

Notice that this holds not only for infinitival complements, but also for finite complement clauses. (See the next section (4.2.2) for further discussion of these examples).

$$\underline{\qquad\qquad\qquad\qquad\qquad\qquad\text{tilt}_i}$$

(12) * BILL$_i$ [ ]$_{\text{AGR-S}_i}$ WANT NOAH HIT$_j$ JESSE$_j$

      'Bill wants Noah to hit Jesse.'

In sum, the generalization demonstrated in this section is that the non-manual marking associated with the phi-features of AGR-S may extend over the domain associated with the subject of AGR-S. In complex sentences, the domain may be solely the main clause (excluding an embedded clause with a subject disjoint in reference) or solely the embedded clause. In a clause that takes a complement clause whose subject is coreferential with that of the main clause, then the subject agreement marking remains in place over both, as will be discussed in the next section.

4.2.2 Perseveration of Agreement Marking in Complex Sentences

Recall in Chapter 3 various cases of non-manual perseveration were discussed. The distribution of the non-manual expressions of AGR-S in example (11) can be explained in terms of perseveration. In complex sentences where the subjects of the two clauses are coreferential, if there is non-manual subject agreement associated with both clauses, because the articulation in the two clauses is identical, the initial agreement marking perseverates (as shown in (11)) and remains

in place for the embedded clause as well, rather than appearing and then reappearing. This is illustrated by the ungrammaticality of (13).[14]

$$\underline{\qquad\qquad tilt_i} \qquad\qquad \underline{\qquad\qquad\qquad tilt_i}$$

(13) * JOHN$_i$ [ ]$_{AGR-S_i}$ WANT [PRO [ ]$_{AGR-S_i}$ SEE$_j$ MARY$_j$]

    'John wants to see Mary.'

In examples where the embedded clause contains a null subject (interpreted as coreferential with the subject of the matrix clause), there may also be phonological assimilation between the verb of the higher clause and the verb of the lower clause. When such assimilation occurs, the perseveration of the non-manual agreement marking is strongly favored over the appearance of non-manual overt agreement marking in only one clause or the other.

The following two sentences illustrate that perseveration can occur whether the overt agreement form is used, as in (15), or the non-overt form is used, as in (14).

---

[14] As previously mentioned, this holds not only for infinitival complements, but also for finite complement clauses.

$$\overline{\qquad\qquad\qquad\qquad\text{tilt}_{neu}}$$

(14) JOHN$_i$ [   ]$_{AGR-S_{neu}}$ WANT^HIT$_j$ JESSE$_j$

'John wants to hit Jesse.'

$$\overline{\qquad\qquad\qquad\qquad\text{tilt}_i}$$

(15) JOHN$_i$ [   ]$_{AGR-S_i}$ WANT^SEE$_j$ MARY$_j$

'John wants to see Mary.'

In summary, if the matrix and embedded clauses contain coreferential subjects, and if the same type of non-manual agreement marking is used in both clauses, then the matrix agreement marking perseverates through the articulation of the embedded clause.

4.3 Justification of Agreement Analysis of Head Tilt

The evidence presented in this chapter provides a number of different motivations for interpreting the kind of head tilt we are considering as non-manual realization of subject agreement. The evidence to support this is summarized below.

4.3.1 Reference to Spatial Location Associated with Phi-Features

Head tilt involves identification of the same spatial locus associated with the person phi-features of the subject. This occurs both with inflecting verbs and with plain verbs.

4.3.2 Distribution

The distribution of head tilt can be accounted for, to a great extent, in terms of the same generalizations previously established for non-manual grammatical marking: namely, the head tilt begins after the articulation of the subject, after any modal or tense marker that occurs in the sentence, after a negative element if there is one, but before the articulation of the VP.[15] This is precisely the position in which we postulate the existence of an AGR-S node (consistent with at least some of the claims that have been made about the position of AGR projections crosslinguistically).[16] The head tilt may remain in place while the VP is articulated. This is predicted by the previously stated generalization (following ABKN, 1992) about the spread of non-manual grammatical marking. If there is no manual material under the AGR-S node, the requirement that the non-manual agreement material be borne by manual material forces the spread of the marking over the

---

[15] The distribution of the head tilt receives a different kind of explanation in Kegl's work. She suggests that this head tilt is on what she calls the "role prominence clitic" and that this clitic (like other kinds of clitics she analyzes) must precede the verb. (In her analysis, both role prominence clitics and classifier clitics precede the verb, but are not ordered with respect to each other.)

[16] There has been some disagreement about whether Tense is higher in the tree than AGR-S. We would suggest that the evidence from ASL supports the view of the relative ordering of Tense and Agreement expressed in Pollock (1989), that Tense dominates AGR-S, over the opposing view contained, e.g., in Chomsky (1991).

c-command domain of AGR-S: namely, the VP. The only important thing to observe is that this spread does not extend over an embedded clause if that clause contains a subject disjoint in reference from the matrix subject. That restriction does not follow from the earlier generalization, but one might speculate as to the reason that the spread stops earlier than expected. The case where the marking occurs over both the main clause and the embedded clause when the two clauses have subjects that are coreferential can be explained in terms of perseveration.

4.3.3 Dual Realization of Forms

The form of the head tilt shows the same kind of dual realization that characterizes manual subject agreement: either an overt tilt to the location associated with the phi-features of the subject, or a default, unmarked position very similar to the normal 1st person subject agreeing form. Furthermore, the cooccurrence of specific forms of head tilt and of morphological agreement can be explained naturally given a feature checking approach for agreement inflection.

4.3.4 Interaction between Manual and Non-Manual Agreement Marking

The interaction between manual and non-manual marking of agreement is also suggestive. As discussed, when there is overt morphological marking on the verb, the spatial realization of this agreement can be reduced somewhat just in case there is also overt non-manual head tilt. This suggests that the two should be analyzed similarly, as agreement phenomena.

4.3.5 Interdependence between Features in DP and Allowable Head Positions

A further argument for analyzing head tilt as syntactic subject agreement will be presented in Chapter 8, where it will be shown that there is an interdependence between the full specification of person phi-features within the subject DP and the acceptability of having an overt head tilt (which we have analyzed as the non-manual realization of fully specified subject person agreement features) in IP.[17]

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[17] In Chapter 8, it will also be shown that the subject DP may in fact contain more than one referential NP, as in cases where there is a possessor in Spec, DP position. In such cases one can establish spatial person features independently for the possessor and for the main noun. The head tilt that is manifested over the VP necessarily points to the location in space associated with the noun, and cannot refer back to the possessor's spatial location.

4.3.6 Licensing of Null Subjects

Finally, this analysis of head tilt as a non-manual expression of syntactic subject agreement features provides an explanation for a previously unobserved fact about the distribution of null subjects in ASL. Previous studies of sentences with null subjects have correctly pointed out that null subjects can occur both with verbs that display manual morphological agreement and with plain verbs. Recall the discussion in Chapter 3 of the dual licensing mechanism proposed by Lillo-Martin (1986 and 1991) to account for null subjects in both kinds of sentences. She was obliged to claim that null subjects of plain verbs are necessarily licensed by Topic, as in Chinese, while null subjects of agreeing verbs are licensed by Agreement, as in Italian. ABKN (1992) argued that Agreement licenses all null subjects in ASL. That would mean that in the following sentence, Agreement is responsible for licensing the null subject, despite the fact that there is no overt manual realization of agreement on the verb.

$$\frac{\qquad\qquad\qquad\qquad\qquad\text{tilt}_i}{}$$
$$\frac{\qquad\qquad\qquad\qquad\quad\text{gaze}_j}{}$$

(16) pro [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ LOVE MARY$_j$

'(He/she) loves Mary'

$$\begin{array}{c}\underline{\hspace{6cm}\text{tilt}_{\text{neu}}}\\[-2pt]\underline{\hspace{7cm}\text{gaze}_j}\end{array}$$

(17) pro   [ ]$_{\text{AGR-S}_{\text{neu}}}$ [ ]$_{\text{AGR-O}_j}$ LOVE   MARY$_j$

        '(He/she) loves Mary.'

Confirmation for this analysis is provided by the non-manual manifestation of the agreement features in AGR-S, whether they are realized by the marked or unmarked form of the head tilt. The crucial observation is that in the absence of such non-manual expression of Agreement, the sentence becomes ungrammatical, as in:

(18) * pro   LOVE   MARY

      '(He/she) loves Mary.'

This sentence is ungrammatical, despite the fact that this lack of non-manual agreement marking is possible with an overt subject:

(19) JOHN   LOVE   MARY

      'John loves Mary.'

Notice that agreement marking (either manual or non-manual) is required in order for a pro subject to be licensed, regardless of whether

there is a topic coreferential with the null subject. [18]

It is interesting to note that these findings again parallel what we find with manually marked agreement. Specifically, the null subject is acceptable if agreement is marked manually, either with the overt or the default manual marking:

(20) pro$_i$ $_i$GIVE$_j$ MARY$_j$ BOOK

'(He/she) **gives Mary a book.**'

(21) pro$_i$ $_{neu}$GIVE$_j$ MARY$_j$ BOOK

'(He/she) **gives Mary a book.**'

These examples confirm that both the default and the overtly marked forms found manually and non-manually are really expressions of agreement, and therefore have the ability to license null subjects.

_____

[18] Consider the following contrast:

       <u> top </u>   <u>   tilt$_i$</u>

(i)   JOHN YOU SAY pro$_i$ [ ]$_{AGR-S_i}$ LOVE MARY

'As for John, you said (he) loves Mary.'

       <u> top </u>

(ii) ?? JOHN YOU SAY pro LOVE MARY

'As for John, you said (he) loves Mary.'

This provides confirmation that it is agreement rather than topic that licenses null subjects.

When no agreement is present, as in (18), the null subject is not acceptable.

We believe that all of the evidence in this section converges upon the conclusion that the head tilt constitutes the non-manual expression of the phi-features postulated to reside in the AGR-S node. The separate non-manual tier required to represent the head position is independently needed to account for the distribution of other non-manual grammatical marking in the language. This tier and the independently motivated generalizations about the distribution of non-manual grammatical markings then suffice to account for the occurrence and distribution of this head tilt. The analysis of head tilt as a non-manual manifestation of subject agreement person features thus provides a simple, precise account of the phenomenon, and no additional mechanisms are needed.

4.4 Alternative Analysis of Head Tilt as a Subject Clitic

What alternative interpretation might be considered to explain this head tilt? One possibility that has been suggested in the literature by Shepard-Kegl (1985) and Kegl (in press) is that this marking may be a clitic. (Her analysis will be discussed in a bit more detail in Chapter 6.) If the association of head position with Subject Agreement argued

for in this chapter is correct, then one logical possibility is that this head

tilt in fact constitutes a subject clitic.   Note, however, that the head tilt

does not occur in ASL in lieu of an overt subject, but rather in addition

to one. So, if a clitic analysis were adopted, it would necessarily be a

clitic doubling analysis. However, no other cases of clitic doubling have

been attested for subject clitics, to our knowledge, unless the NP that is

coreferential with a clitic subject has been left-dislocated (a point to

which we will return in Chapter 7).

One conceivable analysis for the cases that Kegl suggests involve a

subject clitic would be to consider that the full NP in ASL sentences

involving overt head tilt is left-dislocated, corresponding to examples

like the following in French:

(22) Jean, il adore Marie.

'Jean, he adores Marie.'

However, there is very clear evidence that there are sentences in ASL

that involve head tilt expressing subject agreement but that do not

involve left-dislocated NP subjects. Previous work by ABKN (1992) and

Aarons (1994) provides several tests to determine whether the subject

NP in such cases is in a topic position. First, ASL allows a maximum of

two positions for topics or left-dislocated elements, as discussed in Chapter 1. Yet, head tilt can be used to mark subject agreement in sentences that have two such elements (not including the s-structure subject with which the head tilt shows agreement):

$$\text{(23)} \quad \underline{\text{tm2}} \quad \underline{\text{tm2}} \quad \overline{\text{tilt}_i} \quad \overline{\text{gaze}_j}$$

(23) JOHN$_i$ VEGETABLE IX$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ neu$^{\text{HATE}_j}$ CORN$_j$
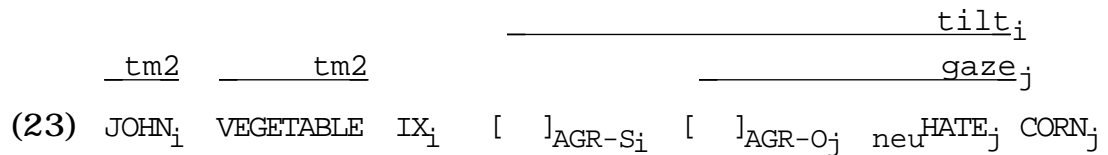
'As for John, as for vegetables, he hates corn.'

Thus, it is clear that the IX in this example cannot be left-dislocated and must be occupying the regular s-structure subject position.

Similarly, Aarons (1994) showed that a sentence can involve at most one moved topic, and that base-generated topics necessarily appear to the left of moved topics. The following sentence, involving a moved topic (identifiable from the non-manual marking, which Aarons called "topic marking 1") can be followed by the NP with which the head tilt shows agreement.

$$\text{(24)} \quad \underline{\text{tm1}} \quad \overline{\text{tilt}_i} \quad \overline{\text{gaze}_j}$$

(24) JOHN$_j$ MARY$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ SEE$_j$ t_j
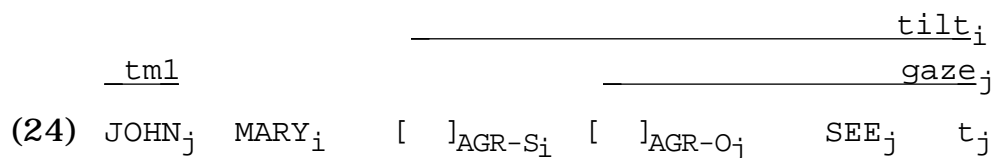
'John, Mary saw.'

Again, this example necessarily involves MARY in the canonical s-structure subject position, since MARY can be neither a moved topic (since there is already one), nor a base-generated topic (which could only occur to the left of JOHN in this sentence). Thus, there is very clear evidence that the head tilt we have analyzed as a marking of subject agreement co-occurs with full NP's in the s-structure subject position.

4.5 The Semantics of Agreement Marking

It should be noted that thus far there has been no discussion of the semantic contribution associated with the presence of the overt head tilt or the use of default 1st-person-like head position to mark agreement non-manually. While we are not yet able to fully characterize the difference, it is clear that the two kinds of marking might be more likely to occur in different kinds of contexts, and it is likely that there is some pragmatic difference that corresponds to the usage of these markings, which is, however, beyond the scope of this

dissertation.[19] It seems that when the default form is used, there is
more of an emphasis on the action, while the use of overt head tilt
seems to place more focus on the subject. This is an area for further
research.

It is also important to note that a wide variety of other
information may co-occur with these subject agreement markings on
the head. Additional non-manual information (such as manner of
action, adverbial information, etc.) may be superimposed on the face
that is engaged in marking subject agreement.[20]

---

[19] This may have particular theoretical relevance in the context of Chomsky's
(1995) suggestion that Agreement projections should not be postulated because
agreement is, in his view, devoid of meaning. Baker (1996) similarly suggests that
Agreement projections are not motivated. While it is not clear whether whatever
meaning is associated with agreement marking in ASL should be attributed
specifically to Agreement or to some other contributing factor, this is a potential
challenge to the claim that Agreement is, in fact, devoid of meaning, and merits
further research.

[20] This includes some marking of volitional involvement in the action vs. non-
volitional action, which Shepard-Kegl (1985) and Kegl (in press, e.g.) have
described differently (as an adversative dative interpretation). For example,
there is a difference in the way the head moves in the following sentence,
depending on whether the action was intentional or accidental:

$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad\quad \texttt{tilt}_{neu}}$$
$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad\quad \texttt{gaze}_{j}}$$

(i) $\texttt{JUDY}_i$ [ ]$\texttt{AGR-S}_{neu}$ [ ]$\texttt{AGR-O}_j$ $\texttt{SHOOT}_j$ $\texttt{BEN}_j$

'Judy shoots Ben.'

If the action is being described as accidental, there is a distinctive head movement
involving, among other things the head and eye gaze jerking slightly upward.

4.6 Distinction between Non-manual Realization of Subject Agreement and Role Shift

There has been extensive discussion in the literature about role shift (e.g., Bellugi and Fischer, 1972; Friedman, 1975; Mandel, 1977; Thompson, 1977; Bahan and Petitto, 1980; Baker and Cokely, 1980; Liddell, 1980; Loew, 1984; Padden, 1986; Lentz, 1986; Fischer and Janis, 1990; Lillo-Martin and Klima, 1990; Meier, 1990; Loew, Kegl and Poizner, 1994)), referred to more recently as referential shift (see, for example, Emmorey and Reilly, 1995) or POV (Lillo-Martin, 1995). This phenomenon occurs when the signer shifts his body out of its neutral position and into a space associated with a particular person or character, and when, in that position, he then assumes the "role" of that character. Whatever is said, done, and seen from that position is attributed to that character. The signer can then shift into another position to attribute whatever is said, done, and seen from that position to another character. ASL storytellers can set up several different characters and express interaction among those characters with skillful precision (Bahan and Petitto, 1980).[21]

---

[21] An example of this can be seen in Supalla's narrative "For a Decent Living" where the protagonist meets 3 different officers in a Deaf Club. There Supalla juggles four different characters (Bahan and Supalla, 1992).

The distinction of role shift, as compared to the grammatical agreement marking discussed so far, is that role shift requires that the signer use 1st person grammatical marking when referring to the 3rd person whose perspective is being conveyed through this device. In this way, role shift allows the signer to temporarily assume the "identity" of that 3rd person, in some sense. Within the scope of the role shift, all instances of grammatical 1st person are therefore bound by the 3rd person referent previously established (Shepard-Kegl, 1985; Padden, 1986; Lillo-Martin, 1995; ABKN, 1992). Interestingly, role shift takes scope over entire clauses or groups of clauses, and thus is not an IP-internal phenomenon (see for example ABKN, 1992) and will not be examined in detail in this dissertation. Nonetheless the interpretation of grammatical person marking provides a clear test to distinguish between role shift and simple agreement marking, where 3rd person reference is maintained as such, and this thus demonstrates that the two constitute distinct phenomena.

```
                        <rs:John _____>
    (25)  JOHN  SAY              IX-1p  LIKE    BILL
```

'John said: I like Bill.'

```
                                                         tilt_i
                                          _____gaze_j
(26)  JOHN   SAY   IX-3p      [  ]_{AGR-S_i}  [  ]_{AGR-O_j}  LIKE   BILL_j
```

'John said he likes Bill'

There has been discussion of at least two different kinds of role

shifts in ASL. One kind involves direct discourse, as above, where there

is interaction between characters that actually are involved in a

conversation with each other. The other kind involves no direct

discourse, but rather conveys the character's perspective on what the

character is seeing and doing, e.g., reaching up to get an apple from a

tree (Padden, 1986; Lentz, 1986; Meier, 1990). Of course, both of these

role shift constructions may include subject agreement marking internal

to the clause, but the interaction between role shift and IP agreement

marking is beyond the scope of this dissertation. The essential point is

that they are distinguishable.

While we are suggesting that the two phenomena should be

carefully distinguished, many researchers have looked at these body

shifts as falling within a continuum, while others have not recognized

distinctions at all and treated all cases of this kind of body shift

uniformly as role shift.[22]

Shepard-Kegl (1985) was the first person to establish a clear-cut

distinction. She proposed what she called a "role prominence clitic" in

ASL, which involves the signer subtly shifting his body into the

direction of the referent's locus, thereby cliticizing the role prominence

clitic onto the verb to indicate the most highly "role-prominent"

argument in the sentence.[23] Part of what Kegl terms role prominence

marking seems to correspond to what is being described here as the

head tilt that overtly marks non-manual subject agreement.[24] In some

ways, Kegl's analysis is quite close to what is being proposed here, in

that she generated these role prominence clitics under the Infl node,

just as we are generating them now (given the current syntactic

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[22] For example, Lentz (1986) proposes that there is a continuum showing a range in the degrees of role shifting, depending on how fully the signer assumes the roles (from minimal to maximal). Interestingly, she may be describing a range that begins at what Shepard-Kegl (1985) and Kegl (1986) reported to be role prominence marking and extending into "complete" role-shift. This is consistent with the way people in the field have been lumping different phenomena (including those described in this chapter) together under a single category "role shift".

[23] "It marks the person from whose perspective the event is viewed." (Shepard-Kegl, 1985:88)

[24] Something like the default non-manual head position described in this chapter has been reported in Danish Sign Language by Engberg-Pedersen (1993); she calls that the "c-form".

framework) under the AGR-S node. Kegl's earlier analysis will be discussed further in Chapter 6.

4.7 Summary

This chapter has presented the justification for analyzing head tilt as the non-manual expression of subject agreement. This is based on the following observations:

1) This kind of head tilt involves identification of the same spatial locus associated with the person phi-features of the subject.

2) Head tilt shows the same dual realization that is found for manual subject agreement (i.e., overt and default).

3) Given the assumption that head tilt is associated with the phi-features contained in the head of the AGR-S projection, the distribution of head tilt can be accounted for in terms of a previously established generalization about the systematic realization of non-manual grammatical marking in ASL

4) The cooccurrence restrictions that hold between non-manual and manual expressions of subject agreement (and the asymmetry thereof) can be understood in terms of the notion that verbs inflected

with manual agreement morphology need to check their features against phi-features contained in AGR-S and reflected non-manually.

5) The fact that there is a reduction in the extent of the spatial realization of manual subject agreement that results from the presence of non-manual head tilt suggests that head tilt is in some sense conveying the same information as the manual agreement marking.

6) Finally, strong evidence in favor of analyzing head tilt as a non-manual expression of syntactic subject agreement features comes from the finding that null subjects are licensed by head tilt in the same way that they may be licensed by overt agreement morphology.

CHAPTER FIVE

NON-MANUAL REALIZATIONS OF OBJECT AGREEMENT

Just as subject agreement has non-manual expression, the same is true of object agreement. That is the focus of this chapter: eye gaze, argued here to be the non-manual correlate of object agreement in IP.

Before we investigate the use of eye gaze for syntactic object agreement, it will be helpful to discuss the variety of roles that eye gaze plays in ASL.

5.1 Many Functions of Eye Gaze

Eye gaze in American Sign Language is crucial for many reasons, especially since the language itself is processed in the visual-gestural mode (so reception of linguistic information is primarily conducted through the eyes). Recall, as stated in Chapter 1, that the addressee usually fixates his gaze at the signer's face, particularly the area around the signer's eyes. In addition to the importance of non-manual information on the face, this may be due to the fact that the signer's eyes in particular are used for many

other linguistic functions (reported in Baker, 1976, 1977; Baker and

Padden, 1978).

At the morphological level there are several different types of

eye gaze identified by Baker (1976a) and Baker and Padden (1978).

Among the types they described are lexically determined eye gaze

and noun modifier gaze. Lexically determined eye gaze is considered

to be a specific eye behavior that co-occurs with the manual com-

ponent of a sign, such as LOOK-AT or DREAM, where a signer's gaze is

oriented in a specific direction.[1] Gazes that modify the noun add

information about some property of the noun, e.g., TALL-TREE, where

the TREE is signed while the eye gazes skyward (Baker, 1976).[2]

In turn-taking discourse, two people involved in a conversation

would have their eyes fixated on each other's face. The use of eye

gaze is particularly complex with signed language, because the signer

needs to use eye gaze not only for specific linguistic functions, but

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[1] It is possible under certain circumstances to omit this eye gaze. Chapter 6 offers another possible interpretation of the function of eye gaze with a lexical item such as DREAM, in terms of a more abstract object that gives rise to eye gaze agreement. As for cases such as LOOK-AT, the eye gaze would be interpreted, within the framework of this dissertation, as regular non-manual object agreement of the kind described in this chapter.

[2] This kind of eye gaze appears to have an adjectival or adverbial function, and is essentially associated with a specific manual adjectival or adverbial sign. When the manual component is absent, then the non-manual marking associated with that adjective or adverbial spreads, as reported in Kegl (1977).

also to regulate the discourse turn-taking, by gazing to the addressee

occasionally to "check" to see if the other person is following (Baker,

1976; Baker and Padden, 1978).[3] This "checking" behavior often

occurs specifically at points that are identified to be major

constituent boundaries (Baker, 1976, 1977; Baker and Padden, 1978)

or ends of lines in narrative discourse (Bahan and Supalla, 1995).

In story telling, eye gaze is vital to engaging the audience in

the story. In telling a story, the narrator will engage in constant eye

gaze shifts. For example, the narrator may make use of role shift

(described briefly in chapter 4), to present information from the

point of view of a character in the story. This has a particularly

important function in the storytelling. The signer will fixate his gaze

into space, away from the addressee, and sign what the character

says or does. At a more global story level, the teller is bringing the

story world up right before the addressees' eyes, and eye gaze then

helps to modulate between the narrator's perspective and the more

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[3] When engaged in turn-taking discourse, the signer will regulate his gaze by gazing at the addressee and away from the addressee. In a situation where the addressee wants to initiate a turn, he will wait until the signer is gazing at him and then start signing, if he wants to interrupt. Interestingly, in a heated exchange, if the signer wants to disallow interruption he will minimize the number of times he gazes at the addressee, thereby not giving the addressee a chance to interrupt (Baker, 1976, 1977; Baker and Padden, 1978).

"direct" depiction of events through the eyes of a character (Bahan and Supalla, 1995).

There are other ways the eyes may function besides merely gazing in a particular direction. The opening and closing of eyes (or eye blinks) can be meaningful (Baker, 1976; Baker and Padden, 1978; Bahan and Supalla, 1995; Wilbur, 1995a). Also, the extent to which the eye lids are open can express information of nearness and farness in association with a lexical item (among other specific functions it may have). The eyes can also be used for emphasis, as in what has been identified as "emphatic eye closure" (Baker, 1976).

It has become obvious that something so deceptively simple as eye gaze actually functions in very complex ways in American Sign Language. The focus of this chapter will be on describing and analyzing the role that eye gaze plays in the non-manual marking of syntactic object agreement. Chapter 8 considers how eye gaze marks agreement within DP (which also accounts for the use of eye gaze with pronominal reference).

5.2 Role of Eye Gaze in Syntactic Agreement within IP

The use of eye gaze in association with person reference has been much discussed in the literature, with regard to a whole range

of types of constructions.[4] Here we focus specifically on its use

within IP in marking the locus in space associated with the person

features of the object.

The interaction of eye gaze with other expressions of object

agreement is also considered. The distribution of eye gaze is

analyzed in relation to the AGR-O node postulated to contain the

object agreement features expressed non-manually by eye gaze. In

section 5.2.2 the distribution of eye gaze within complex sentences is

examined. The interaction between the agreement markings in the

main clause and embedded clause of such sentences is analyzed.

5.2.1 Eye Gaze Expressing Object Agreement

It should be noted that the use of eye gaze as a non-manual

correlate of object agreement co-occurs with head tilt (the non-

manual correlate of subject agreement discussed in Chapter 4, i.e.,

overt head tilt or neutral head position). While the eyes are part of

the head, which itself may tilt as previously discussed, the position to

---

[4] Eye gaze, for example, has been reported to play a significant role in setting up referents in space; that is, it makes pronominal and deictic reference to locations associated with the referents (Bellugi and Fischer, 1972; Lacy, 1974; Fischer, 1975; Friedman, 1975; Baker, 1976a; Hoffmeister, 1978a; Baker and Cokely, 1980; Baker-Shenk, 1983; Meier, 1990). We will return to many aspects of these functions throughout the remainder of this dissertation.

which the eyes gaze is often determined by the position in space associated with the phi-features of the object DP. This is illustrated in sentences (1) and (2), both of which involve eye gaze to object position (marked with subscript j), despite the differing positions of the head.

Eye gaze with overt non-manual subject agreement marking

$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad \text{head tilt}_i}$$
$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad\qquad \text{gaze}_j}$$

(1) JOHN_i [$]_{\text{AGR-S}_i}$ [$]_{\text{AGR-O}_j}$ SEE_j MARY_j

  'John sees Mary.'

Eye gaze with unmarked non-manual subject agreement marking

$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad \text{head tilt}_{neu}}$$
$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad\qquad \text{gaze}_j}$$

(2) JOHN_i [$]_{\text{AGR-S}_{neu}}$ [$]_{\text{AGR-O}_j}$ SEE_j MARY_j

  'John sees Mary.'

The subscripts show that the gaze is oriented in the direction of the position in space associated with the object DP, the same position with which the verbal inflection on SEE shows manual morphological

agreement. This use of eye gaze is consistent, regardless of which of the two types of non-manual subject agreement occurs.

In both cases, the eye gaze begins right before the verb is articulated and extends into the VP. This section argues that the eye gaze toward object position is, in fact, a non-manual correlate of the agreement features contained in AGR-O, and presents an analysis parallel to that proposed for head tilt in relation to the phi-features in AGR-S.

5.2.1.1   Justification of Object Agreement Analysis

The conclusion that eye gaze, as used in examples (1) and (2), constitutes a non-manual correlate of object agreement, associated with the phi-features contained in AGR-O, is based on a number of general considerations, which will be discussed in turn. These are very similar to the motivations already presented in favor of an analysis of head tilt as a non-manual correlate of subject agreement.

1) The direction of the eye gaze is determined by the phi-features associated with the object DP.

2) The occurrence of eye gaze to object position is found both with verbs that overtly inflect morphologically for object agreement and with those that do not.

3) As was found for the non-manual correlate of subject agreement, however, there is some interaction in the extent of expression of object agreement when it is overtly multiply instantiated. In sentences that contain verbs that display manual object agreement, the eye gaze may have a shorter duration than it would otherwise have. Section 5.2.1.1.3 examines interactions among eye gaze to object position and manual object agreement marking.

4) The distribution of eye gaze to object position can be explained in terms of an independent generalization about the distribution of non-manual correlates of syntactic features, as discussed in section 5.2.1.1.4, given the hypothesis that this eye gaze is associated with the phi-features contained in AGR-O. Namely, the gaze begins at the position where the node containing object agreement features is postulated to occur crosslinguistically, and extends over the appropriate syntactic domain.

5) Finally, just as was seen with subject agreement, the non-manual expression of object agreement can license null objects.

5.2.1.1.1 Direction of Eye Gaze Determined by Location Associated with Object DP Phi-Features

The direction of eye gaze has already been discussed in the first section of this chapter and was illustrated for sentences (1) and (2). The eyes gaze at the location in space associated with the phi-features of the object DP.

Interestingly, depending on the semantics of the verb, there are certain other inflections that may be marked on the verb, expressing, for example, exhaustivity or distributivity in relation to a plural object (see Klima and Bellugi, 1979). This kind of inflection is expressed manually by associating with the verb multiple points in space, corresponding to several different sets of person phi-features. In such cases, the eye gaze similarly marks agreement with the same referential positions. In the first case, there may be a kind of sweep of articulation, with a verb like SHOW, which would indicate that the object consists of all of a number of NP's, and the sweeping motion would go smoothly over the various NP's included in the object. Similarly, the eyes would follow a similar sweeping motion,

corresponding to the phi-features of the NP's included in the object.

The second case involves a repeated articulation of the verb that

corresponds to a different reading. If the verb SHOW is iterated,

each time agreeing with a different location in space (corresponding

to the person-features of the various NP's included in the object),

then this conveys that the action is performed to each of them

individually. Again, the eye gaze would go successively to the

locations in space identified with the person features of the various

NP's included in the object. The eyes function the same way for all

the various types of inflection involving multiple reference points

discussed by Klima and Bellugi (1979). Again, eye gaze is optional in

such cases, but if eye gaze occurs, it expresses object agreement with

all points in space associated with the object of the verb.

5.2.1.1.2 Non-manual Expression of Object Agreement Across Verb

Classes

As with non-manual expression of subject agreement, the

occurrence of eye gaze to object position is found across all

morphological classes of verbs in ASL (i.e., inflecting verbs and plain

verbs). That is, it appears with verbs that overtly inflect

morphologically for object agreement and with verbs that do not; see, for example, sentences (3) and (4).

Eye gaze with plain verb

<pre>
                                          head tilt_i
                               _____
                                              gaze_j
                               _____
(3)   JOHN_i   [ ]_AGR-S_i   [ ]_AGR-O_j   LOVE   MARY_j
</pre>

'John loves Mary.'
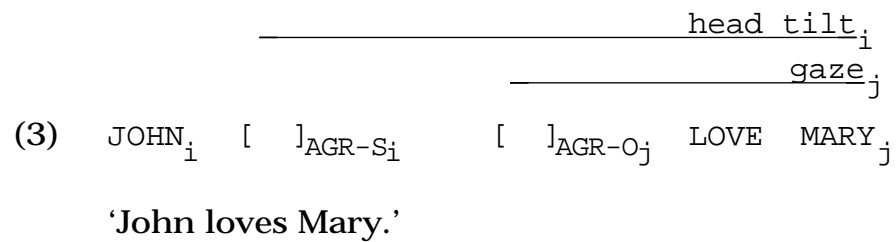
Eye gaze with inflecting verb

<pre>
                                          head tilt_i
                               _____
                                              gaze_j
                               _____
(4)   JOHN_i   [ ]_AGR-S_i   [ ]_AGR-O_j   _i PAY_j   MARY_j
</pre>

'John pays Mary.'
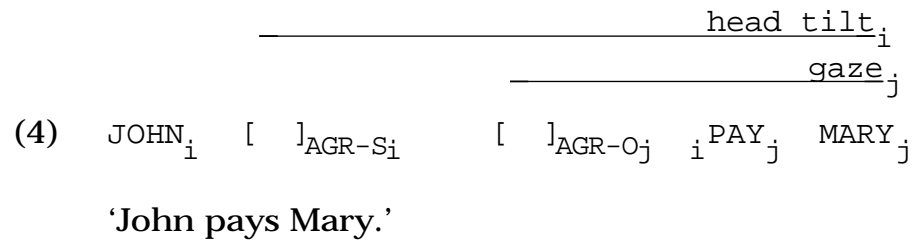
So, just as we found that eye gaze can co-occur with both forms of non-manual correlates of subject agreement, so it can occur with verbs that overtly display manual agreement with object, and with those that do not.

5.2.1.1.3 Interaction of Expressions of Object Agreement

Recall that Chapter 4 contained a description of the co-occurrence possibilities of the manual and non-manual expressions of subject agreement. In the case where subject agreement is manifested overtly both by manual subject-verb agreement and by the overtly agreeing head tilt, the extent of the realization of manual subject agreement tends to be reduced. In this section, a similar observation with regard to object agreement is presented.

Whenever there is a multiple expression of object agreement, this interaction may give rise to a reduction in the extent of the expression of object agreement. That is to say, when there is overt manual expression of object agreement, the duration of the eye gaze to object position may be somewhat reduced. This reduction in the duration of eye gaze is independent of the expression of subject agreement, as shown by the following two examples, one with overt non-manual expression of subject agreement (sentence (5)), the other with the unmarked non-manual realization of subject agreement (sentence (6)). In both cases, because there is overt manual expression of object agreement on the verb, the eye gaze to object position may end earlier than it ordinarily would.

$$\overline{}\text{tilt}_i$$

$$\overline{\text{gaze}_j}$$

(5)   JOHN$_i$ [   ]$_{\text{AGR-S}i}$ [   ]$_{\text{AGR-O}j}$ $_i$GIVE$_j$ MARY$_j$ BOOK

'John gives Mary a book.'

$$\overline{}\text{head}_{\text{neu}}$$

$$\overline{\text{gaze}_j}$$

(6)   JOHN$_i$ [   ]$_{\text{AGR-S}_{\text{neu}}}$ [   ]$_{\text{AGR-O}j}$ $_i$GIVE$_j$ MARY$_j$ BOOK

'John gives Mary a book.'

Notice that the line above the glosses marking the duration of eye gaze (i.e., gaze$_j$) is shorter in length than usual. This indicates that the gaze departs from the location associated with the object (i.e., MARY$_j$) prior to the completion of the inflecting verb GIVE, and gaze returns to the addressee.[5]

This shortened eye gaze is unacceptable with plain verbs, which do not have overt manual expression of object agreement.

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[5] The verb is articulated with a sequence of Hold, Movement, and Hold (H M H). The eyes begin to gaze to the object position prior to the production of the verb and remain in that position as the first H segment of the verb is being signed. About half-way through the movement portion of the sign, the gaze begins to depart, as indicated in the transcription. However, if there is overt non-manual expression of subject agreement, there is a tendency for a slightly later departure, just prior to the final H segment.

$$\overline{\hspace{6cm}\text{tilt}_i}$$
$$\overline{\hspace{2.5cm}\text{gaze}_j}$$

(7) * JOHN$_i$ [   ]$_{AGR-S_i}$ [   ]$_{AGR-O_j}$ LOVE   MARY$_j$

'John loves Mary.'

$$\overline{\hspace{6cm}\text{tilt}_{neu}}$$
$$\overline{\hspace{2.5cm}\text{gaze}_j}$$

(8) * JOHN   [   ]$_{AGR-S_{neu}}$ [   ]$_{AGR-O_j}$ LOVE   MARY$_j$

'John loves Mary.'
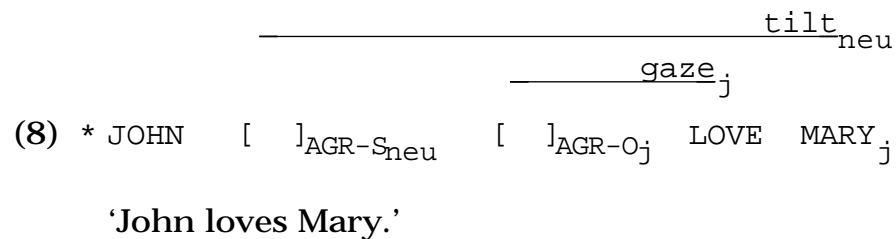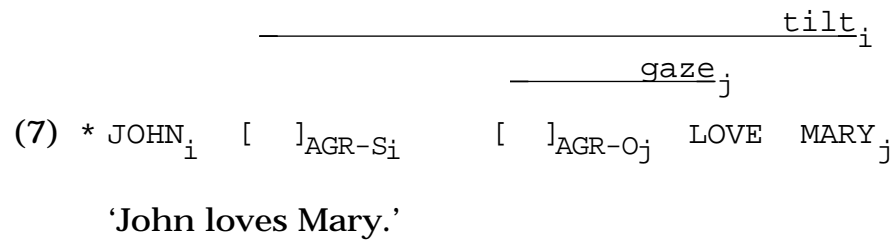
So the examples in sentences (7) and (8) show that there may be a reduction in the duration of the non-manual correlate of object agreement only if object agreement is expressed overtly by the verbal inflection.

It is interesting to note that the interaction between manual and non-manual marking of subject agreement and of object agreement is different in one respect. While for subject agreement, it is the manual instantiation of subject agreement that may be reduced in the presence of non-manual instantiation, for object agreement it is the reverse: the non-manual eye gaze is reduced in

duration, while the manual expression of object agreement remains unchanged.[6]

5.2.1.1.4 Distribution of Eye Gaze within IP

The distribution of eye gaze to object position can be explained in terms of an independent generalization about the distribution of non-manual correlates of syntactic features, discussed in Chapter 2. Specifically, the gaze begins at the position where the node containing object agreement features is postulated to occur crosslinguistically, and extends over the appropriate syntactic domain. That is, it obligatorily spreads rightward over its c-command domain.

AGR-O occurs after the AGR-S node, with functional heads appearing in the following order:

TNS < NEG < ASPECT < AGR-S < AGR-O.[7]

When non-manual correlates of subject and object agreement are

---

[6] This does not seem to be a property of subject and object agreement per se, but rather an articulatory difference between head tilt and eye gaze. Eye gaze seems to be able to undergo a comparable reduction in other contexts, as will be discussed in Chapter 6, while head tilt does not.

[7] The position of ASPECT in this ordering will be justified in Chapter 7.

present, their relative ordering is consistent with the ordering just described. Namely, the head tilt begins before the eye gaze is initiated. It is important to note, though, that observation of the ordering of head tilt and eye gaze is confounded by the fact that the eyes move more quickly than the head; the eyes often reach their final destination before the head has reached its ultimate tilt. This can, however, be explained by articulatory factors, and does not disconfirm the proposed analysis.

5.2.1.1.5 Object Agreement Licensing Null Objects

ASL also allows null objects, but, as argued by Lillo-Martin (1991), this requires licensing by object agreement. Thus there is a contrast between:

(9) $JOHN_i$ $_iGIVE_j$ pro_j BOOK

'John gives (him/her) a book.'

(10) *JOHN LOVE pro

'John loves (him/her).'

However, sentences such as the previous one become grammatical if

object agreement is expressed non-manually, as in:[8]

$$\text{(11)} \quad \text{JOHN}_i \quad [\quad]_{\text{AGR-S}_i} \quad [\quad]_{\text{AGR-O}_j} \quad \text{LOVE} \quad \text{pro}_j$$

with overlines: $\overline{\text{head tilt}_i}$ and $\overline{\text{gaze}_j}$

‘John loves (object).’

$$\text{(12)} \quad \text{JOHN} \quad [\quad]_{\text{AGR-S}_{neu}} \quad [\quad]_{\text{AGR-O}_j} \quad \text{LOVE} \quad \text{pro}_j$$

with overlines: $\overline{\text{head tilt}_{neu}}$ and $\overline{\text{gaze}_j}$

‘John loves (object).’

As was seen for subject agreement, these examples—which show that

the non-manual marking by eye gaze to the position in space

associated with the object's phi-features suffices to license null

objects—provide confirmation of the analysis of eye gaze as object

agreement marking.

---

[8] As will be discussed later in Chapter 6, body lean may also incorporate a non-manual realization of object agreement when the unmarked head tilt for subject agreement is used. This sentence can also be made grammatical without eye gaze, if body lean is used. The key point is that some realization of object agreement is required in order for the null object to be licensed.

5.2.1.1.6 Summary

In summary, eye gaze appears to function as a non-manual correlate of the syntactic object agreement features. As with other expressions of information about phi-features, eye gaze makes reference to the spatial location associated with person features, specifically, in this case, those features associated with object agreement.   Further support for analyzing eye gaze as a non-manual correlate of object agreement, based on its distribution, is provided in the following sections.

5.2.1.2 Use of Eye Gaze with Non-specific Objects

How is object agreement manifested non-manually in the case of non-specific object DP's, for which there are no person phi-features specified? In this case, there seems to be a general characteristic position for the gaze. When the object is non-specific, the eyes engage in a wandering upward gaze.[9] Such a gaze is found

---

[9] There are several possible variants of the form of this non-specific eye gaze, including a kind of unfocused stare. In some cases the wandering gaze is also accompanied by a side-to-side head shake.

in a sentence like (13).[10]

```
                    _____
         up      rt-lf--
eye gaze: ctr  c-/        \c----
         dwn     _____
```

(13)   JOHN   BUYⱼ   CARⱼ

'John bought a car.'
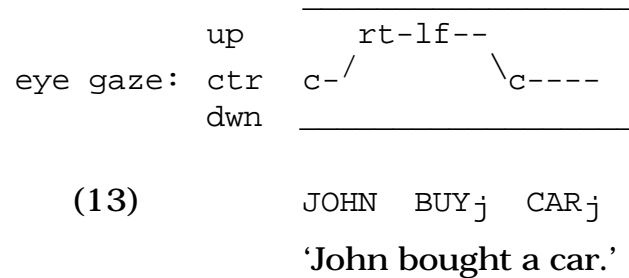
Rather than having a specified location upon which to fixate, the eyes

gaze upward and wander from right to left as the verb in (13) is

---

[10] For this reason, the type of eye gaze used to mark object agreement can provide semantic information about the object that is not expressed in any other way. For example, the sentence in (i) might be used in two different situations.

(i)   JOHN   DECIDE   BUY   DOG

'John decides to buy a dog.'

This may express the idea that John decided to buy a dog but had not yet decided on any particular dog, or it may express the idea that there is a specific dog that John has decided to buy. This semantic difference is not expressed within the DP itself, but the eye gaze used for object agreement will be different in the two cases. If there is no specific dog that is intended, then the eye gaze will either take the form used for sentence (9), for non-specific objects, or the gaze will just remain fixed at the addressee; otherwise, if there is a specific dog, the eyes will gaze at the location in space associated with the dog's phi-features.

signed.[11]

This eye gaze is also generally associated with non-specific
reference in other situations.[12] In Chapter 8, this form of eye gaze
will be seen to occur DP-internally with non-specific NP's.[13]

---

[11] The eye gaze marking object agreement is optional. Even when present,
however, this kind of gaze does not suffice for licensing a null object.
Compare:

```
               ____wandering gaze____
(i)    JOHN       WANT         CAR
```

       'John wants a car (non-specific).'

```
               ____wandering gaze____
(ii) ? JOHN       WANT          pro
```

       'John wants.'

```
               _____gaze_i____
(iii)  JOHN   WANT   CAR_i
```

       'John wants a (specific) car.'

```
               _____gaze_i____
(iv)   JOHN   WANT   pro_i
```

       'John wants it.'

[12] Klima and Bellugi (1979) describe one grammatical number inflection that
has indefinite distribution, which they call the "allocative indeterminate"
aspect (although in their description they did not discuss its non-manual
correlates of non-specific objects). However the example they used to
illustrate this involves this same slightly upward eye gaze. The examples they
provide involve a clear distinction between the determinate use of eye gaze
(see—in their book—Figure 12.10 on page 286) and indeterminate use of eye
gaze (see Figure 12.12 on page 288).

[13] When the noun's person features are not specified, the eyes gaze upward
and wander slightly, as with indefinites introduced by SOMETHING/ONE. See
Chapter 8 for discussion.

Notice that this is not comparable to the default form used with subject agreement, in that this eye gaze is used only when the person features associated with the object NP are not specified. It cannot cooccur with an object that is fully specified for person features. In this sense it is interesting to note that there is an asymmetry—the same asymmetry—with respect to the possible expressions of agreement for both manual and non-manual agreement. That is, with subject agreement there are two types, an overt and an unmarked realization of agreement, that can be used. For object agreement, however, there is no unmarked form. While there are two manifestations of eye gaze marking object agreement, the form of eye gaze required is uniquely determined by the semantic characteristics of the object (i.e., specific vs. non-specific).

5.2.2 Distribution of Eye Gaze Associated with Embedded Clauses

In this section we look at the distribution of eye gaze in complex sentences, where the non-manual object agreement associated with the lower clause may "raise" and be realized on material that is syntactically higher in the clause, such as the main verb.

5.2.2.1 Distribution of Eye Gaze Associated with Agreement

In simple sentences, as discussed in the first part of this chapter, eye gaze associated with AGR-O begins just before the verb is articulated and extends over the VP, as illustrated in sentence (14).

$$\overline{\qquad\text{gaze}_i}$$

(14) JOHN WILL SEE MARY$_i$

'John will see Mary.'

However, it is also possible to find the eye gaze beginning with the articulation of Tense, e.g., WILL, as seen in sentence (15).

$$\overline{\qquad\text{gaze}_i}$$

(15) JOHN WILL SEE MARY$_i$

'John will see Mary.'

The same is true for the perfective aspect marker, FINISH.

$$\overline{\qquad\text{gaze}_i}$$

(16) JOHN FINISH SEE MARY$_i$

'John saw Mary.'

$$\overline{\qquad\qquad\qquad\text{gaze}_i}$$

(17) JOHN FINISH SEE MARY$_i$

'John saw Mary.'

If both a tense marker (or modal) and aspect marker are present, then the eye gaze may begin either before the VP or before either of those elements:[14]

$$\overline{\qquad\quad\text{gaze}_i}$$

(18) JOHN WILL FINISH SEE MARY$_i$

'John will have seen Mary.'

---

[14] One further point worth noting with respect to the appearance of gaze in a position that precedes the position in which the associated agreement features are originally generated is that in such cases, the head tilt also begins in a higher position; that is, there is an association between eye gaze and head tilt in terms of the domain over which they are manifested.

$$\overline{\qquad\qquad\qquad\text{tilt}_i}$$
$$\overline{\qquad\qquad\qquad\text{gaze}_j}$$

(i)   JOHN$_i$ WILL SEE$_j$ MARY$_j$

'John will see Mary.'

$$\overline{\qquad\qquad\text{tilt}_i}$$
$$\overline{\qquad\qquad\text{gaze}_j}$$

(ii) JOHN$_i$ WILL SEE$_j$ MARY$_j$

'John will see Mary.'

```
                               _____gaze_i
(19) JOHN   WILL   FINISH   SEE   MARY_i
```

'John will have seen Mary.'

```
                               _____gaze_i
(20) JOHN   WILL   FINISH   SEE   MARY_i
```

'John will have seen Mary.'

It is important to note, however, that all of the verbal material that occurs simultaneously with the eye gaze must form a very tight phonological unit (involving a maximum of assimilation and contraction in the verb producing a "prosodic unit").

However, eye gaze position appears much more limited in sentences that contain negation. In this case, the eye gaze must remain in the post-negation position; it cannot begin in any higher position, as illustrated by the following sentences:[15]

---

[15] It is in fact possible to have eye gaze take scope over negation as well as the following VP, but only under a totally different reading of these sentences. For example, the following sentence is grammatical:

```
                    <rs:John_____>
                              _____gaze_i
                              _____neg
(i)    JOHN    pro-1p    NOT   SEE   MARY_i
```

'John (said) "I did not see Mary."'

```
                        neg
              _____
                        gaze
              _____i___
(21)  JOHN NOT   SEE   MARY
                          i
```

'John does not see Mary.'

[continued from previous page]

However, this sentence is only interpretable in terms of role shift. This is clear from examples like the following, where the interpretation of a 1st-person form pronoun allows differentiation between the two uses of eye gaze. In (ii), a grammatical 1st person possessive form is required if coreference with JOHN is intended, thus showing that the only reading available when the eye gaze has this distribution is the role shift interpretation.

```
        <rs:John_____>
                                          gaze
                              _____i_____
                                          neg
                              _____
(ii)   JOHN  pro-1p NOT  GIVE  MARY   POSS-1p  BOOK
                                  i
```

'John (said) "I did not give Mary my book."'

Notice that the role shift interpretation is also available for other examples shown above, such as

```
        <rs:John_____>
                          gaze
                   _____i_____
(iii)  JOHN  pro-1p WILL   SEE   MARY
                                    i
```

'John "I will see Mary."'

but crucially, this reading is not required in those cases. Both of the following are grammatical (the first with role shift, the second without role shift) on the interpretation where the possessive refers back to JOHN:

```
        <rs:John_____>
                                          gaze
                              _____i_____
(iv)   JOHN  pro-1p WILL  GIVE  MARY   POSS-1p  BOOK
                                  i
```

'John "I will give Mary my book."'

```
                                                   tilt
                              _____i___
                                                   gaze
                              _____j___
(v)    JOHN  AGR-S  AGR-O  WILL   GIVE  MARY   POSS-3p  BOOK
           i      i      j                 j          i
```

'John will give Mary his book.'

It is important to note that these distinctions are extremely subtle, but nonetheless significant.

$$\overline{}\text{neg}$$
$$\overline{}\text{gaze}_i$$

(22) * JOHN   NOT   SEE   MARY$_i$

'John does not see Mary.'

$$\overline{}\text{neg}$$
$$\overline{}\text{gaze}_i$$

(23) JOHN   WILL NOT   SEE   MARY$_i$

'John will not see Mary.'

$$\overline{}\text{neg}$$
$$\overline{}\text{gaze}_i$$

(24) * JOHN   WILL NOT   SEE   MARY$_i$

'John will not see Mary.'

$$\overline{}\text{neg}$$
$$\overline{}\text{gaze}_i$$

(25) * JOHN   WILL NOT   SEE   MARY$_i$

'John will not see Mary.'

In complex sentences containing an embedded clause, the gaze
associated with the phi-features of the object DP of the lower clause

would normally extend over the VP of the embedded clause, as

shown in (26).

$$\overline{\text{gaze}}_i$$

(26) JOHN   DECIDE   SEE   MARY$_i$
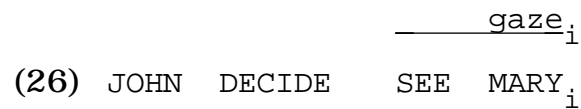
      'John decides to see Mary.'

The eye gaze associated logically with the object of the lower clause

may, however, begin with the main verb of the matrix clause, as

shown in (27).

$$\overline{\text{gaze}}_i$$

(27) JOHN   DECIDE   SEE   MARY$_i$
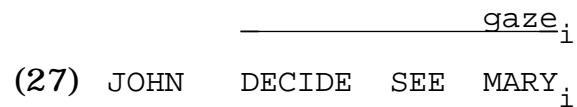
      'John decides to see Mary.'

This possibility of finding the eye gaze associated with the lower

clause object beginning before the embedded clause occurs, however,

in a restricted set of constructions. These restrictions will be

explored in the remainder of this section.

    First, there is a crucial difference between infinitival clauses

and finite clauses with respect to the distribution of eye gaze. The

verb DECIDE, for example, may occur either with a finite or infinitival

clausal complement. When it occurs with a finite clause as in (28),

(29) or (30) below (note that the presence of the Tense marker WILL in (29) and (30) demonstrates that the embedded clause is finite), the distribution of eye gaze associated with the lower object is more restricted.[16]

                                                            _____gaze$_i$

(28) JOHN DECIDE [BILL SEE MARY$_i$]

     'John is definite Bill saw Mary.'

                                                             _____gaze$_i$

(29) JOHN DECIDE [pro WILL SEE MARY$_i$]

     'John is definite (he) will see Mary.'

                                                            _____gaze$_i$

(30) JOHN DECIDE [pro WILL SEE MARY$_i$]

     'John is definite (he) will see Mary.'

---

[16] Although we do see the occurrence of eye gaze over BILL in (i).

                             gaze$_i$ _____gaze$_j$

(i)   JOHN DEFINITE   BILL$_i$ SEE MARY$_j$

     'John is definite that Bill saw Mary.'

This occurrence may appear confounding, but, as will be discussed in Chapters 8 and 9, there may be an independent eye gaze associated with DP, and so what we see in such a case is eye gaze over the subject DP followed by the eye gaze that realizes object agreement within IP.

In this construction, the eye gaze may not begin with the matrix verb
DECIDE, as shown by the ungrammaticality of (31) and (32).

$$\overline{\hspace{5cm}\text{gaze}_i}$$

(31) * JOHN   DECIDE [BILL   SEE   MARY$_i$]

     'John is definite Bill saw Mary.'

$$\overline{\hspace{5cm}\text{gaze}_i}$$

(32) * JOHN   DECIDE [pro WILL   SEE   MARY$_i$]

     'John is definite (he) will see Mary.'

In sum, the eye gaze associated with object agreement may be
associated with a higher node in the same clause; it may precede
material in Tense, for example. Similarly, as will be shown, the eye
gaze associated with object agreement in the lower clause may be
articulated with the matrix verb if the matrix verb is immediately
followed by an infinitival complement clause, but not if the
embedded complement clause is finite. This holds not only for the
verb DECIDE, but also for other verbs in ASL that subcategorize
exclusively for infinitival complements (e.g., BEGIN/START,
IMPROVE, NEED, REFUSE, TRY, WANT, PREFER) and for verbs that may
optionally take infinitival or finite complement clauses (e.g., DOUBT,

HOPE, MEAN-TO, CONFESS). With these verbs, the eye gaze associated
with the lower clause object agreement may not begin with the
matrix verb if the embedded verb is finite.

It is important to note, however, that not all infinitivals allow
lower clause object eye gaze to begin with the matrix verb. In
particular, object control verbs that have an object intervening
between the matrix verb and the embedded infinitival complement
(such as FORCE and PERSUADE) do not allow this. Sentence (33) is
ungrammatical in contrast to sentence (34).[17]

$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad\text{gaze}_i}$$

(33) * JOHN   FORCE   BILL   [PRO] SEE   MARY$_i$

'John forces Bill to see Mary.'

---

[17]Note that the ASL glosses are capitalized, as is the usual convention, but here,
in addition, the empty category [PRO] is included in the subject position of the
embedded clause in these sentences. 'PRO' should not be interpreted as an ASL
gloss.

It is, however, possible to have eye gaze in the matrix clause, but only if
is associated logically with the matrix object.

$$\overline{\qquad\qquad\text{gaze}_i}$$

(i)   JOHN FORCE BILL$_i$ [PRO] SEE MARY.

'John forces Bill to see Mary.'

$$\overline{\qquad\text{gaze}_i}$$

(ii)   JOHN FORCE e$_i$ [PRO] SEE MARY.

'John forces (him/her) to see Mary.'

$$\overline{\qquad\qquad\text{gaze}}_i$$

(34) JOHN FORCE BILL [PRO] SEE MARY$_i$

  'John forces Bill to see Mary.'

This is true even if the object of the matrix clause is non-overt (i.e., pro) as in sentence (35):

$$\overline{\qquad\qquad\qquad\qquad\qquad\text{gaze}}_i$$

(35) * JOHN FORCE e$_i$ [PRO] SEE MARY

  'John forces (him/her) to see Mary.'

  Finally, with a verb like WANT that involves Exceptional Case Marking (i.e., in embedded infinitival complements with an overt subject in the lower clause), the eye gaze associated with the lower clause object cannot begin with the matrix verb. Compare (36) with (37).

$$\overline{\qquad\qquad\qquad\qquad\text{gaze}}_j$$

(36) * JOHN WANT BILL SEE MARY$_j$

  'John wants Bill to see Mary.'

$$\overline{\qquad\text{gaze}_j}$$

(37) JOHN   WANT   BILL   SEE   MARY$_j$

'John wants Bill to see Mary.'

In summary, the eye gaze associated with the lower clause object in complex sentences may be articulated with the main verb and extend over the lower clause, but only when the matrix verb is immediately followed by an infinitival clause without an overt subject.   This articulation is not possible with finite complement clauses or in case a main clause object precedes the infinitival complement. The next section will propose an account of this distribution.

5.2.2.2 "Feature Climbing"

From a crosslinguistic perspective, the phenomena just observed are particularly interesting. Although eye gaze has, in the current analysis, been interpreted as a non-manual correlate of syntactic phi-features associated with AGR-O rather than as a clitic, the distribution of this non-manual marking exhibits a number of interesting parallels with the freedom of distribution exhibited by clitics in languages that allow clitic-climbing.

Like a clitic associated with the object of an embedded clause
in a clitic-climbing construction, the non-manual marking associated
with the AGR-O node of the embedded clause may, in certain
configurations, be associated with a higher position. The
configurations in which this is possible in ASL are very similar to
those in which clitic climbing occurs in languages that allow it: this
occurs essentially in ASL in constructions where a main verb is
immediately followed by an infinitival complement clause. Compare
the ASL examples given in the previous section with the following
example from Italian (from Haverkort, 1993):

(38) `Gianni li vuole vedere.`

      'Gianni them wants to see.'

In such cases, despite the fact that the clitic is logically associated
with the object of the lower clause, it cliticizes to the main verb.
This is parallel to the cases where the object agreement marking
logically associated with the lower clause in ASL co-occurs with the
higher verb, and thus has scope over both the main verb and the
complement clause, and may extend over the entire c-command
domain. Note that climbing fails to occur in ASL in many instances

where clitic-climbing is frequently blocked in clitic-climbing languages: for example, in constructions where there is a main clause object intervening between the main verb and the infinitival complement clause, or where the complement clause is finite.

To the extent that this phenomenon in ASL is related to clitic-climbing, comparisons with ASL may ultimately provide insights into fundamental theoretical issues, although this is beyond the scope of the current dissertation. In any event, it is interesting to note that the correlation observed by Kayne (1989)—namely that this kind of climbing is found in languages that show pro-drop—holds as well for ASL, which is a pro-drop language.

5.3 Summary

In this chapter, we have determined that eye gaze marks object agreement. The following observations serve as the basis for this determination:

1) The eye gaze is in the direction of the location that is associated with the person phi-features of the object DP. As we would expect, it occurs both with verbs that overtly inflect morphologically for object agreement and with those that do not.

2) The distinction found between the two forms of eye gaze (to a fixed location, for a specific DP object, or a wandering gaze to multiple points in space, for a non-specific DP object) parallels distinctions that are found in manual verb object agreement for certain verbs, as was shown, for example, for the manual form of the verb GIVE when used with a specific vs. a non-specific DP object.

3) Eye gaze interacts with the manual realization of object agreement in a way very similar to what was observed for the interaction between head tilt and the morphological realization of subject agreement. Namely, if eye gaze co-occurs with morphological object agreement marking, the extent of the realization of eye gaze may be reduced. This kind of reduction suggests that there is multiple instantiation of object agreement in these cases.

4) Given the assumption that eye gaze constitutes the non-manual correlate of the person phi-features in AGR-O, we can explain

the distribution of eye gaze in terms of more general observations about non-manual marking in ASL. That is, the eye gaze begins at the position where the AGR-O is postulated to occur crosslinguistically, and spreads over the appropriate syntactic domain.

5) Like morphological object agreement on the verb, eye gaze can license null objects.

CHAPTER SIX

NON-MANUAL EXPRESSION OF SUBJECT AND OBJECT AGREEMENT:

SOME EXTENSIONS

The findings in Chapters 4 and 5 clearly establish that, in the sentences examined thus far, head tilt and eye gaze can constitute the non-manual correlates of grammatical subject and object agreement within IP for transitive clauses. The general pattern is that the head position reflects subject agreement (either by tilting overtly toward the locus associated with the subject's person features or by assuming a neutral 1st person-like position, thereby defaulting, in some sense to the signer's spatial location), while positioning itself in such a way that the eyes may then gaze toward the locus associated with the object's person features, thereby marking object agreement. This chapter will explore specific situations in which these agreement markers may be used in a slightly different fashion to mark syntactic agreement in IP.

6.1 Extension to First Person Objects

First person objects pose a special problem, since the kind of object agreement marking normally found for objects, i.e., eye gaze

directed to the locus in space associated with the object, cannot be

accomplished if the object is 1st person, since the eyes cannot gaze

back upon themselves, and the head cannot position itself in such a

way as to make that possible. This articulatory dilemma is resolved

in ASL by making use of the same basic inventory of non-manual

agreement markers (namely head tilt and eye gaze), but using them

differently. That is, exceptionally in such cases, eye gaze is instead

used to mark subject agreement in such sentences, while head

position is consequently freed up to mark object agreement.

In situations where there is a 1st person object, the eye gaze

which is normally associated with object agreement instead marks

subject agreement. Conversely, the head tilt normally associated

with subject agreement is, in this case, used to mark object

agreement, as demonstrated in sentence (1).

$$\overline{\rule{0pt}{0pt}\hspace{8cm}}\text{gaze}_i$$
$$\overline{\rule{0pt}{0pt}\hspace{6cm}}\text{backward tilt}_j$$

(1)   WOMAN$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_{j=\text{1st person}}}$ $_i$GIVE$_j$ MONEY

'A woman gave me money.'

In the sentence above, the eyes gaze to the location associated with

the subject's person features, the same location that is also marked

by the morphological agreement prefix on the verb GIVE. The head

tilts slightly backwards just prior to the articulation of the verb as it

would do if it were marking the 1st person features of the object,[1]

agreement which is also marked morphologically on the verb itself.

Note that the head position used with the 1st person object in the

sentence just given is essentially the same as the head position that

would mark agreement with a 1st person subject. Similarly, in that

sentence, the eye gaze to the locus associated with the subject of that

sentence functions in the same way that eye gaze marking object

agreement would normally work: it begins after articulation of the

---

[1] It is not completely clear that the backward tilting behavior in itself marks agreement with the object, because there are situations where this head tilt can be used to convey the signer's attitude toward an activity (with a forward head tilt conveying enthusiasm while a backward tilt may express displeasure or surprise).

subject and may remain in place across the VP.[2] However, an

important difference between the articulation of these non-manual

markings in this sentence, as compared with the other examples

considered in Chapter 5, is that in this instance, the eye gaze begins

---

[2] It is interesting that we find the same interaction between eye gaze and manually realized morphological agreement as in the case of eye gaze used to mark object agreement. If the verb has overt morphological marking for subject, then the duration of the eye gaze may be reduced, and the eye gaze may terminate before the end of the articulation of the verb (just as in the case of eye gaze marking object agreement, when object agreement is also marked overtly on the verb). Consider the following examples:

$$\underline{\hspace{7cm}\text{gaze}_i}$$
$$\underline{\hspace{5cm}\text{backward tilt}_j}$$

(i) MARK_i [   ]$_{\text{AGR-S}i}$ [   ]$_{\text{AGR-O}j=\text{1st person}}$ GIVE-1p_j MONEY

'Mark gave me money.'

$$\underline{\hspace{6cm}\text{gaze}_i}$$
$$\underline{\hspace{5cm}\text{backward tilt}_j}$$

(ii) MARK_i [   ]$_{\text{AGR-S}i}$ [   ]$_{\text{AGR-O}j=\text{1st person}}$ GIVE-1p_j MONEY

'Mark gave me money.'

$$\underline{\hspace{6cm}\text{gaze}_i}$$
$$\underline{\hspace{5cm}\text{backward tilt}_j}$$

(iii) MARK_i [   ]$_{\text{AGR-S}i}$ [   ]$_{\text{AGR-O}j=\text{1st person}}$ LOVE ME_j

'Mark loves me.'

$$\underline{\hspace{6cm}\text{gaze}_i}$$
$$\underline{\hspace{5cm}\text{backward tilt}_j}$$

(iv) * MARK_i [   ]$_{\text{AGR-S}i}$ [   ]$_{\text{AGR-O}j=\text{1st person}}$ LOVE ME_j

'Mark loves me.'

This provides indirect support for the claim that eye gaze is marking subject agreement in these cases.

before the head tilt. In the cases where we interpret head tilt to express subject agreement and eye gaze to express object agreement, their relative order of articulation is the reverse.

6.2 Non-manual Realization of Agreement in Intransitive Clauses

In intransitive clauses, where there is a single NP whose agreement is to be signaled syntactically, it appears that either, or both, of the available agreement devices may be called into service: head tilt and/or eye gaze. Thus, we consistently find that the non-manual expressing AGR-S starts before that expressing AGR-O.

6.2.1 General Cases

Up to now, we have focused on transitive cases. In a simple intransitive sentence, subject agreement may be marked in any of the following ways:

(2) MEGAN$_i$ [ ]$_{\text{AGR-S}_i}$ BATH

$$\overline{\qquad\qquad\qquad \text{gaze}_i}$$

'Megan is taking a bath.'

$$\overline{\text{tilt}_i}$$

(3)   MEGAN$_i$ [   ]$_{\text{AGR-S}_i}$ BATH

'Megan is taking a bath.'

$$\overline{\text{tilt}_i}$$
$$\overline{\text{gaze}_i}$$

(4)   MEGAN$_i$ [   ]$_{\text{AGR-S}_i}$ BATH

'Megan is taking a bath.'

$$\overline{\text{gaze}_i}$$

(5)   ELLY$_i$ [   ]$_{\text{AGR-S}_i}$ FAINT

'Elly is fainting.'

$$\overline{\text{tilt}_i}$$

(6)   ELLY$_i$ [   ]$_{\text{AGR-S}_i}$ FAINT

'Elly is fainting.'

$$\overline{\text{tilt}_i}$$
$$\overline{\text{gaze}_i}$$

(7)   ELLY$_i$ [   ]$_{\text{AGR-S}_i}$ FAINT

'Elly is fainting.'

These possibilities for agreement marking do not depend on the semantics of the verb. Intransitive verbs of all semantic classes can be used with these agreement markings.

Notice that while head tilt and eye gaze may both occur in a transitive sentence to mark IP agreement, they necessarily mark different NP's. In the intransitive cases, if both head tilt and eye gaze are used, they mark agreement with the same NP, the only NP, the subject.

6.2.2 Special Class of Verbs

There is, however, another extremely interesting use for eye gaze with some intransitives, like DREAM. Consider the following example, in which the eye gaze does not point in the direction of the location associated with DON's person features, but instead assumes a particular orientation that was described by Baker (1976) as "lexically determined."

```
                  gaze-up
   (8)   DON   DREAM

         'Don dreams.'
```

The eye gaze in (8) is fixated upward as the sign DREAM is produced.

In such cases, we hypothesized that the eye gaze may be showing

agreement with an implicit argument that is not syntactically

realized in ASL, although it may be realized in English, as in the

following English sentence:

(9)   Don dreamed a dream.

This might be explained along the lines of the approach taken by

Hale and Keyser (1991, 1993); namely, it is possible that the eye gaze

in these cases may function as an expression of agreement with an

abstract argument, such as 'dream' in (9).

Further support for this analysis of DREAM as involving an

implicit argument other than the subject argument comes from the

appearance, at distinct times, of head tilt and eye gaze in the cases

where both are used. Since the head tilt precedes the appearance of

eye gaze, this suggests that the kind of analysis just outlined may be

correct: [3]

---

[3] We thank Seth Minkoff for pointing this out.

```
                                                        tilt_i
                                  _____
                                          _____  gaze_j
(10) JOHN    [   ]           [   ]           DREAM    e_j
                 AGR-S_i          AGR-O_j
```
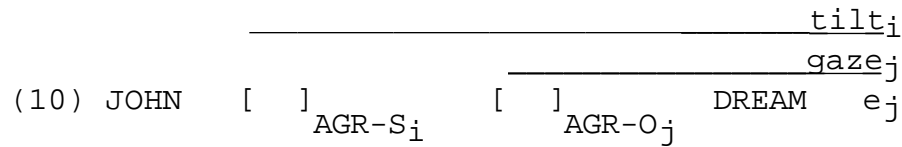
  'John dreams.'

This is in contrast with verbs that have a single argument, as already

seen in examples (4) and (7) or as in the following example, where, if

head tilt and eye gaze co-occur, they begin at the same time:

```
                                  _____  tilt_i
                                  _____  gaze_i
(11)  JOHN_i        [   ]           ARRIVE
                         AGR-S_i
```

  'John arrives.'

In ASL, the verb DREAM cannot be used with DREAM as an

object, as in the English sentence (9) above. However, there is a

classifier that is used to denote DREAM that is also accompanied by

the same eye gaze described for the example in (8), which may be

used transitively. In such a case, where Don may be, for example,

dreaming of a HOUSE, the HOUSE must be signed in the same portion

of the signing space that is designated by the upward eye gaze used

with the verb, which is also suggestive that the eye gaze in the

seemingly intransitive case in (8) may reflect agreement with an

abstract object argument.

                                                  `gaze up`

        _____

(12) `DON   (2h)LCL:S-C:"dream ballooning up"  LARGE  HOUSE`

'Don dreams of a large house.'

Several other verbs also seem to require a similar kind of eye gaze, such as the verb PONDER/WONDER (which can take an upward or downward gaze, with different connotations).[4] The verb MULL-OVER tends to require a downward gaze. PLAN seems to involve eye gaze toward a location down and in front of the signer. While this use of eye gaze is beyond the scope of this dissertation, these examples suggest that the functions of eye gaze may extend beyond the kind of syntactic agreement that was the focus of Chapter 5.

However, some of the other examples that Baker offered as illustrations of what she termed "lexically determined" eye gaze do

---

[4] A downward look may be associated with connotations of serious or deep thoughts. An upward gaze seems to contribute some kind of lightness or a sense of future. More research would be required to identify the semantic associations of eye gaze in these instances.

      Interestingly, Ken Hale (personal communication) points out that these verbs that require eye gaze correspond to verbs which in other languages may involve some notion of 'seeing' in one's mind.

      There is also an interesting difference with some of these verbs (including WONDER and PLAN) in the obligatoriness of the eye gaze, depending on whether there is a sentential complement. With such verbs, the eye gaze is required if the verb is used without a sentential complement, but otherwise is optional.

find a straightforward explanation in terms of object agreement marking. For example, LOOK-AT involves eye gaze toward the syntactic object, as we would expect:

$$\text{(13)} \quad \overline{\quad\quad\quad\quad\underline{\text{gaze}_i}} \atop \text{MIKE} \quad \text{LOOK-AT} \quad \text{DON}_i$$

       'Mike looks at Don.'

6.2.3 Realization of Agreement with Second Person Subjects

There is one more case where transitive verbs exhibit slightly different realization of agreement from intransitives. This involves the manifestation of subject agreement by head tilt specifically in the case of 2nd person subjects, and it involves the difference between the transitive cases, in which eye gaze is used to mark object agreement, and the intransitive constructions.

As already suggested, there is some kind of interaction between the use of head tilt for subject agreement and the use of eye gaze for object agreement, a subject worthy of further exploration. The eye gaze to object position is necessarily originating from the head (marking subject agreement). Thus in some sense, there is an intrinsic relation between the two. This has consequences for the expression of subject agreement with 2nd person subjects. For

intransitive subjects, the head tilt marking overt subject agreement

is realized in exactly the way one would expect, by the head moving

forward to the location in space associated with the 2nd person

subject.

$$
\begin{array}{lllll}
& & & \underline{\text{tilt}_i} & \text{(forward head tilt)} \\
\textbf{(14)} & \text{IX-2p}_i & [\quad]_{\text{AGR-S}_i} & \text{ARRIVE} & \ldots
\end{array}
$$

'You arrive... .'

However, this realization of head position is precluded if eye gaze is

also used to mark object agreement, presumably because eye gaze

from the location in space associated with 2nd person cannot be

performed by the signer. Thus, in such cases, the head assumes a

kind of compromise position, moving a bit toward 2nd person

position, but moving instead to the side[5] so as to maintain the

possibility of having eye gaze to object position.

---

[5] A similar phenomenon occurs with subject agreement marking for 1st person subjects. Since overt subject agreement cannot be visible if the head remains in the real 1st person position, the head may instead tilt a bit to the side to mark overt subject agreement with a 1st person subject.

Notice that in both these cases where a slight compromise head position is required, the position used for manual subject agreement is unaffected.

$$\begin{array}{l} \text{(slightly sidewards head tilt)} \\ \underline{\hspace{4cm}\text{tilt}_i} \\ \underline{\hspace{3cm}\text{gaze}_j} \end{array}$$

(15) IX-2p$_i$ [   ]$_{\text{AGR-S}_i}$ [   ]$_{\text{AGR-O}_j}$ $\overset{\text{SEE}_j}{}$ MARY$_j$

'You see Mary.'
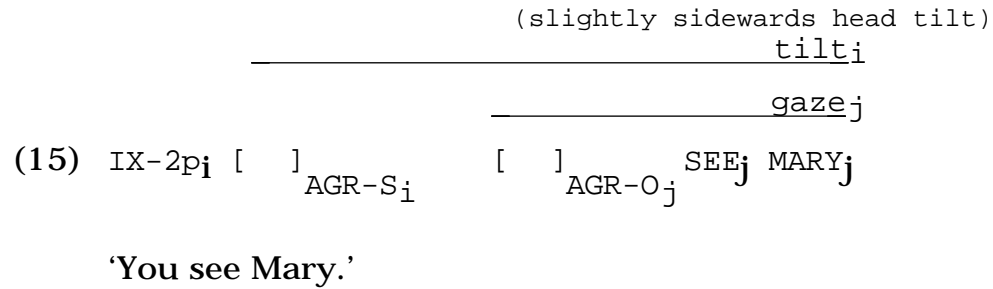
6.3 Classifiers

Classifier predicates present an interesting kind of test of the

claim that eye gaze reflects phi-features. Classifiers involve the use

of a specific handshape to represent a nominal argument,[6] which

actually moves along a trajectory associated with the movement

depicted by the verb that is articulated by moving the classifier. It

has been suggested in earlier work (see Kegl, 1976) that classifiers

include incorporated pronominal-like reference to NP, since the

location of the classifier (which may change) is at all times associated

with the point in the signing space understood to correlate with the

---

[6] Similar to other classifier languages, ASL classifier morphemes have the trait of incorporating the salient visual-tactile characteristic of a noun referent (Allan, 1977). In ASL the classifier system has two basic components: the hand configuration (the classifier handshape) and its mandatory movement root (called the verb of motion by Supalla, 1982 and 1986; or classifier predicate by Schick, 1987 and 1990).

There are different kinds of classifiers in ASL and each serves to represent a noun category in a different way. They may categorize nominals within the frame of their semantic class, e.g., vehicle, human, animate object, or focus on the visual-geometrical aspect of the entity, such as its size, shape, texture and dimensions, and/or indicate how the object is handled by the hand (Supalla, 1982, 1986; McDonald, 1982; Schick, 1987, 1990).

NP's referential features. Within the perspective of this dissertation, we would thus view classifiers as essentially involving movement of the subject's phi-features in the course of articulation of the verb. This has interesting consequences for the morphological agreement expressed manually on the verb, although this has not been discussed elsewhere in these terms. Notice that, while for "agreeing" verbs, there is a subject agreement prefix affixed to the beginning of the verb and an object agreement prefix affixed to the end, for these intransitive classifier predicates, the spatial location associated with the subject's phi-features is expressed spatially by the location of the hand at all times during the articulation of the verb.[7]

This makes an interesting prediction about what might happen to eye gaze in the course of articulation of a classifier predicate:

---

[7] As Padden and Bahan reported in a presentation at a lab meeting at the Salk Institute in 1980, and as Padden (1983, 1988) describes, with verbs of motion, subsequent pronominal reference to the NP that has undergone the movement will be to the final point in space reached by the verb, rather than to the starting position. We would suggest that classifier verbs involve a constant spatial agreement with the subject's phi-features, and in this way differ significantly from so-called "agreeing" verbs. This change in the spatial locus used for pronominal reference subsequent to completion of the articulation of the verb provides confirmation, we would argue, of our analysis that the phi-features have been reassigned to a different location in the signing space. (See also Van Hoek, 1992.)

namely, that if eye gaze is tied to phi-features, eye gaze should also be able to move in the appropriate way, being directed at all times to the locus assigned to the subject's phi-features.[8] This does indeed occur, as illustrated, for example, in the sentence below.

(16)   BICYCLE SCL:3″vehicle rolls downhill and jumps in air″
       'The bicycle rolls downhill and jumps in the air.'

When the vehicle classifier is being signed, the eyes follow the movement path as the hands depict a downward roll and an eventual jump in the air. Eye gaze is, however, not required to accompany classifier verbs.[9]

---

[8] The use of eye gaze following the movement path of the classifier has been previously reported (for example, in Kegl, 1976, and Bahan and Supalla, 1995).

[9] There are also very interesting things happening with respect to eye gaze with verbs that may incorporate classifiers corresponding to the theme argument, as in:

(i)   JOHN ICL:C″give-bottle″ MARY.
    'John gave the bottle to Mary.'

In this case, there seem to be two different kinds of eye gaze that can be used over the VP. In one case, gaze may be directed at MARY; in the other, the gaze may follow the moving bottle classifier. We would suggest that there may be a different argument structure in the two cases; that in the first case, MARY is in some sense the most prominent syntactic object, while in the other, BOTTLE is understood to be the true syntactic object. Further research would be required to confirm this and to make it more precise. However, there do seem to be differing readings in the two cases, which correspond to this prediction. The two types of eye gaze would be used in different situations, depending on whether MARY or the BOTTLE is the focus. So, in answer to the question 'Who did you give the bottle to?' eye gaze would necessarily be associated with MARY. (See also Kegl, 1985.)

6.4 Generalizations about Non-Manual Correlates of Phi-Features in AGR-S and AGR-O

To summarize the conclusions reached thus far, we have argued that the person phi-features located in the heads of agreement projections may be expressed non-manually in one of two ways: either by the head tilting to the locus in space associated with those features, or by the eyes gazing to that location. In transitive clauses, generally head tilt marks AGR-S and eye gaze marks AGR-O. However, there is one circumstance where this association encounters insurmountable articulatory obstacles; this is the case of sentences that involve a 1st person object. In this case, because the eyes cannot gaze to 1st person while the head tilts to a non-1st person position, eye gaze is instead used to mark subject agreement while head position may be used to mark object agreement, thus reversing the normal associations.[10] In intransitive constructions,

---

[10] This represents a crucial difference between the analysis proposed in this dissertation and the interpretation of the data that led to Kegl's generalization about "role prominence". Kegl viewed those NP's marked by a distinct head position (including most subjects, but also 1st person objects) as a unified class, and invoked the notion of role prominence to characterize that class. In this dissertation, the recognition that 1st person objects give rise to an exceptional kind of syntactic agreement marking allows us to formulate generalizations about syntactic subject and object agreement without recourse to other notions.

however, where there is only a single NP argument, either of these two agreement devices, or both, may be used to signal agreement non-manually.

6.5 Correlates of Agreement Features of the Verb Itself

The phi-features contained in the heads of agreement projections are required for feature checking of inflectional information associated with the verb. Notice that the current analysis involves the insertion into the syntax of verbal material complete with inflectional information that is then checked against the agreement features contained in the heads of the agreement projections. Thus, the syntactic agreement features are present not only in the agreement heads, but also within the Verb itself. We are leaving aside the bookkeeping issues of how this checking occurs. We are not necessarily assuming the mechanisms Chomsky uses; only the notion that verbs come into the syntax with agreement features and that these are checked against the features in functional heads of agreement projections (an assumption that Chomsky also no longer maintains in his most current work).

If there are truly non-manual correlates of agreement features, then we might expect to find manifestations thereof not only for the

phi-features in AGR-S and AGR-O but also for the agreement features

included within the inflected Verb. Although this investigation is

still at a preliminary stage, this section offers the suggestion that

these features may also be instantiated non-manually, although in a

way that is slightly different from—but not unrelated to—the

expression of the agreement features contained in AGR-S and AGR-O.

We suggest that, while the degree of head tilt continues throughout

the VP to express subject agreement, there is an additional

dimension that joins forces with that head position to express the

morphological features associated with the verb's object agreement,

and that is the orientation of the head toward the location associated

with the object.[11] This orientation can take two forms.

First, the head rotates such that it will be oriented toward the

object by the time the verb's articulation is complete (although the

head may remain in this orientation for the rest of the VP). Note,

however, that orientation to subject is not visibly marked non-

manually, since the head position at the beginning of the verb's

articulation is already consistent with the marking of the subject, as

_____

[11] Other people have discussed the role of orientation in manual morphological verb agreement as well. See, for example, Meier (1982). Thus, there is yet another similarity in terms of the manual and non-manual expressions of agreement.

determined by other factors (i.e., the head will assume either the neutral position for unmarked syntactic subject agreement or the tilted position for overtly marked subject agreement). However, the object agreement is marked at the end of the verb by the final position of head orientation. The change in head rotation from the initial position to the final orientation occurs progressively and smoothly as the verb is articulated.

In addition, there is a second way in which the orientation to object locus can be realized non-manually as the verb is articulated: by a forward body lean in the direction of the object locus. This can occur only with the unmarked/default (subject) head position (presumably because the position assumed for the overt head tilt is inconsistent with the forward lean that will be described). In such a case, the head begins in the unmarked neutral position, and then leans forward in the direction of the object; however, the head does not need to rotate to achieve the final orientation to object position.

These two articulations of the verb's agreement features have both involve a smooth and progressive change throughout the articulation of the verb, resulting in a head (and upper body) orientation toward the locus in space associated with the object's

person features by the end of the verb's articulation, an orientation

that may be retained for the rest of the VP. This will now be

considered in somewhat more detail, with examples.

6.5.1 Orientation: Head Rotation and Body Lean

By the end of the verb's articulation, the head will be in the

appropriate location for its orientation to be toward the locus

associated with the object's person features.[12] There are two

different ways for it to achieve this final position. First, with overtly

marked syntactic subject agreement, the head tilts prior to

articulation of the VP, and then remains tilted. As the verb is signed,

the head gradually rotates and finally reaches the object orientation

at the end of the verb's articulation.[13]

There is also a second way in which orientation to object

position can be marked non-manually on the verb, although this

option is restricted to cases that do not involve overt head tilt for

syntactic subject agreement. This involves a slight forward lean of

---

[12] This object head orientation can, however, be suppressed in the case of a "whisper," where the signer attempts to prevent information from being visible to others.

[13] It is interesting to note, however, that the orientation marking also reverses when a 1st person object is present. In such cases, the head begins oriented toward the subject (rather than ending in such a way as to be oriented to the object).

the head and upper body toward the position in space associated

with the object's person features.[14] By the end of the articulation of

the verb, the head and upper body have already reached a position

in which they are oriented toward and leaning in the direction of the

object. There is a very smooth transition to the final position,

beginning immediately as soon as the verb starts to be articulated,

reaching the final position by the time the end of the verb's

articulation is complete. This object orientation may remain

throughout the VP,[15] or the body may return to neutral position. It is

interesting to note that this kind of body lean can (but need not) co-

occur with the other non-manual marking of object agreement

previously identified, i.e., eye gaze. If both occur, then the eye gaze

precedes the articulation of the Verb, while the body lean is

coextensive with the Verb's articulation.

    As demonstrated in Figure 1 and sentence (17), the production

of the marking begins in a neutral position associated with the

---

[14] Supalla (in prep.) mentions, in passing, a body lean associated with object
agreement, but does not analyze it.

[15] Presumably, when this occurs, there is perseveration of the head position
associated with the Verb and the head position independently associated with
the object DP. The non-manual markings internal to DP will be discussed in
Chapter 8 and the interactions between agreement marking within IP and DP
will be discussed in Chapter 9.

default subject marking; see the first photograph in Figure 1. Then

the upper body starts to lean forward and continues to do so while

the VP is articulated, ending at the location associated with the

object; see the second photograph in Figure 1. [16]

Figure 1

Body Lean

Beginning of Default Marking   >   End of Body Lean

$$\begin{array}{c} \underline{\hspace{6cm}\text{tilt}_{neu}} \\ \text{neu}\underline{\hspace{0.3cm}\text{lean}_{j}\hspace{1.5cm}} . \\ \underline{\hspace{5cm}\text{gaze}_{j}} \end{array}$$

(17) JOHN_i [$]_{\text{AGR-S}_{neu}}$ [$]_{\text{AGR-O}_j}$ neuGIVE_j MARY_j BOOK

'John gives Mary a book.'

---

[16] The gloss shows two separate lines showing how the body is positioned—the neutral position assumed before the body lean begins is associated with the subject, and final position of the body lean is associated with the object.

In sentence (17) the body starts leaning after the verb GIVE is initiated, and continues to lean forward reaching the position associated with the object's person features at the final production point of the verb GIVE, thereby associating the forward body lean with expression of object agreement.

Note that this body lean also co-occurs with any change in orientation of the head required for the head to have the proper angle of rotation by the end of the verb's articulation. Often there is no head rotation required, but if head rotation does occur with body lean, then the two motions blend together smoothly.[17]

It is also interesting to note that this body lean establishes an axis along which the head and upper body can move. Therefore certain other types of information that may be expressed with the head will also be incorporated into the movement along this axis. For example, a specific type of headnod may be used for emphatic purposes. If such a headnod co-occurs with this kind of verbal agreement marking, then the head may engage in a single nod, with the maximum downward thrust over the verb itself, as the head and

---

[17] Note that even if there is a situation where no head orientation occurs with this construction, the body lean is still oriented in the direction of the object.

upper body move to the object agreement position corresponding to the end of the verb's articulation.

Some degree of body lean always seems to occur with the verb's articulation when the unmarked non-manual subject agreement marking is used, although this can vary greatly in degree. The body lean can take a very minimal instantiation (a slight movement), or a more emphatic realization of the kind just described, or can fall somewhere in between.

6.5.2 Consequences and Predictions of this Analysis

What we are suggesting, then, is that, in addition to non-manual correlates of the phi-features contained in the head of AGR-S and AGR-O, whose realization has been described in previous chapters, there are also non-manual correlates of the agreement features associated with the verb itself.[18] Thus we are suggesting that just as there is manual morphological agreement that may be expressed on verbs in ASL (depending on the verb class to which

---

[18] If our analysis is correct, then the non-manual correlates of morphological inflection features, as realized at the beginning and end of the verb, may provide some indirect support for the distributed morphology theory formulated by Halle and Marantz (1993), according to which there is separable inflectional morphology, consisting of features to be instantiated phonologically. It is presumably these features that are instantiated non-manually in the body lean that occurs over the verb (and also in the manual agreement marking on the verb).

they belong), there are also non-manual realizations of the verb's subject and object agreement. This kind of non-manual instantiation does not distinguish among verb classes. Both plain verbs and agreeing verbs involve the same non-manual change in orientation that is coextensive with the articulation of the verb itself. The non-manual movement just described involves motion from an initial position (at the very beginning of the verb) associated with subject agreement to a final position (achieved at the very end of the verb's articulation) associated with object agreement.

If this analysis is correct, then it makes certain testable predictions. For example, if the body lean incorporates a non-manual expression of object agreement, then we might expect that, like overt morphological realization of object agreement, this would make possible a reduction in the duration of the eye gaze as previously observed. This is confirmed, and described in the next section. The section after that explores the expected interactions between the two types of non-manual agreement correlates and manual expressions of morphological agreement.

6.5.2.1 Interaction of Expressions of Object Agreement

It is necessary to reconsider the suggestion offered in Chapter

5 that, whenever there are multiple instantiations of object

agreement (e.g., overt manual expression of object agreement and

eye gaze), the eye gaze may end before the end of the VP. We now

consider the interaction between eye gaze, body lean, and head

orientation (with respect to overt non-manual subject agreement).

Recall that the following sentence was offered earlier to

illustrate that, in the absence of overt morphological agreement on a

plain verb like LOVE, the eye gaze must remain in place at least until

the end of the articulation of the verb.

$$\overline{\hspace{8cm}\text{tilt}_{neu}}$$
$$\overline{\hspace{4.5cm}\text{gaze}_{j}}$$

(18) * JOHN$_i$ [   ]$_{\text{AGR-S}_{neu}}$ [   ]$_{\text{AGR-O}_j}$ LOVE MARY$_j$

'John loves Mary.'

However, sentence (19) below shows that if body lean results in the

marking of object agreement, then the eye gaze can end early as in

other cases with overt morphological object agreement on the verb.

$$\underline{\qquad\qquad\qquad\qquad\qquad\qquad\text{tilt}_{neu}}$$
$$\text{neu}\underline{\overset{\text{lean}_j}{\qquad}}\underline{\qquad}.$$
$$\underline{\qquad\qquad\text{gaze}_j}$$

(19) JOHN$_i$ [   ]$_{\text{AGR-S}_{neu}}$ [   ]$_{\text{AGR-O}_j}$ LOVE   MARY$_j$

'John loves Mary.'
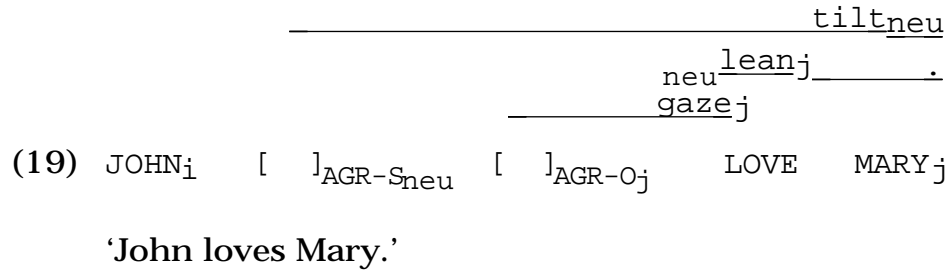
In conditions where a body lean is present (e.g., sentence (19)) with eye gaze, then—because there is multiple overt realization of object agreement—the eye gaze may be of shorter duration.[19] Notice that the early end of eye gaze is independent of the use of head rotation to express object agreement, since the latter always occurs (and therefore, there are no differences in the extent of information about object agreement in different sentences that results from any differences in head orientation).

---

[19] It is not unusual to have a situation where there are as many as three instantiations of object agreement—an overt expression of object agreement on the verb and the two forms of non-manual object agreement. However, it is also possible to find body lean as the only instantiation of object agreement.

       sentence with non-manual body lean alone

$$\underline{\qquad\qquad\qquad\qquad\qquad\qquad\text{tilt}_{neu}}$$
$$\text{neu}\underline{\overset{\text{lean}_j}{\qquad}}\underline{\qquad}.$$

(i)   JOHN   [   ]$_{\text{AGR-S}_{neu}}$ [   ]$_{\text{AGR-O}_j}$ LOVE   MARY$_j$

'John loves Mary.'
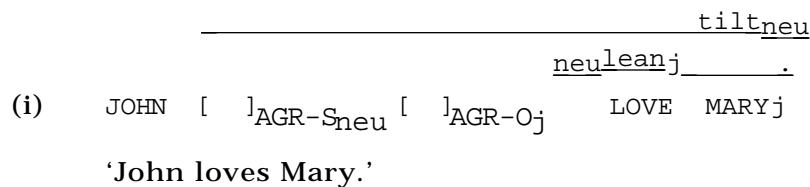
In addition, like other forms of object agreement marking, the presence of body lean is sufficient to license null objects.

Taken together, the above examples demonstrate that whenever object agreement is multiply manifested by either a manual object agreement affix or a body lean to a position associated with object agreement, then the use of eye gaze as non-manual correlate of object agreement may be slightly reduced in duration. This is, once again, parallel to what was found for multiple instantiations of subject agreement marking.

6.5.2.2 Interaction between Non-manual Expression of Agreement Features in the Verb and in Agreement Projections

At this point it will be useful to consider the overall analysis that is being suggested for various combinations of manual and non-manual agreement markings, and to see whether the analysis makes the correct predictions for cooccurrences. Consider again the figure below, taken from Chapter 4, showing possible interactions between morphological subject agreement features of the verb and the phi-features contained in AGR-S.

Figure 2

Subject Person Features

		In AGR-S Realized Non-manually	Associated with Verb Inflection Realized Manually
1.	ok	Unspecified	Unspecified
2.	*	Unspecified	Fully specified
3.	ok	Fully specified	Unspecified
4.	ok	Fully specified	Fully specified

What do we expect to find in each of these situations? In Case 1, there will be no head tilt (i.e., the head will be at neutral tilt position). A body lean occurs (of greater or lesser degree). This is correct. In Case 3, there is overt head tilt reflecting the fully specified AGR-S person features. This does not allow a body lean, but the head will rotate to achieve orientation to object position by the end of the verb's articulation. This may be accompanied by eye gaze to object position, but eye gaze is not required. Case 4 is very much like Case 3, except that the subject features are overtly marked by the manual morphology of the verb. Thus all the possible cases are accounted for, as summarized in Figure 3.

Figure 3

Manual and Non-manual Expressions of Agreement

	AGR-S	Verbal Agreement Inflection				AGR-O
	Head Tilt Subject Agreement	Manual Subject Agreement	Body Lean	Head Rotation	Manual Object Agreement	Eye Gaze Object Agreement
1	Neutral	Neutral	yes	may occur	Overt	
3	Overt	Neutral	no	occurs	iff V	Optional
4		Overt			inflects	

6.6 Summary

Basically, then, we have argued that there are a number of different non-manual expressions of agreement. With respect to their distribution, we have found that non-manual marking of subject and object agreement fall into two classes. First, there are agreement markings that occur prior to articulation of the VP and that may remain in place throughout the VP. Second, there are markings that seem to occur on the verb with the same distribution as manual markings of morphological agreement (with subject agreement marking attaching to the very beginning of the verb, object agreement marking attaching to the very end, and a transition occurring smoothly as the verb itself is articulated). We argued that

this first type of non-manual marking corresponds to agreement

features contained in the head of AGR projections. We suggest (albeit

tentatively) that the second type may in fact reflect the agreement

features that are part of the verb itself.

With respect to the non-manual correlates of the syntactic

person phi-features situated in AGR-S and AGR-O, there are two

principal non-manual realizations of those features, which spread

over the c-command domain of the Agreement heads.[20] The non-

manual devices available for marking such agreement consist of head

tilt and eye gaze. Head tilt is used preferentially for subject

agreement, and eye gaze for object agreement, within transitive

clauses. However, in the instance where there are articulatory

obstacles to using those markings—i.e., in the case of sentences that

contain 1st person objects—the reverse association occurs, namely

subject agreement is marked by eye gaze while object agreement

may be marked by head position. For intransitive clauses, where

there is a single NP with which syntactic agreement is to be marked,

both devices become available for expressing subject agreement, and

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[20] Although, as previously mentioned, the duration of the eye gaze marking
object agreement may be somewhat shorter if object agreement is overtly
expressed by either body lean or verbal morphology or both.

these may be used singly or jointly to mark agreement with the subject.

In addition, we have suggested that the agreement features that are associated with the verb itself may also have non-manual expression. In particular, object agreement appears to be marked at the end of the verb's articulation by head orientation and/or body lean in the direction to the locus associated with the object's person features. The starting point for the verb's articulation (which in a sense marks subject agreement) is taken from the head position required for expression of the person features in AGR-S (e.g., the neutral head position, for unspecified person features, or the overt head tilt expressing fully specified person features in AGR-S). Coextensive with the articulation of the verb is whatever transition is required to result in the appropriate object orientation by the end of the articulation of the verb.

CHAPTER SEVEN

CONSEQUENCES OF THESE FINDINGS

This chapter considers several consequences of the findings presented thus far for our understanding of ASL syntax and for linguistic theory in general. We begin by considering how the analysis presented in this dissertation relates to previous proposals by Kegl concerning the role of head position in ASL and show that we can account for many of Kegl's observations in a rather different way. Then we consider the theoretical significance of our findings, in terms of an understanding of how agreement operates within ASL and how syntactic agreement in general should be represented theoretically. In the final section, the distribution of non-manual correlates of syntactic agreement is compared with that of other non-manual grammatical markings, and the significance of the distribution of head tilt and eye gaze for determination of the proper syntactic analysis of verb raising in ASL is discussed.

7.1 Consideration of Alternative Analyses of ASL

In this section, we consider some of Kegl's early work on the role of head position in ASL syntax, and discuss how her observations can be recast in light of the analysis presented in this dissertation. We then consider the relevance of non-manual grammatical marking to the question of the existence of a passive construction in ASL, and suggest specifically that the evidence does not support the existence of passives in ASL.

7.1.1 Kegl's Work on Head Position

Many of the phenomena involving the grammatical use of head position in ASL were described by Kegl in earlier works (1976, 1985, 1986, e.g.)[1] However, there are several significant differences between her approach and ours.

As far back as two decades ago, in unpublished work, Kegl (1976) observed two kinds of uses of the head and upper body, one called "SBP", signer's body position/pronoun, and the other "PBP", projected body position. Although there are several differences between her original analysis and her more recent proposals, it

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[1] These ideas are also summarized in Wilbur (1979).

seems that Kegl originally observed the same kind of distinction that we discussed in Chapter 4, between an overtly spatially agreeing form and a default.[2] In her subsequent work, however, she seems to collapse the two together in referring to them as a "role prominence clitic". In her analysis, these body markers are bound morphemes that may express a variety of types of syntactic information.

We will now consider the proposal by Kegl that involved an analysis of head tilt in terms of a "role prominence clitic" rather than strict syntactic agreement. Several of the observations that led Kegl to such an analysis now find a very different kind of interpretation. One of Kegl's observations was expressed in terms of a "role prominence hierarchy," which encoded, among other things, the fact that it is not possible to find "role prominence" associated with a 3rd person subject when the object is 1st person (since a 1st person object is higher on this hierarchy). Her proposal thus captures a descriptive generalization that head tilt normally occurs with the sentential subject but can also occur with a 1st person object. This is

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[2] As late as Shepard-Kegl (1985), for example, she makes reference to a default or neutral pro.

a fact for which we have a very different explanation. The
explanation proposed in this dissertation is based on the articulatory
difficulty of using head tilt for subject agreement and eye gaze for
object agreement in a sentence with a 1st person object.

We suggest, however, that generalizations concerning subject
and object agreement can be stated independently of specific rules
governing their physical manifestations in particular contexts. Thus,
just as distinct phonemes may be neutralized in certain contexts, we
suggest that the head involvement found with 1st person objects is
nonetheless object agreement marking, despite the fact that, in this
specific environment, it takes the form normally used for expression
of subject agreement. This represents a major divergence in the
interpretation of the facts from the approach taken by Kegl.[3]

One crucial difference between her approach and the proposal
in this dissertation is that we are exploiting an autonomous non-
manual tier on which syntactic features are manifested, rather than
trying to account for the relations between manual and non-manual

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[3] Some of the other observations that formed the basis for Kegl's conclusions
about "role prominence" would require further investigation and may well
have alternative explanations, but our analysis does account, in a
straightforward way, for at least a subset of the generalizations that Kegl
observed.

material at a single syntactic level.[4] This provides new ways to account for the appearance and distribution of these non-manual markings in an explanatory way that generalizes to non-manual expressions of other grammatical information (see section 7.4). The current approach allows us to account both for the similarities and differences between clitics (in languages that have them) and the use in ASL of head tilt and eye gaze for the specific functions that have been the focus of this dissertation. While the similarities derive from the fact that these non-manual grammatical markers are associated with precisely the same phi-features that are expressed by clitics, the non-manual expressions do not substitute for overt NP arguments (as clitics generally do). The only way to analyze head position and eye gaze as "clitics" would be to suggest that these involve cases of clitic doubling. However, strikingly, no other language (to our knowledge) allows clitic doubling of (non left-dislocated) subject arguments;[5] so in this respect ASL would be anomalous. On the other hand, we are able to relate the non-manual expressions of phi-features in ASL to the non-manual expressions of

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[4] Kegl does, however, recognize a separate articulatory tier for non-manual behaviors, but it has no difference in status, in her analysis, from what occurs manually in signing.

[5] We thank Marco Haverkort for pointing this out.

other grammatical features in the language in a way that offers some explanatory generalizations about their distribution.

Furthermore, the use of head position and eye gaze is not restricted to this syntactic environment. These non-manual markers have related functions internal to DP, which will be considered in Chapter 8. If our interpretation of these non-manual grammatical markings is correct, then it is clear that a "clitic" analysis would not extend to the cases of DP-internal agreement, while the analysis in terms of non-manual correlates of phi-features carries over in a simple and straightforward way.

The reader is referred to Kegl (in press) for a comprehensive overview of her positions with respect to the interpretation of syntactic use of head and upper body position. Much of her data would receive a different interpretation from the author of this dissertation.

7.1.2 Existence of Passives

The question of the existence of passives in ASL has been a somewhat controversial one. The general claim has been that ASL does not have a passive construction (see, e.g., Padden, 1988; Perlmutter, 1991). However, Kegl has argued that ASL does, in fact,

have passives. She has presented several different analyses of the

passive construction (e.g., Kegl, 1985, 1990, in press[6]). In ABKN

(1992), her observations about what she had considered to be the

passive construction were integrated in with the newer

understanding of ASL phrase structure. In that paper, ABKN argued

that role prominence marking provides evidence of subject

agreement with the logical object argument, and thereby supports

the notion that there is a true passive construction in which the

logical object argument is realized as a syntactic subject.

However, the analysis presented in this dissertation provides a

new way to interpret evidence based on head position that occurs

when there is a 1st person object. This in turn provides a different

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[6] Kegl (in press) explains:

> True passives.   A true syntactic passive in ASL is detransitivized and
> exhibits a distinctly different form of morphological agreement. In (24)
> and (25) the movement of the verb changes noticeably. The translatory
> movement between subject and object is lost, and the CL-clitic loses its
> coindexation with its corresponding NP referent in the sentence. Contact
> is still made with the CL-clitic, which is now opaque with respect to
> syntactic agreement, but the movement is oriented sideward and upward
> rather than toward the signer's body. Association of the subject of the
> passive with a RP-clitic is obligatory.

```
(24) MARY IX_j RP-CL_j#CL:1_a#_aHIT+passive.

     'Mary (role prominent) was hit.'  [a=neutral agreement and a j]


(25) SUE IX_i RP-CL_i#CL:1_a#_aHIT+passive.

     'Sue (role prominent) was hit.'
```

analysis for cases that might previously have been considered to be passives. Here we will begin by considering a simple case, and then move on to consider the kind of examples given in Kegl (in press) and in ABKN (1992).

Let's first consider the following example:

(1)
$$\overline{\underline{\text{gaze}_j}}$$
$$\overline{\text{backward tilt}}$$
$$\text{HIT}_{i=1p}$$

This sentence has the meaning that I was hit. But syntactically, it is not a passive. We suggest that this sentence, in fact, has the following analysis:

(2)
$$\overline{\underline{\text{gaze}_j}}$$
$$\overline{\underline{\text{backward tilt}_{i=1p}}}$$

$[e]_j$ [ ]AGR-S_j [ ]AGR-$O_{i=1p}$ HIT$_{i=1p}$ $[e]_{i=1p}$

'(Someone) hit (me).'

The eye gaze toward the position in space associated with the phi-features of the non-overt subject argument is the normal form for syntactic subject agreement in sentences that contain a 1st person object. Likewise, the backward head tilt is precisely that which we have already identified as characteristic in sentences of this kind.

Notice that the non-manual markings here are exactly those that

would occur with an overt subject SOMEONE in the sentence above:

$$\begin{array}{c}\underline{\hspace{5cm}\text{gaze}_i}\\ \underline{\hspace{3cm}\text{backward tilt}_j}\end{array}$$

(3)   SOMEONE$_i$ [   ]$_{\text{AGR-S}_i}$ [   ]$_{\text{AGR-O}_j}$ HIT-1p$_j$

   'Someone hit (me).'

There is, however, another similar construction in which there

is a non-specific subject NP (someone, but not someone specific in the

mind of the signer). Recall that in such cases, the subject agreement

features would not be specified, and the eye gaze associated with

such non-specific referents is the kind of wandering eye gaze

described in Chapter 5. This would result in the following:

$$\begin{array}{c}\underline{\hspace{4cm}\text{wandering gaze}}\\ \underline{\hspace{3cm}\text{backward tilt}_j}\end{array}$$

(4)   SOMEONE   [   ]$_{\text{AGR-S}}$ [   ]$_{\text{AGR-O}_j}$ HIT-1p$_j$

   'Someone hit (me).'

The eye gaze in this case identifies a non-specific subject, by virtue

of the slight upward, somewhat distant, stare. Thus, rather than

providing evidence that the logical object of the verb HIT in this case

is the syntactic subject, we find evidence that this is a normal 1st

person object, and that the non-manual subject agreement marking

by eye gaze points to the existence of a null subject (either a specific

indefinite NP, in (2) or a non-specific NP, as in (5)).

$$\frac{\overline{\qquad\qquad\qquad\qquad\qquad\qquad\text{gaze}_i}}{\underline{\qquad\quad\text{backward tilt}_j}}$$

(5)   pro(indefinite)$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ HIT-1p$_j$

        'Someone hit me.'
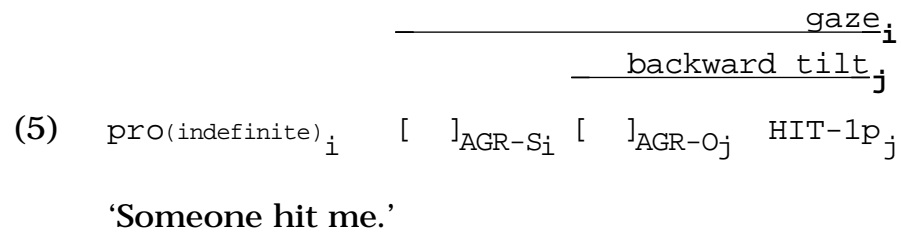
Thus, a proper interpretation of non-manual agreement marking can

provide evidence crucial to the syntactic analysis of specific

constructions in ASL. Such evidence, in this case, argues against

interpreting sentences such as those given above as passives.

The examples given in Kegl (in press) and in ABKN (1992) are

slightly more complicated, since they do not appear to involve 1st

person objects, with respect to their interpretation and their English

translation. However, we would argue that syntactically, the object

in a sentence like the following (the sentence presented as ABKN,

1992 (33)) is, in fact, grammatically a 1st person object. This

sentence actually involves role shift, which means that, in such a

construction, the grammatical 1st person argument is bound by a

previously established 3rd person argument.

```
        <rs: MARY------------------------------------->
                                     wandering gaze
                                     backward tilt j
   (6)   MARY            e    [   ] AGR-S i   [   ] AGR-O j  HIT-1p j
```

As viewed from Mary's perspective: 'Someone hit me.'

While ABKN failed to observe role shift in their example (33), unless role shift occurs, 'MARY HIT-1p' could only be interpreted to mean 'Mary hit me.'

In summary, we believe that careful interpretation of the evidence available from head tilt and eye gaze, in light of the analysis of agreement proposed in this dissertation, disconfirms the existence of a "true passive construction" in ASL.

7.2 Agreement in American Sign Language

If we are correct in our interpretation of head tilt and eye gaze as non-manual correlates of syntactic subject and object agreement, then the observations from the distribution of non-manual agreement marking provide a new understanding of the way in which Agreement functions in ASL specifically, and in language generally, as discussed in this and the next sections. This section summarizes the conclusions that emerge from this research with

respect to agreement in ASL, while section 7.3 explores some of the more general theoretical consequences of our findings.

7.2.1 Presence of Agreement with Verbs of All Classes

Significantly, the use of head tilt and eye gaze to express syntactic agreement occurs with verbs of all morphological classes in ASL, including both plain and agreeing verbs. We have seen that the realization of subject and object agreement by head tilt and eye gaze licenses pro, as will be discussed again in section 7.2.2 This provides strong evidence for the existence of syntactic agreement projections in all main clause sentences (counter to claims of Lillo-Martin, 1991, e.g.) regardless of the morphological class to which the main verb belongs. It is simply the case that verbs of certain classes cannot bear the manual morphological subject agreement prefix and object agreement suffix.

In addition, further indication that sentences containing plain verbs are not lacking in syntactic agreement is provided by the appearance of body lean, which, we suggest, reflects the inflectional information associated with the verb itself. Moreover, the realization of object agreement through body lean is, as we have shown, also sufficient to license null objects.

7.2.2 Licensing of Null Subjects and Objects: A New Perspective

Thus, the purported difference in the syntactic structures associated with plain verbs and agreeing verbs—which formed the basis for Lillo-Martin's claim that subjects of plain verbs are licensed by a totally different mechanism—is disconfirmed by the findings in this dissertation. ABKN (1992, 1994) had previously argued, on independent grounds, that her proposal made predictions that failed to hold. The findings reported here support ABKN's claim that Agreement licenses null subjects uniformly in ASL.

However, the licensing of null subjects or objects by Agreement could not be fully understood until the non-manual correlates of Agreement were recognized and identified. That is one major contribution of this dissertation. In light of the analysis presented in earlier chapters, it now becomes clear—for the first time—that the licensing of a null subject or object in ASL requires some expression of Agreement. This expression may be morphological, as realized by manual verbal inflection (for verbs of the appropriate morphological class to bear such overt inflection) and/or by non-manual body lean (on verbs of all morphological classes), if our analysis of body lean is

correct. It also may be via a non-manual expression of the phi-
features contained in the head of the Agreement projections.

The licensing mechanism for null subjects and objects is the
same. Chapter 4 showed that null subjects occur only in sentences
that have some kind of realization of Subject Agreement, manually or
non-manually or both, a finding that lends support both to the
interpretation of head tilt as a non-manual correlate of subject
agreement and to the claim that Agreement licenses null subjects
generally in ASL.

The same principles extend to the licensing of null objects.
Despite claims by Lillo-Martin (1991) that null objects occur only
with agreeing verbs and not with plain verbs, in fact, null objects
occur with plain verbs as well, but only if there is non-manual
realization of object agreement. Recall the ungrammaticality of
sentences like the following:

    (7) * JOHN LOVE   pro

          'John loves (him/her).'

Such sentences become grammatical, however, in the presence of eye
gaze expressing object agreement.

$$\underline{\hspace{5cm}\text{tilt}_i}$$
$$\underline{\hspace{5cm}\text{gaze}_j}$$

(8)   JOHN$_i$ AGR-S$_i$ AGR-O$_j$ LOVE   pro$_j$

'John loves (him/her).'

$$\underline{\hspace{5cm}\text{tilt}}_\text{neu}$$
$$_\text{neu}\underline{\text{lean}_j}$$
$$\underline{\hspace{4cm}\text{gaze}_j}$$

(9)   JOHN$_i$ AGR-S$_\text{neu}$ AGR-O$_j$ LOVE   pro$_j$

'John loves (him/her).'
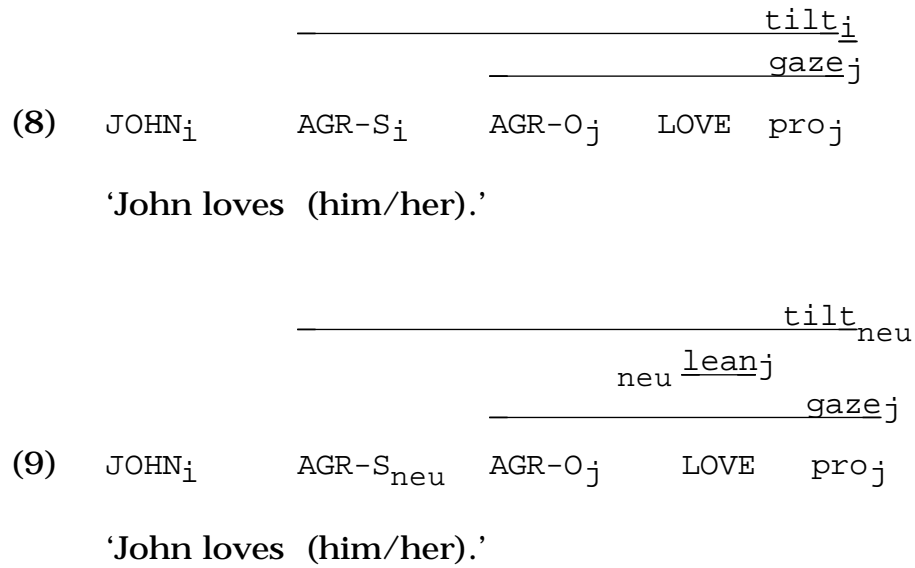
Thus, like manual object agreement morphology, the eye gaze that we analyze as an expression of the phi-features in the head of AGR-O can also license a null object.

7.2.3 Summary

The data just discussed suggest that

- subject and object agreement, realized either manually or non-manually, licenses null subjects and objects, respectively, in ASL;

- agreement projections are present in sentences that contain both plain verbs and agreeing verbs.

These data also support our claim that the use of head tilt and eye gaze in the examples we have been considering is, in fact, a non-manual expression of syntactic agreement.

7.3 Theoretical Considerations

There are several interesting implications of the present analysis for more general theoretical accounts of agreement, and there are, conversely, ways in which current theoretical models can provide possible explanations for phenomena in ASL that have thus far eluded understanding. Some of these issues will be addressed in the remainder of this chapter.

7.3.1 Status of Phi-Features and Agreement Projections

If our analysis is correct, then this suggests that in ASL, phi-features have essentially the same kind of non-manual grammatical correlates as have been found for other syntactic features, such as +wh and +neg. The distribution of these non-manual markings, to be discussed in Section 7.4, provides indirect support for the notion that phi-features have a theoretical status similar to that of other syntactic features.

Furthermore, at a time when the very existence of agreement projections has been called into question (see, e.g., Chomsky, 1995), the facts from ASL are of particular interest. If we assume that, like other features such as +neg and +wh, these phi-features do, in fact, reside in the head of a functional agreement projection, then we have a way to unite the distribution of the non-manual correlates of agreement and of other syntactic features. To that extent, the ASL evidence may therefore constitute indirect support for the existence of such projections (although, of course, different analyses of agreement might give rise to different accounts of these phenomena).

7.3.2 Feature Checking

The asymmetries observed in Chapter 4 concerning the relation between morphological inflection and non-manual agreement marking have been explained in terms of feature checking. The idea is that, generally in ASL, subject agreement features may either be unspecified or fully specified. Head tilt represents the non-manual expression of fully specified subject agreement features, while the more neutral, 1st-person like head position (without tilt) reflects subject agreement features that are not fully specified but that are compatible with any value.

If there is morphological agreement information present in an inflected form, then those agreement features must be checked against features that are contained in an Agreement head. So, if subject agreement features on the verb are fully specified (as is the case when there is overt morphological spatial inflection on the verb), then fully specified (and matching) agreement features must be contained in AGR-S. Thus, overt head tilt is the only non-manual correlate of subject agreement that is acceptable for use with overt, spatially agreeing subject verb inflection.[7] The neutral head position, reflecting subject agreement features that are not specified, cannot be used with such a verb, since the neutral position reflects subject person agreement features in AGR-S that are not fully specified, and such features would not be able to check the fully specified features on the inflected verb, as required. However, if the morphological inflection is not fully specified for subject agreement features (as is the case with plain verbs or for agreeing verbs when they are articulated with a spatially neutral starting position), then this is compatible with agreement features in AGR-S that are either fully specified or unspecified. While these observations are compatible

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[7] For the moment, we are leaving aside the cases where eye gaze is used to mark subject agreement.

with a variety of possible theoretical approaches to subject-verb agreement, the evidence may provide some indirect support for some mechanism like feature checking, since simple matching of features in Agreement heads and in verbal inflection would not be able to explain the asymmetries of the kind that we have observed and described for ASL.

7.3.3 Implicational Relationship between Expression of Subject and Object Agreement

All verbs that show overt morphological subject agreement also show morphological object agreement. In other words, morphological object agreement can appear alone, but once there is overt subject agreement you must have overt object agreement.

While this implicational relationship has been noted in the literature (see, e.g. Padden, 1983, 1988; Supalla, in prep.),[8] no explanation for this generalization has been offered. One possible explanation may be found in the idea that inflected forms that bear fully specified agreement features need to raise to the appropriate heads of agreement projections to check those agreement features.

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[8] These researchers do not, however, discuss non-manual correlates of agreement.

If we combine this with an observation (for which we have no explanation) that subject agreement features in ASL may either be fully specified or not, while object features, if they are present, are necessarily fully specified, then we may be able to understand why this is so. Let's consider the two cases separately.

7.3.3.1 Overt Subject and Object Agreement Inflection

If inflected forms that raise to AGR-S necessarily first pass through AGR-O, as required by the Head Movement Constraint (see Travis, 1984 and Chomsky, 1986), then an inflected form with specified subject agreement features that need to be checked would first have to pass through AGR-O on its way to AGR-S. However, for reasons of economy, this first movement should only occur if the verb has object agreement features that need to be checked. If object agreement features are lacking in the inflected verb, then it would fail to raise to AGR-O, and would therefore not be in a position to be able to raise to AGR-S. Thus, in order to raise to AGR-S to check subject agreement features, the verb would necessarily have already raised to AGR-O to check its object agreement features; such a verb would, therefore, be specified for both AGR-S and AGR-O features.

7.3.3.2 Overt Object Agreement Inflection Only

However, consider the case of a verb that has only AGR-O features specified. It could check those features by raising to AGR-O. In the absence of AGR-S features requiring checking, it would not need to (and in fact, could not) raise to AGR-S. This situation would result in a verb that is specified for AGR-O features but not for AGR-S features.

This is one possible explanation for the observed implicational relationship found for morphological marking on verbs in ASL. This explanation remains speculative, and is worth further investigation. However, if it is correct, then this means that there are essentially two possibilities for inflected verbs in ASL: either they raise to AGR-O or they raise through AGR-O to AGR-S.

Note that the arguments just presented about the verb raising to AGR-O and AGR-S do not determine whether the Verb raises overtly (by s-structure) or covertly (at a later stage in the derivation). This is somewhat hard to ascertain, in fact, since there is no intervening material between the AGR heads and the Verb. We will return to this issue in section 7.4 after brief investigation of the basic structure of IP in ASL. We do know, however, from the

position of the verb in ASL relative to negation, that the verb does not raise to any higher position by s-structure.

7.3.4 Structure of IP

What information can be gleaned about the structure of IP on the basis of the distribution of these non-manual markings of agreement?

7.3.4.1 Relative Order of AGR-S and AGR-O

It does appear that the head begins to tilt before the eyes change position. However, because movement of the head requires more time than movement of the eyeballs, in fact, the final head position is attained after the eye gaze shift has been completed. This order of articulation is at least consistent with the well-established crosslinguistic finding that AGR-S dominates AGR-O (an assumption upon which the analysis in the previous section was based).

As was pointed out, however, in Chapter 6, specifically in those cases (with a 1st person object) where AGR-S is expressed by eye gaze and AGR-O is expressed by head position, the relative order of articulation is the reverse. Recall also that, in an intransitive

construction, where there is a single argument with which agreement is expressed and where both head tilt and eye gaze may be used for that purpose, they occur simultaneously.

These articulatory differences strongly suggest that there is some syntactic significance to the order of articulation in these cases, and specifically that AGR-S dominates AGR-O.

7.3.4.2 Position of Agreement Marking with Respect to Other Functional Projections

As mentioned in Chapter 5, eye gaze reflecting the object's person features may occur in positions other than the basic position immediately preceding the VP. It may optionally occur instead before any of the following elements in a simple clause, if they are present:[9]

- a modal or lexical tense marker

- the aspect marker FINISH (indicating completion of the action)

The ability of eye gaze to appear in positions other than the AGR-O position (where we postulate that the features it reflects are

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[9] There have been a variety of proposals as to the relative order of TNS and AGR-S. If our analysis is correct, then AGR-S comes below TNS in ASL.

found) initially had not been recognized in ABKN's early (1992) exploration of head tilt and eye gaze. They did not realize that the head tilt and eye gaze could in fact occur at different points in the sentence, in part because they did not realize that head tilt and eye gaze were marking distinct syntactic agreements. They associated both with an expression of subject agreement.[10] Therefore, when they observed eye gaze occurring prior to the Aspect marker, FINISH, they took that to be evidence that AGR-S was in a higher projection than Aspect Phrase. Our current understanding allows us to reinterpret those sentences as involving some kind of "climbing" rather than as revealing of the underlying relative order of Aspect and the agreement nodes. Thus, in cases where eye gaze precedes FINISH, we now believe that this does not reflect the underlying position of the agreement nodes. Rather, Aspect in fact occurs higher than AGR-S and AGR-O,[11] as shown in the tree in Chapter 1, and that

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[10] Because head tilt and eye gaze normally co-occur, ABKN (influenced by prior work on role prominence by Kegl) interpreted these non-manuals as a unitary marking and had failed to recognized the importance of distinguishing the syntactic functions of these two different non-manual behaviors.

[11] This ordering is different from what has been suggested for other languages, suggesting that ordering of functional projections may be subject to parametric variation.

the possible alternative ordering of eye gaze relative to Aspect is a result of the kind of "climbing" described in Chapter 5.[12]

7.4 Comparison between Non-manual Marking of Agreement and Other Non-manual Grammatical Marking

The proposal that eye gaze and head tilt constitute the non-manual correlates of phi-features contained in AGR-S and AGR-O, in conjunction with the generalization previously established (ABKN, 1992) about the distribution of non-manual grammatical marking generally, goes a long way to explaining the distribution of head tilt and eye gaze associated with agreement in IP. This section will consider the distribution of non-manual markings of agreement in comparison with other non-manual grammatical markings discussed in Chapter 2, and consider the significance of these facts for the syntactic analysis of verb agreement in ASL.

First, we consider the question of when non-manual marking is absolutely required. Second, we consider the spread of non-manual marking.

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[12] The data presented in Chapter 5 raise many interesting questions in relation to clitic climbing, which are, however, beyond the scope of this dissertation.

7.4.1 When is non-manual marking required?

We have seen that the occurrence of non-manual grammatical marking of negation, questions, etc., is to some degree optional, although it tends to occur. If, however, there is a grammatical feature (such as +neg) that is not expressed by any manual material (such as the sign NOT, in that particular instance), then the non-manual instantiation of that feature is absolutely required. We will now consider when non-manual agreement marking cannot be omitted, taking the case of object agreement marking first, and then looking at subject agreement marking.

7.4.1.1 Object Agreement Marking

As we have seen, some verbs are overtly inflected for object agreement, and in this case there is some overt manual instantiation of the object agreement features. In such cases, no non-manual expression of object agreement (whether by eye gaze or body lean) is required. With plain verbs, however, there is a strong preference to have object agreement manifested: either by a body lean (however slight) or else by eye gaze. This provides further confirmation for

our interpretation of head tilt and eye gaze as non-manual correlates of syntactic agreement.

This observation is also consistent with what was found for other grammatical markings, in that the non-manual realization of object agreement is required unless the same information is expressed manually. Agreement marking is a bit more complex than the marking of +neg or +wh, because, even if there is no manual material in the AGR-O node, there may nonetheless be a redundant expression of this object agreement information elsewhere, to the extent that these features are overtly expressed on the verb. This is precisely the only context in which it becomes possible to omit the non-manual correlate of object agreement, as just stated. With plain verbs, eye gaze may be omitted just in case the inflectional information about object agreement is expressed by body lean; thus some non-manual realization of object agreement is required in the absence of any manual marking of object agreement.[13]

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[13] As mentioned earlier, there may, however, be particular situations in which non-manual marking generally may be omitted—either for affective purposes or for "whisper" type interactions where there is an attempt to keep information from being revealed. We are abstracting away from such cases for purposes of the present discussion, but it appears that agreement marking works in the same way as other non-manual grammatical markings in this mode: namely, it can be omitted in "whisper mode" even in contexts where it would normally be required.

7.4.1.2 Subject Agreement Marking

The question of the extent to which the non-manual correlate of subject agreement marking may be absent is a difficult one to resolve with certainty. While it is clear that the head positions described in this dissertation occur with very great frequency in signing, there is some variation in the extent of the head tilt associated with overt marking of subject agreement, or the degree of the head movement associated with the unmarked head position. Since these realizations can be extremely subtle, it is sometimes difficult to tell whether the non-manual correlate is there to a slight degree or absent. It is possible that the non-manual marking of subject occurs to some degree in every sentence. However, this cannot be determined without further study.

7.4.2 When can or must the non-manual marking spread?

As discussed in Chapter 1, a non-manual marking associated with syntactic features residing in the head of a functional projection optionally spreads over its c-command domain. There is a strong preference for non-manual marking to be expressed with manual material; therefore the otherwise optional spread occurs obligatorily if such spread is required to enable the non-manual material to co-

occur with manual signing. Let's consider how this relates to the spread of non-manual markings of agreement.

If V-raising has not occurred by s-structure, then the AGR-S and AGR-O nodes contain no manual material at s-structure. This would then predict obligatory spread of head tilt and eye gaze, when they mark agreement, over the c-commanded VP. The spread of agreement marking within simple sentences and complex sentences will now be considered in turn.

7.4.2.1 Simple Sentences

The generalization about the distribution of other non-manual grammatical markings is that they optionally spread over the c-command domain of the node with which the features are associated (this spread being obligatory if it is required to ensure that they are borne by manual material). One interesting difference is observed, in this respect, with head tilt and eye gaze. While spread over the entire c-command domain (i.e., the VP) is always possible in a simple sentence, the non-manual markings of agreement may end a little before the end of the VP. The head may return to normal position and the eyes may return to the addressee a little before the VP has been completed. This may be explained in one of a number of ways.

One possibility is that this is a kind of anticipatory phenomenon, in that the signer is preparing to proceed to the next utterance. Another possibility is that there is some interference from discourse-level functions. For example, eye gaze is used in an important way for turn-taking (see, for example, Baker, 1976a, and Baker and Padden, 1978). This might explain why the eye gaze does not always remain until the bitter end of the VP.

We have already investigated one specific construction in which the eye gaze may stop even before the verb's articulation is complete; this is allowable just in case there is a significant amount of other object agreement information overtly expressed. In particular, the eye gaze may stop early if the object agreement is manifested by body lean or manual verb inflection; thus the information continues to be expressed over the relevant syntactic domain, although by other means.

Thus, there are cases where the spread does not extend completely over the c-command domain (although spread over the c-command domain is always possible in these cases). However, these exceptions to the expectation that the non-manual marking should

extend over the c-command domain can perhaps be understood in terms of the considerations just mentioned.

7.4.2.2 Complex Sentences

The distribution of non-manual subject agreement marking in complex sentences was discussed in Chapter 4. The significant observation is that the spread of agreement marking over the c-command domain of the Agreement head seems to be limited to the clause associated with the agreement marking. If the embedded clause has a subject disjoint in reference, the non-manual subject marking from the main clause cannot extend into the lower clause. In cases where the upper and lower clause have coreferential subjects, there is the appearance of spread, but this may better be understood in terms of perseveration, i.e., the subject agreement being expressed independently in the two clauses, but with a single, continuous articulation.

With respect to object agreement, like subject agreement, this is expressed only locally, within the main clause. Thus an eye gaze marking object agreement in the main clause cannot extend over an embedded clause.

However, in Chapter 5, instances where the object agreement marking from an embedded clause may occur with the higher verb have been observed. This phenomenon has interesting similarities with clitic climbing in languages that allow it, although we are not analyzing these markings as clitics.[14] Rather, we are assuming that the agreement features associated both with clitics and with the non-manual expressions we have been studying are in fact engaging in a similar kind of raising.

7.4.3 Alternative Analysis

There is, however, another possible account of the distribution of non-manual correlates of subject and object agreement. We have assumed thus far that, in ASL, verbs do not raise to AGR-O and AGR-S by s-structure, and, therefore, that at s-structure, there is no manual material in these nodes, thus necessitating the spread of non-manual marking over the c-command domain (to satisfy the requirement that non-manual marking be borne by manual

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[14] It is clear, as discussed in Chapter 5, that there are similarities between clitics and the non-manual expression of agreement features similar to those instantiated by clitics in other languages. In distinguishing this agreement marking in ASL from clitics, the main point is that this marking occurs on a separate non-manual tier, and that the features that have associated non-manual correlates are not limited to phi-features in ASL, but include such features as +neg and +wh.

material). However, unlike the cases of other non-manual correlates

of syntactic features, spread of head tilt and eye gaze over the entire

c-command domain, while consistently possible, is not absolutely

required. We have seen that the non-manual correlates of subject

and object agreement, while they may extend over the entire

VP, need not; but they are necessarily manifested over the verb.[15]

One possible explanation for this is that, in such cases, the Verb has

actually raised by s-structure into the AGR projections. Clearly the

verb does not raise to Tense, as indicated by its position relative to

sentential negation. However, the question of whether it has raised

from V to the AGR projections is a difficult one to ascertain. What

kind of predictions would raising make? First, this would predict

that, in fact, since manual material has become available for

realization of non-manual correlates of agreement, the agreement

marking could be manifested either only on the Verb, or else it could

optionally spread over the remainder of the Verb's c-command

domain, i.e., the VP. That is an accurate statement of the facts we

have observed about the spread of head tilt and eye gaze.

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[15] We have suggested that this may be explained by other factors involving the way the head and eyes are used in ASL.

However, this approach would predict that the non-manual manifestation of agreement features should occur simultaneously with the articulation of the verb. This is not the case. As has been previously discussed, the head tilt and eye gaze marking sentential agreement necessarily precede the articulation of the verb, and their relative order corresponds to their function, with AGR-S (whether expressed by head tilt of eye gaze) preceding AGR-O (in whatever form its non-manual expression takes). We provisionally take this fact to be significant and revealing of the s-structure configuration, although further research may lead to a better understanding of this phenomenon. We note that in the other cases investigated to date where non-manual marking co-occurs with manual material, the non-manual marking does not precede the manual sign in question (abstracting away from anticipatory phonological effects)[16], and certainly does not reach its maximum articulation before the manual sign begins, but rather appears to reach maximum articulation by the end of the manual sign. On the other hand, cases involving

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[16] However, in considering the distribution of eye gaze with respect to other manual and non-manual markings, it is apparent that the eyes reach their target position much more quickly than other articulators. Thus, if eye gaze begins at the same time a signer starts to produce a manual sign, it may appear the eye gaze, in fact, precedes the sign itself.

obligatory spread from a functional head node that lacks manual

material do involve a discernible interval associated specifically with

the non-manual marking. For example, with an in situ wh-question,

where the wh-marking spreads obligatorily from the +wh

Complementizer over the c-commanded IP, there is a very strong

tendency to hold the non-manual marking after the IP has been

articulated, as shown in the following sentence:

$$\overline{\qquad\qquad\qquad\qquad\qquad}^{\text{wh}}$$
(10) [WHO   SEE   MARY]$_{\text{IP}}$ [+wh]$_{\text{C}}$

'Who sees Mary?'

Here, the wh brow furrow would be maintained at the end of the

sentence. This is comparable to the appearance of head tilt and eye

gaze expressing subject and object agreement before the Verb is

articulated. In such cases, the head has reached its maximum tilt

before the Verb begins. We will return to this observation when we

consider the distribution of agreement marking internal to DP, where

we will suggest that the difference within DP—in that the non-manual

markings of DP-internal agreement co-occur with the Determiner

rather than precede it[17]—is explained by the presence of manual

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[17] This is easier to observe for head tilt than for eye gaze, for the reasons
discussed in the previous footnote.

material, namely the determiner, in the head of the agreement projection.

7.4.4 Interaction with Other Non-Manual Markings

Non-manual correlates of agreement can cooccur with a wide variety of other non-manuals. For example, this kind of agreement marking is found regularly in yes-no questions, wh-questions, etc..[18]

7.4.5 Conclusions about Distribution of Non-Manual Agreement Marking

Many aspects of the distribution of the head tilt and eye gaze used as correlates of person features in AGR-S and AGR-O, as described in Chapters 4, 5, and 6, fall out of more general principles about the distribution of non-manual grammatical marking in ASL.

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[18] However, there is one interesting interaction that we have noted, in which another non-manual—negative marking—was temporarily masked by the head tilt marking subject agreement.

$$\begin{array}{c} \overline{\hspace{5em}\texttt{tilt}_i} \\ \overline{\hspace{4em}\texttt{gaze}_j} \\ \underline{\texttt{neg}}\text{-----------}\underline{\texttt{neg}} \end{array}$$

(i)   BILL   NOT   AGR-S$_i$ AGR-O$_j$ HIT$_j$ BOB$_j$

　　　Bill did not hit Bob.

In fact, the masking was total in the case of one informant, but only partial for another. For this second informant, the negative head shake was greatly reduced during the overt head tilt and then returned to its more intense form immediately after.

Those are:

- The point at which the head tilt and eye gaze begin—namely in the position after the subject, after any lexical tense marker or modal, after a negative element if there is one, but before the VP—is explained by association of these markers with the AGR-S and AGR-O heads, which precede VP.

- The spread of these markings is obligatory. This is predicted by the assumption that there is no manual material contained in the AGR-S and AGR-O nodes in ASL, since we have argued that verbs have not raised by s-structure.

- These markings may spread over the entire c-command domain of the AGR-S and AGR-O nodes. That is, these may be manifested until the end of the VP.

- The maximum intensity of these markings occurs at the position where they are postulated to occur: immediately before the VP. With respect to head tilt, the maximal degree of head tilt is reached before the VP, and gradually toward the end of the VP, the head begins to return to a more neutral position. With respect to eye gaze, the eyes are fully directed to object locus before the VP begins, and again, as the VP

progresses, the eye gaze may begin to return to a more neutral

position.

What is not automatically explained by previous generalizations

about non-manual grammatical marking in ASL, are the following

observations, for which we have offered some speculation in this

section:

• The marking may in some cases end sooner than the end of

the VP.

• The marking does not extend over indefinitely large syntactic

domains. For example, we have seen that the spread of AGR-S

marking is restricted to the main clause, and does not spread

into an embedded clause containing a subject not coreferential

with that of the main clause.[19]

Certain other observations about the distribution and specific form

that these markings may take follow from other more general facts

as well. For example, perseveration was shown to account for the

appearance of spread of agreement marking from the main clause

over an embedded clause with a coreferential subject. Similarly,

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[19] In fact, however, there may be other locality restrictions that hold for other non-grammatical markings. This is a subject for further research, now in progress by Bahan, Kegl, MacLaughlin, and Neidle.

something analogous to clitic climbing appears to occur, thus enabling

non-manual object marking associated with an embedded clause (in

the appropriate type of construction) to appear earlier than it would

otherwise. The orientation of the head and eyes to the position in

space associated with the person features of the subject and object is

consistent with the way in which information about person features

is expressed generally in ASL. Other cases in which agreement

features are expressed in terms of orientation to the locus in space

associated with them are found in pronominal reference and

phenomena that occur within DP (to be addressed in the next

chapter), as well as with manual morphological marking of subject

and object agreement.

7.5 Conclusion

We have thus demonstrated that head tilt and eye gaze have

(among their other functions) a use as correlates of the person

features associated with AGR-S and AGR-O within IP. They are

associated with phi-features postulated to occur in the nodes that

head the syntactic agreement projections in IP, and they spread over

the appropriate syntactic domain, consistent with findings about the

distribution of other non-manual correlates of syntactic features.

In the next chapter, we will examine similar functions of head tilt

and eye gaze internal to DP. Finally, in Chapter 9, we will consider

how the markings at the level of DP and IP interact.

CHAPTER EIGHT

NON-MANUAL EXPRESSION OF AGREEMENT IN DP

In this chapter we examine the non-manual expression of agreement in the Determiner Phrase. Several recent studies suggest that, as in IP, Agreement projections are fundamental to the structure of DP as well. If this is the case—that both DP and IP include essential projections of AGR nodes that contain phi-features— then we might expect that the non-manual correlates of the phi-features we have already identified within IP might also appear internal to DP. Indeed, we do find head tilt and eye gaze occurring internal to DP, and with a distribution that can be explained in terms of the generalizations that have been established for the spread of non-manual grammatical marking generally in ASL.

This chapter investigates non-manual correlates of phi-features within DP. First, section 8.1 provides a bit of background about the structure of DP, with specific reference to ASL. Section 8.2 then describes the occurrence of head tilt and eye gaze in DP. Chapter 9 will examine the interaction between DP and IP agreement marking.

8.1 The Structure of DP

8.1.1 Agreement Projections within DP

It is now generally accepted that Determiners head the DP. There has been a great deal of research with regard to the internal structure of DP (Szabolcsi, 1983-84, 1987; Hellan, 1986; Giorgi and Longobardi, 1991; Ouhalla, 1991; Valois, 1990 and 1991; Bernstein, 1993; Radford, 1993; Ritter, 1991; Grosu, 1988; e.g.), and while there are still open questions, many researchers now consider that the Determiner Phrase is projected from Agreement heads (i.e., from heads that contain phi-features). The pronoun, which Abney argued (following Postal, 1969) occurs in the Determiner head, expresses the phi-features associated with the main noun (or pronoun) in the phrase. It is, however, also possible to find agreement phenomena that involve a possessor as well.

With respect to ASL, BKMN (1995) have identified a set of determiners, which they argue appear in the head position of the DP. Their proposal is summarized in the next subsection. These determiners can also function pronominally (in the absence of an overt NP following the determiner). DP's in ASL may also contain

possessor phrases. It will be shown in section 8.2 that the phi-features contained in the agreement heads associated both with the possessor phrase and with the main NP in the DP have precisely the same non-manual correlates that were associated with agreement within IP: head tilt and eye gaze. This finding provides strong confirmation for our interpretation of head tilt and eye gaze as non-manual correlates of syntactic agreement, as well as providing some crosslinguistic (and crossmodal) support for the syntactic analysis of DP in terms of agreement projections.

8.1.2 Structure of DP in ASL

As discussed earlier, the systematic use of space for establishment of person reference has received a great deal of attention in the literature. One of the most common ways in which this occurs involves the use of the index finger to point to the locus associated with a specific referent. Within a nominal phrase, this index may occur independently (functioning pronominally), or it may precede the NP, follow the NP, or occur both before and after the NP. The difficulties in differentiating the various uses of such "indexes" may partially explain the fact that the status of these indexes had

not been clearly characterized in the prior literature. BKMN (1995)

summarize the claims that had been made about the existence of

determiners in ASL, and these range from the claim that ASL does

not have determiners to the suggestion that such indexes "may"

function like determiners.[1] What BKMN (1995) suggest is that there

is a fundamental distinction between the pre-nominal index, which

functions as a definite determiner, and the post-nominal index,

which has a more adverbial function. Thus, a phrase like (1) would

be analyzed in a way comparable to the French and Norwegian

examples in (2) and (3).

    (1)   IX MAN IX
           'the/that man over there'

    (2)   cet homme-là
           'that man there'

    (3)   den mannen der
           'that man there'

---

[1] For example, De Vriendt and Rasquinet (1989) claimed that there is no clear marking of the semantic notions associated with determiners, such as definiteness, specificity, mass/count, or genericity. Others (such as Wilbur, 1979; Hoffmeister, 1977, 1978a) have suggested that pre-nominal and post-nominal indexes might be definite determiners. Zimmer and Patschke, 1990, proposed that these indexes are determiners but that they do not carry definiteness.

The confounding factor in ASL is that the determiner and the
adverbial are homophemous, which has made it difficult to
distinguish between them. BKMN (1995) argue, based on semantic
distinctions, that only the pre-nominal index is a true determiner.
In the next section, we consider the non-manual marking that may
co-occur with the determiner, and the possible spread of this
marking over its c-command domain. We show that, as was seen
with IP's in which a single referential NP is relevant, in the case
where the DP contains a single referential NP, either of the two non-
manual markings for agreement is available: the determiner may be
accompanied by eye gaze (to the locus in space associated with the
person phi-features of the main noun), head tilt (to that same
location), or both. We then consider the case of DP's that contain
possessor phrases.

8.2 Occurrence of Non-manual Correlates of Agreement within DP

8.2.1 Determiner Phrases with Determiners

8.2.1.1 Definite Determiners

Consider the simple case of a DP that consists solely of a definite determiner index (IX) and a following noun (or NP).

(4) IX_i MAN_i

        'the/that man'

In this case, while no non-manual marking is required, it is possible to find eye gaze to the location in space to which the index points, that location associated with the person features of MAN. This eye gaze may appear solely over the index, or it may spread over the NP c-commanded by the head Determiner.[2]

        $\underline{eg_i}$

(5) IX_i MAN_i

        'the/that man'

---

[2] In this chapter, to save space, "eye gaze" will be abbreviated as "eg" and "head tilt" will be abbreviated as "ht."

$$\overline{\quad\quad\quad\text{eg}_i}$$

(6)   IX$_i$ MAN$_i$

       'the/that man'

It is also possible to find head tilt toward the same location, with the

same distribution:

$$\underline{\text{ht}_i}$$

(7)   IX$_i$ MAN$_i$

       'the/that man'

$$\overline{\quad\quad\quad\text{ht}_i}$$

(8)   IX$_i$ MAN$_i$

       'the/that man'

It is possible for both of these markings to co-occur, as shown here:

$$\underline{\text{ht}_i}$$
$$\underline{\text{eg}_i}$$

(9)   IX$_i$ MAN$_i$

       'the/that man'

$$\overline{\quad\quad\quad\text{ht}_i}$$
$$\overline{\quad\quad\quad\text{eg}_i}$$

(10)   IX$_i$ MAN$_i$

       'the/that man'

Notice that there is one difference immediately apparent between what we find in IP and DP with respect to these non-manual correlates of agreement. Unlike the case of AGR-S and AGR-O, we have a case here where there is manual material (i.e., IX) that can bear the non-manual marking. Thus, spread over the c-command domain is optional, rather than obligatory. This difference would be expected, and is an automatic consequence of the fact that there is manual material available to bear the eye gaze or head tilt.

In the absence of an overt determiner, the non-manual marking, if present, normally is required to spread over the entire c-command domain, i.e., the NP. The only exception to this is a special "whisper" register, where eye gaze actually substitutes for the index,[3] in order to minimize the information that is perceptible to others in the area.[4] In such cases, the eye gaze may remain over the c-

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[3] In such cases, a head tilt may accompany the eye gaze, but would not normally occur independent of the eye gaze.

[4] In this "whisper" register, there are other instances in which non-manuals occur without manual signs. This sometimes occurs with a negative or wh expression, for example: in the "whisper" register, the manual component is sometimes omitted (but inferred from the non-manual marking).

commanded NP as well.[5]

(11) $\underline{\qquad\text{eg}_i}$
       MAN_i

       'the/that man'

(12) $\underline{\quad\text{eg}_i}$
       MAN_i (acceptable only in the "whisper" register)

       'the/that man'

(13) $\underline{\qquad\qquad\text{eg}_i}$
       MAN_i (acceptable only in the "whisper" register)

       'the/that man'

Just as it is possible to find a DP that contains only the main NP but no overt Determiner, it is also possible to find the Determiner with no overt NP following. This accounts for the pronominal use of the index in ASL (see BKMN, 1995). In such cases, as expected, the index may be optionally accompanied by either head tilt or eye gazeor both. In the "whisper" mode, it is also possible to use eye gaze (with or without head tilt) in lieu of the index. Note that for the moment, agreement marking associated with AGR-S in IP is omitted

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[5] Note that in example (11), the eye gaze starts slightly before the noun MAN is signed, and remains in place during the articulation of MAN.

from the gloss notation in the following examples. The interactions

between DP-internal and IP-internal agreement marking will be

discussed in Chapter 9.

        <u>eg$_i$</u>

(14) IX$_i$ ARRIVE

       'S/he arrives.'

        <u>ht$_i$</u>

(15) IX$_i$ ARRIVE

       'S/he arrives.'

        <u>eg$_i$</u>
        <u>ht$_i$</u>

(16) IX$_i$ ARRIVE

       'S/he arrives.'

        <u>eg$_i$</u>

(17)   ARRIVE   ("whisper" register)

       'S/he arrives.'

8.2.1.2 Indefinite Determiners

As discussed in BKMN (1995), in addition to the definite

determiner, IX, there is also another sign used as an indefinite

determiner: SOMETHING/ONE. This is a sign articulated with the

index finger pointed upward while the whole hand undergoes a small

circular movement with the palm remaining oriented towards the

signer. When this is used with a non-specific referent, it may be

accompanied by the same eye gaze that was discussed in Chapter 5

as occurring to mark object agreement with non-specific objects.

That is, the eyes do not fixate to a particular point in space but

rather "rove" around a broader area. There is a tendency for this

gaze to rove upward. This is illustrated in the following examples,

which also show that this eye gaze may occur either over the

determiner alone or else it may spread over the entire DP.

```
                 _____wandering gaze
    (18)  SOMETHING/ONE   WOMAN    ARRIVE
```

‘Some/a woman arrives.’


```
          wandering gaze
    (19)  SOMETHING/ONE   WOMAN    ARRIVE
```

‘Some/a woman arrives.’

This contrasts with the eye gaze used with the same determiner

when there is a specific referent. In this case, the eyes gaze toward

the location in space associated with that referent's phi-features, in
the same way as if the referent were definite:

                          $\overline{\qquad\qquad\qquad\qquad\text{eg}_i}$

(20) SOMETHING/ONE WOMAN$_i$ ARRIVE

     'Some/a (specific) woman arrives.'

                  $\overline{\qquad\qquad\text{eg}_i}$

(21) SOMETHING/ONE   WOMAN$_i$ ARRIVE

     'some/a (specific) woman arrives.'

8.2.2 "Double Index" Construction

An interesting thing happens in constructions that involve both
a pre-nominal and a post-nominal index. As already mentioned,
BKMN (1995) have analyzed those constructions as involving a
definite determiner (the pre-nominal index) plus a more adverbial
final index.

(22) IX MAN IX

     'the/that man there'

Eye gaze may be used in conjunction with either index. Thus, it is
possible, in principle, to have eye gaze associated with either the
determiner (as illustrated in the previous subsection) or with the
final adverbial index:

$$\overline{\text{eg}_i}$$
(23) IX_i MAN_i IX_i

'the/that man there'

$$\overline{\text{eg}_i}$$
(24) IX_i MAN_i IX_i

'the/that man there'

One might, therefore, expect, to find eye gaze occurring with the two
indexes independently. However, in such a case, perseveration
occurs, and the eye gaze spreads over the entire DP.

$$\overline{\text{eg}_i} \qquad \overline{\text{eg}_i}$$
(25) * IX_i MAN_i IX_i

$$\overline{\hspace{3cm}\text{eg}_i}$$
(26) IX_i MAN_i IX_i

'the/that man there'

8.2.3 Determiner Phrases Containing Possessors

Now let us consider the situation in which we have both a head NP and a possessor NP (which we assume provisionally to be in Spec, DP position; see MacLaughlin, in prep. for further analysis of this construction). If DP and IP really do have similarities in structure, we might expect to find cases, comparable to what we find with transitive clauses, where we have two referential NP's within DP with which agreement could be expressed.[6] Indeed, in such cases, it is possible to find head tilt associated with the possessor DP (the "subject" of the DP), and eye gaze associated with the (second) NP.

In ASL, there is frequently a possessive marker that follows the possessor DP and that precedes the NP. We gloss this as POSS. This is similar to an index, in that it is produced in the location in the signing space associated with the phi-features of the possessor, but it is articulated with an open hand instead of a pointed index finger. POSS may also occur without an overt DP possessor:[7]

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[6] Although within the DP framework, an NP by itself is not normally considered referential, in this case we are focusing on the fact that the lower NP is associated with its own phi-features and occurs with an associated AGR projection. Thus the DP contains two NP's having distinct phi-features, and it is in this sense that we describe such a DP as involving two referential NP's.

[7] Other variations on this word order are possible; see MacLaughlin (in prep.).

(27) JOHN$_i$ POSS$_i$ FRIEND

　　'John's friend'

(28) 　　　POSS FRIEND

　　'his friend'

In such constructions, it is possible to find a head tilt associated with the possessor (pointing to the phi-features associated with JOHN) as well as eye gaze associated with the phi-features of the main NP.

$$\overline{\qquad\qquad\qquad ht_i}$$
$$\overline{\qquad\qquad eg_j}$$
(29) JOHN$_i$ POSS$_i$ FRIEND$_j$

　　'John's friend'

$$\overline{\quad ht_i}$$
$$\overline{\qquad eg_j}$$
(30) JOHN$_i$ POSS$_i$ FRIEND$_j$

　　'John's friend'

In this case, the head tilts in the direction of the person features associated with JOHN, reaching the maximum tilt over POSS. The head would normally remain in that tilted position while the

following NP is articulated (as in (29)), although it need not.

Especially if POSS is emphasized,[8] the head tilt may occur only over

POSS.[9]

Thus, we do, in fact, find the same kinds of non-manual

correlates of agreement both within IP and DP. Namely, the

inventory of possible ways to mark agreement non-manually

consists of either head tilt or eye gaze toward the locus associated

with the person phi-features of the relevant NP. If there is a single

NP in the relevant domain (either DP or IP), then either device can

be used to mark agreement with that NP. However, if there are two

NP's in the domain, head tilt is used preferentially for the "subject",

and eye gaze may be used for the second NP.

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[8] This is similar to what has been found for other non-manuals. For example, the negative marking normally spreads over the c-command domain of NOT, but, especially when NOT is emphasized, it may occur solely over NOT.
The same preference for spread is also found in examples (7) and (8).
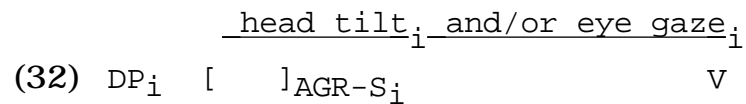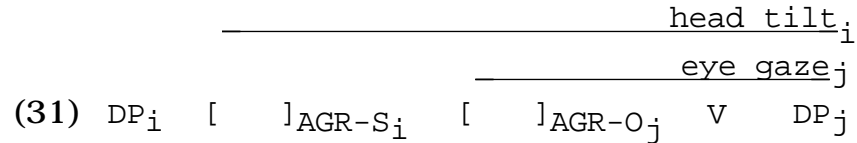
[9] There is a very interesting third possibility, in which the head appears to continue moving a bit further (in the same direction that it had been tilting over POSS) over FRIEND. One possible analysis of this additional movement is that this is the realization of the headnod that is associated with stress on a constituent, but this is beyond the scope of the current dissertation.

8.3 Parallels between DP and IP

8.3.1 Distribution of Head Tilt and Eye Gaze

With respect to the distribution of head tilt and eye gaze, there is a striking parallel within DP and IP. Typical patterns are illustrated in (31), for a transitive clause, and in (32) for an intransitive. These compare with a DP containing a possessor, illustrated in (33), and a DP without a possessor, as shown in (34).

Within IP

$$\underline{\hspace{10em}\text{head tilt}_i}$$
$$\underline{\hspace{6em}\text{eye gaze}_j}$$

(31) DP_i [   ]$_{AGR-S_i}$ [   ]$_{AGR-O_j}$ V DP_j

$$\underline{\text{head tilt}_i \text{ and/or eye gaze}_i}$$

(32) DP_i [   ]$_{AGR-S_i}$ V

Within DP

$$\underline{\hspace{12em}\text{head tilt}_i}$$
$$\underline{\hspace{7em}\text{eye gaze}_j}$$

(33) DP_i [POSS]$_{AGR_i}$ [   ]$_{AGR_j}$ NP_j

$$\underline{\text{head tilt}_i \text{ and/or eye gaze}_i}$$

(34)   [Det]$_{AGR_i}$ NP_i
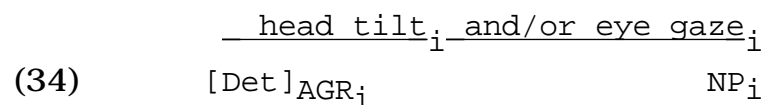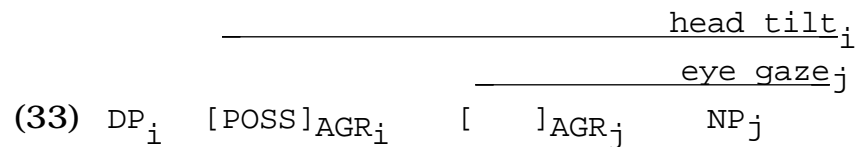
Thus, the distribution of the non-manual markings in a transitive clause is strikingly similar to that found in a DP with a possessor, while the pattern in an intransitive clause resembles that found in a DP lacking a second referential NP element.[10]

However, there is one interesting difference between the pattern exhibited in DP and IP. Within IP, we saw that the head tilt and eye gaze occur prior to the articulation of VP. We suggested, in Chapter 7, that this is because the Verb has not raised by s-structure, and therefore the AGR-S and AGR-O nodes lack other manual material over which the non-manual markings can be expressed. Therefore, as predicted, the markings spread over the c-command domain (in order to be borne by manual material; the spread would otherwise be optional). However, within DP, we see that, when there

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[10] As Tarald Taraldsen brought to our attention, Aleut exhibits a similar kind of parallel. According to Bergsland and Dirks (1981), the number agreement marking on Aleut nouns with possessors is identical to the object agreement marking on verbs, otherwise like the subject agreement marking on verbs. Abney (1987, Chapter II) notes a similar fact about Yup'ik, namely that possessive noun phrases pattern like transitive clauses and non-possessives with intransitives, with respect to agreement morphology; he also discusses similar phenomena in other languages.

Bittner and Hale (1996:60) also report parallels between DP and IP, stating that:

> Many languages which employ the ergative Case use it both for the subject of a transitive VP and the subject of a possessed NP, i.e., the possessor. This holds not only for classical ergative languages, like Intuit, but also for languages with three-way or split Case systems...

is manual material, such as a determiner (IX) or possessive (POSS), any non-manual marking occurs with the manual sign, rather than a little bit before it. We suggest that this is because there is, in this case, manual material occupying the DP-internal AGR head with which the phi-features expressed by the non-manual marking are contained. As we find in other instances where manual material fills the head of the functional projection with which the non-manual marking is associated, the non-manual reaches its maximal degree of expression at the end of the articulation of that manual material. Here as well, the head reaches its maximal tilt by the end of the articulation of IX or POSS, for example. In addition, while spread over the c-command domain, the following NP, is quite common, it is also possible to have the non-manual marking solely over IX or POSS, as shown in (35) and (36).

Within DP

$$\text{(35)} \quad \overline{\text{DP}_i \quad [\text{POSS}]_{\text{AGR}_i}} \quad [\quad]_{\text{AGR}_j} \quad \text{NP}_j$$

$$\text{(36)} \quad \overline{[\quad \text{Det} \quad]_{\text{AGR}_i}} \quad \text{NP}_i$$

ht over (35): ht_i

eye gaze over (35): eye gaze_j

over (36): ht_i and/or eg_i

This is what we expect, given the generalization about the spread of non-manual markings in ASL. Spread is optional in the case where there is manual material available over which the non-manual can be expressed. Thus, this one difference between the patterns of the distribution of head tilt and eye gaze in DP and IP follows directly from the Determiner or Possessor occupying the head of the higher of the two DP-internal agreement projections.

The situation within DP is actually quite a bit more complex than can be addressed here. MacLaughlin (in prep.) will provide a more comprehensive analysis. However, the preliminary results presented here suggest an intriguing parallel and provide further support for our interpretation of head tilt and eye gaze as non-manual correlates of the phi-features postulated to occur in agreement projections both in DP and IP.

8.3.2 Distinctions in Agreeing Forms

There are also parallels in the types of distinctions manifested in "subject" and "object" agreement in DP and IP. With respect to the use of eye gaze, Section 8.2.1.2 showed that the same distinction is found, between gaze to a specific location and a wandering eye gaze, depending on whether the NP with which agreement is expressed (whether in IP or in DP) is specific or non-specific. There is a further parallel to be observed in the forms used for subject agreement in IP and for the Determiner in a DP lacking a possessive.

Recall that when the phi-features for subject agreement in IP are fully specified, the non-manual realization of AGR-S consists of an overt head tilt toward the location in space associated with those phi-features, and the manual agreement marking, for verbs of the appropriate class, consists of an overtly, spatially agreeing prefix. When the phi-features are not fully specified, a neutral head position and a neutral manual agreement position are used. This same distinction is found within a DP, such as IX WOMAN, if there is no location in the signing space that has yet been established for the referent. As mentioned in BKMN (1995:10, footnote 7), a kind of default,

neutral position is used for the index in this case, with the finger

pointing upward at about a 45 degree angle. This is also the kind of

IX that would be used for pronominal reference to someone in the

discourse whose spatial location has not yet been fully established.

Thus the same kind of distinction, between overt spatial

agreement used in IP with a subject that has fully specified phi-

features and a neutral spatial form used in the absence of fully

specified phi-features is seen for the manual realization of the

Determiner in a DP. Further research would be required to analyze

the head position used to accompany this index and the possible

realizations of a possessive marker if the possessor's phi-features are

not fully specified.[11] For the moment, however, we at least observe

that the same basic distinction is found in IP and DP with respect to

specified vs. underspecified phi-features of the sole NP in an

intransitive construction.

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[11] The head position accompanying this "neutral" form of IX seems to be able to involve only a very minimal tilt (which might perhaps be considered a "default" head position, in this case). In addition, when there is a possessive marker used in the absence of fully specified phi-features for the possessor, in a construction like MARY POSS SISTER ('Mary's sister'), if no location has been established in the signing space for the referent of MARY, again, the position used for the possessive marker appears to involve a kind of neutral hand position. However, further analysis is required.

8.4 Summary

Although we have not examined the structure of DP in detail, the point of this chapter has been to demonstrate that the same non-manual correlates of IP-level agreement are also used to express agreement internal to DP: namely, head tilt and eye gaze. When there is a single relevant referential NP within DP, either eye gaze or head tilt or both may be used to signal the phi-features associated with that NP. This is parallel to the situation with AGR-S in intransitive clauses. However, when there is a possessor in addition to the main NP within the DP, then there are two distinct agreement projections, associated with each of the two referential NP's, each associated with distinct phi-features. This chapter has shown that, just as it is possible for head tilt to be used to mark subject agreement at the clausal level, so head tilt can also be used within DP as a correlate of agreement with the possessor NP (in "subject" position of the DP). Likewise, eye gaze, used in the clause to mark object agreement, can occur in association with the phi-features of the main NP within the DP. The same distinction between eye gaze to a specific location, used for object agreement with a specific DP,

and a wandering gaze, used for object agreement with a non-specific

DP, is relevant internal to DP, as was shown, for example, by the

contrast between examples (18) and (20).

While the possibilities for non-manual marking within DP are

complex, and a full description of the structure of DP in ASL is

beyond the scope of this dissertation, the parallels provide strong

confirmation for interpreting head tilt and eye gaze as correlates of

syntactic agreement, both within DP and IP.

CHAPTER NINE

INTERACTIONS BETWEEN DP AND IP AGREEMENT

This chapter will address briefly the ways in which the non-manual correlates of agreement associated with internal properties of DP interact with the correlates of sentence-level agreement. Specifically, section 9.1 discusses the dependencies found between the phi-features expressed for the subject DP and those expressed in AGR-S. Section 9.2 reviews dependencies discussed in Chapters 3 and 5 between the object DP phi-features and non-manual correlates of AGR-O. Finally, section 9.3 examines what happens when both DP-internal agreement and sentence-level syntactic agreement are expressed non-manually.

9.1 Dependency between Phi-Features within Subject DP and AGR-S

Person phi-features may be specified only for specific NP's.[1] If an NP is non-specific, then it is not possible to associate any location in the signing space with the phi-features of that NP. Phi-features associated with specific NP's may be realized manually. This can happen either when the NP is signed in the location in space associated with the phi-features, or when an index points to that location.[2] This index may consist of a determiner—either a definite or an indefinite determiner—or it may be an adverbial (pointing to the location in space associated with the NP), as discussed in the previous

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[1] Lambrecht (1994:80-81) explains the notion of specificity as follows:

> A "specific indefinite NP" is one whose referent is identifiable to the speaker but not to the addressee, while a "non-specific indefinite NP" is one whose referent neither the speaker nor the addressee can identify at the time of the utterance. This is tantamount to saying that a non-specific indefinite NP is one which may have no referent at all.

While the use of phi-features to represent grammatical person, in the traditional sense (1st, 2nd, and 3rd), would normally be defined for 3rd person non-specific NP's, in ASL, where reference is part of the information conveyed by the phi-features relevant to syntactic agreement phenomena (see Gee and Kegl, 1982), it is perhaps not surprising that NP's lacking information about reference also lack the features relevant to establishment in the signing space.

[2] This has been discussed extensively in the literature (although without the use of the term 'phi-features' in this regard). See, for example, Baker and Cokely (1980), Friedman (1975), Hoffmeister (1978a), Kegl (1976), Kegl, Lentz, and Philip (1977), Klima and Bellugi (1979), Lacy (1974), Lillo-Martin and Klima (1990), Meier (1990), Petitto (1983), Stokoe, Casterline, and Croneberg (1965), Wilbur (1987), and Woodward (1970).

chapter (see also BKMN, 1995). The location associated with the phi-features may also be pointed to non-manually, by head tilt or eye gaze to that location in space. However, there are also cases where the signer may have in mind a spatial location associated with the phi-features of a DP, and yet there may be no manual or non-manual overt expression of those features within the DP. Overt expression of the DP's phi-features is not obligatory, although it frequently occurs.

The phi-features associated with AGR-S necessarily match those that are associated with the subject DP. As shown in Chapters 4 and 6, the phi-features in AGR-S may or may not be fully specified. Underspecified phi-features in AGR-S are compatible with any feature value. The features of AGR-S may be expressed non-manually (for all verbs) and/or manually (for those verb classes that allow manual expression of morphological agreement). Consider non-manual expression of subject agreement first.

The default, non-overt form of non-manual syntactic subject agreement may be used with a subject DP having any possible phi-feature values. This neutral head position correlates with phi-features in AGR-S that are not fully specified, and which are, therefore, compatible with any phi-features defined for the subject

DP. If the subject has no specified phi-features, then only the non-overt form of manual or non-manual subject agreement marking may be used. However, if the phi-features in AGR-S are overtly expressed non-manually (and therefore are necessarily fully specified), then the phi-features in AGR-S must be identical with those associated with the subject DP.

This essentially rules out two kinds of non-manual realizations of AGR-S:

• the use of a non-specific subject DP with overt non-manual subject agreement. If the AGR-S node contains fully-specified phi-features, then these must match those associated with the subject DP; however, a non-specific subject DP can only be used with the default head position associated with underspecified subject phi-features.

• the use of overt non-manual subject agreement where the phi-features pointed to non-manually fail to match those associated with the subject DP.

Thus, of the following sentences, all are grammatical except for (4) and (6).

$$\overline{\hspace{7cm}\text{tilt}_i}$$
$$\overline{\hspace{6cm}\text{gaze}_j}$$

(1) JOHN$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ $_i$BLAME$_j$ MARY$_j$

'John blames Mary.'

$$\overline{\hspace{7cm}\text{tilt}_i}$$
$$\overline{\hspace{6cm}\text{gaze}_j}$$

(2) IX$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ $_i$BLAME$_j$ MARY$_j$

'He/she blames Mary.'

$$\overline{\hspace{7cm}\text{tilt}_{\text{neu}}}$$
$$\overline{\hspace{6cm}\text{gaze}_j}$$

(3) IX$_i$ [ ]$_{\text{AGR-S}_{\text{neu}}}$ [ ]$_{\text{AGR-O}_j}$ $_{\text{neu}}$BLAME$_j$ MARY$_j$

'He/she blames Mary.'

$$\overline{\hspace{7cm}\text{tilt}_i}$$
$$\overline{\hspace{6cm}\text{gaze}_j}$$

(4) * NOBODY   [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ $_i$BLAME$_j$ MARY$_j$

'Nobody blames Mary'

$$\overline{\hspace{7cm}\text{tilt}_{\text{neu}}}$$
$$\overline{\hspace{6cm}\text{gaze}_j}$$

(5) NOBODY   [ ]$_{\text{AGR-S}_{\text{neu}}}$ [ ]$_{\text{AGR-O}_j}$ $_{\text{neu}}$BLAME$_j$ MARY$_j$

'Nobody blames Mary'

$$\overline{\hspace{7cm}\text{tilt}_j}$$
$$\overline{\hspace{6cm}\text{gaze}_k}$$

(6) * IX$_i$ [ ]$_{\text{AGR-S}_j}$ [ ]$_{\text{AGR-O}_k}$ $_j$BLAME$_k$ MARY$_k$

'He/she blames Mary'

Notice that the observations about the dependency for overt expression of AGR-S features on the existence of a specific NP for which phi-features are defined is not restricted to non-manual subject agreement. The same restriction applies with verbs that exhibit manual subject-verb agreement. Thus, for a non-specific subject DP, overt manual agreement is also impossible, as shown in (7), just as overt non-manual agreement was seen in (4) to be unacceptable.

(7) * NOBODY $_i$SHOOT$_j$ PAUL$_j$
        'Nobody shot Paul.'

In this sentence, the verb SHOOT can only be signed beginning from a neutral position, the same initial position that would be used for the citation form of SHOOT.

Overt manual agreement is possible only with a subject for which phi-features are specified, as in (8) below. Note that it is also not possible to use an overtly agreeing manual form that does not match the phi-features corresponding to the subject DP, as shown in (9) (comparable to (6)).

(8)   JAMIE$_i$ $_i$SHOOT$_j$ PAUL$_j$

       'Jamie shot Paul.'

(9) * JAMIE$_i$ $_J$SHOOT$_K$ PAUL$_K$

In summary, phi-features may only be specified for specific NP's. If AGR-S is fully specified, its phi-features must match those of the subject DP (and therefore, phi-features must be defined for the subject DP, whether or not they are actually overtly manifested, manually or non-manually, within the DP). However, the use of underspecified features in AGR-S is compatible with any particular value for the subject DP's phi-features. A non-specific subject DP, though, for which phi-features have not been specified, can only occur with the manual or non-manual expressions of agreement associated underspecified phi-features.

9.2 Dependency between Phi-Features within Object DP and AGR-O

The relation between the specificity of the object and the form of object agreement that is found was discussed in Chapter 3 (for manual object agreement) and Chapter 5 (for non-manual correlates of object agreement; see section 5.2.1.2). As previously mentioned, there is a different realization of AGR-O for non-specific objects. This
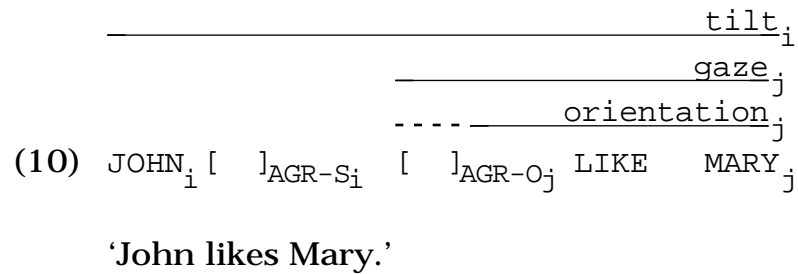
involves the eyes darting quickly among various points in space. Thus, AGR-O may be realized non-manually with both specific or non-specific objects, although it takes a different form in the two cases.

9.3 Realizations of DP-level and IP-level Agreement

9.3.1 Interactions between Non-manual Expressions of Agreement internal to Subject DP and AGR-S

As just discussed, it is possible to find a head tilt associated with DP-internal agreement (see Chapter 8) and also a head tilt associated with AGR-S (see Chapter 4). What happens if both of these are present in a sentence? Interestingly, there appear to be two distinct head movements. Despite the fact that the head tilt used for both agreement markings points to the same locus in space (i.e., to the phi-features associated with the subject DP), and that the non-manual marking for AGR-S consists of a head tilt (essentially the same head tilt as used within the DP), there is also a change in head orientation (as discussed in Chapter 6, section 6.5.1), as the head turns in order to become oriented toward the syntactic object. This gives the impression of a distinct head movement occurring after the

DP, but this change reflects the addition of head orientation found with AGR-O. Consider the following example:
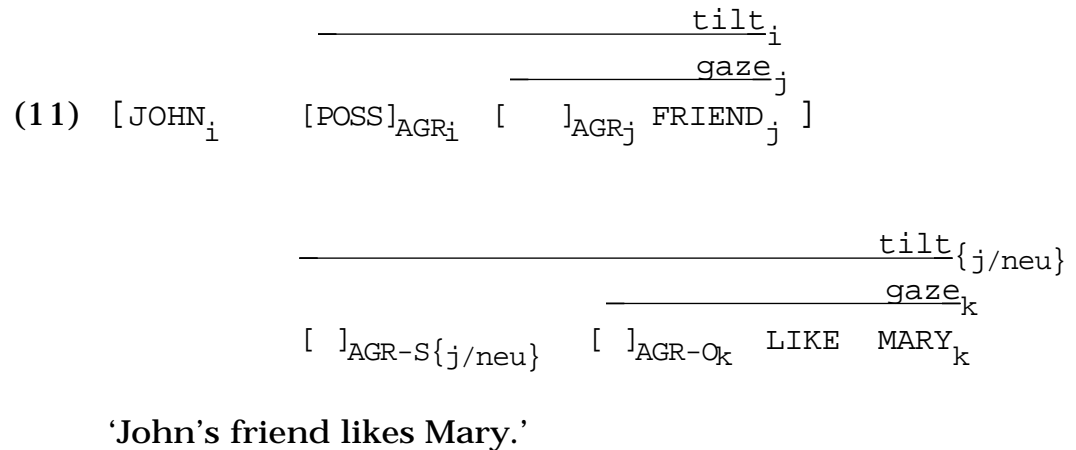
$$\underline{\hspace{8cm}\text{tilt}_i}$$
$$\underline{\hspace{5cm}\text{gaze}_j}$$
$$- - - -\underline{\hspace{2.5cm}\text{orientation}_j}$$

(10) JOHN$_i$ [ ]$_{\text{AGR-S}_i}$ [ ]$_{\text{AGR-O}_j}$ LIKE   MARY$_j$

'John likes Mary.'

What happens in this case is that the head tilts over JOHN (the head tilting toward the location associated with the subject's phi-features) and then, remaining in a tilted position,[3] the head shifts its orientation so that it faces the location in space associated with the object's phi-features.

Notice that if there is a DP in subject position that contains a possessor, and if there is, internal to that DP, head tilt agreement marking agreement with the possessor, then by the end of the DP, the head must return to a position that can mark subject agreement

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[3] This is yet another instance of perseveration. Although there are actually two distinct head tilts in this sentence—one associated with the subject DP and the next associated with AGR-S—there is no break in the articulation of the head tilt. The head remains continuously in the tilted position.

(either the neutral position or tilt in the direction of the main NP

within the subject DP).

$$\text{(11)} \quad [\text{JOHN}_i \quad \underset{\overline{}}{\overset{\overset{\text{tilt}_i}{\overline{}}}{\underset{}{\text{gaze}_j}}} [\text{POSS}]_{\text{AGR}_i} \ [\quad]_{\text{AGR}_j} \ \text{FRIEND}_j \ ]$$

$$[\ ]_{\text{AGR-S}\{j/\text{neu}\}} \quad \underset{}{\overset{\overset{\text{tilt}_{\{j/\text{neu}\}}}{\overline{}}}{\underset{\text{gaze}_k}{\overline{}}}} [\ ]_{\text{AGR-O}_k} \quad \text{LIKE} \quad \text{MARY}_k$$

'John's friend likes Mary.'

The tilt associated with the possessor internal to DP must be

terminated at the end of the DP (i.e., at the end of the c-command

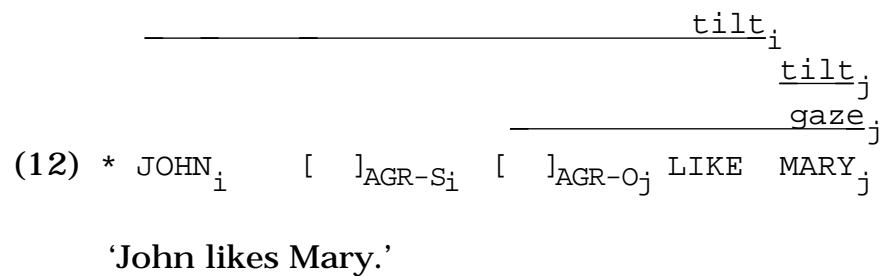domain of the Determiner node, with which the tilt is associated).[4]

9.3.2 Interactions between Non-manual Expressions of Agreement internal to Object DP and AGR-O

The use of head tilt to mark agreement internal to the object

DP is more restricted than for marking agreement relations internal

to the subject DP. When head tilt is used to mark AGR-S, it occurs

only on the portion of the sentence that follows the subject DP. Thus,

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[4] This was pointed out by Dawn MacLaughlin.

there is no interference between the use of head tilt for marking

internal agreement relations within the subject DP and its use for

marking AGR-S (by assuming a tilted position that remains in place

over the following VP, as indicated above in example (10)).

However, if head tilt is used to mark AGR-S, then this makes it

impossible to use head tilt as well to mark agreement relations

internal to the object DP, since the head is already in use for another

purpose. Thus the following is ungrammatical:

$$
\begin{array}{c}
\underline{\qquad\qquad\qquad\qquad\qquad\text{tilt}_i} \\
\underline{\qquad\qquad\text{tilt}_j} \\
\underline{\qquad\qquad\text{gaze}_j} \\
\text{(12) } * \text{ JOHN}_i \quad [\ ]_{\text{AGR-S}_i} \ [\ ]_{\text{AGR-O}_j} \text{ LIKE } \text{MARY}_j
\end{array}
$$

'John likes Mary.'

This sentence shows that, despite the fact that in other contexts, the

DP, MARY, could have head tilt and eye gaze, this head tilt is not

acceptable within the scope of subject agreement marked by head

tilt.

So, while head tilt cannot be used to mark agreement relations

internal to the object DP if it is also used for AGR-S (as shown in

(12)), head tilt can be used to mark relations internal to the subject

DP, regardless of whether it is used to mark AGR-S (as shown in (10))

or not (as shown in (13)):[5]

```
        tilt_i
(13) JOHN_i    LIKE    MARY
```

'John likes Mary.'

However, if head tilt is not used to mark AGR-S, then the head

is available to mark agreement relations internal to the object DP.

```
                        tilt_j
(14)  JOHN    LIKE     MARY_j
```

'John likes Mary.'

---

[5] When head tilt is used in this way to mark subject, it often has a contrastive function. So, for example, one might distinguish two people, as in the following:

```
     tilt_i                  tilt_j
(i)  JOE_i  LIKE  MARTHA.    MIKE_j  LIKE  KAREN.
```

'Joe likes Martha.   Mike likes Karen.'

In some cases, the head actually remains tilted for the duration of each of the two sentences, to establish the contrast between the two utterances.

```
     _____tilt_i    _____tilt_j
(ii) JOE_i  LIKE  MARTHA.    MIKE_j    LIKE  KAREN.
```

'Joe likes Martha.   Mike likes Karen.'

We believe that this contrastive use is more a discourse or prosodic use of body position, and will not be discussed further in this dissertation, although this has been observed by others (e.g., Smith, Lentz and Mikos, 1988) and is a subject for further investigation.

Notice that this is independent of whether or not head tilt is also

used to mark agreement relations internal to the subject DP, as

shown in (15).[6]

$$\begin{array}{l}
\quad\quad\;\; \underline{\text{tilt}}_i \quad\quad\quad \underline{\text{tilt}}_j \\
(15) \quad \text{JOHN}_i \quad \text{LIKE} \quad \text{MARY}_j
\end{array}$$

        'John likes Mary.'

The point is that in examples like (15), there is no conflict with the

use of head tilt for marking AGR-S.[7]

---

[6] If the positions of i and j in this sentence are very close, e.g., on the right side of the signer's body, then the head does not return to neutral position over the verb, but stays close to the i position. This is a phenomenon probably related to (though not identical with) perseveration.

[7] Interestingly, if the default form of AGR-S marking is used (which is also accompanied by a slight body lean, as discussed in Chapter 6, differentiating it from (15), this is still compatible with the use of head tilt for object:

$$\begin{array}{l}
\quad\quad\quad\quad\quad\quad\quad\quad\quad \underline{\text{head}}_{\text{neu}} \; \underline{\text{tilt}}_j \\
\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad \underline{\text{lean}} \\
\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad \underline{\text{gaze}}_j \\
\text{(i)} \quad \text{JOHN}_i \; [\quad]_{\text{AGR-S}_{\text{neu}}} [\quad]_{\text{AGR-O}_j} \quad \text{LIKE} \quad \text{MARY}_j
\end{array}$$

        'John likes Mary.'

9.4 Summary

　　This chapter has discussed the interaction between the realizations of syntactic agreement at the level of DP and IP. We have seen that the phi-features in AGR-S must match those of the subject DP, just as the phi-features in AGR-O must match those of the object DP. The features in AGR-S (unlike those in AGR-O) may be underspecified, and in that case compatible with any phi-features associated with the subject DP. For a non-specific object DP, a particular form of syntactic object agreement is required. This is found for both manual and non-manual expressions of AGR-O when the object is non-specific, and this same kind of non-specific agreement marking also occurs within DP (see Chapter 8, section 8.2.1.2).

　　In section 9.3, we examined what happens when there is non-manual expression of agreement both internal to DP and internal to IP. If there are non-manual expressions of agreement correlating with agreement relations internal to the subject DP, these may freely co-occur with non-manual expression of AGR-S, since the domains over which these occur are disjoint. However, if there is non-manual expression of both types of agreement, section 9.3.1 showed that

perseveration will result in a continuity of head tilt across the two domains, although a change in head orientation will occur after the subject DP, giving the impression of a second head movement at that point in the sentence. With respect to non-manual expression of agreement relations internal to the object DP, this is allowed only if there is no overt head tilt associated with AGR-S (since if both occur, there is a conflict, and the head tilt can only express either AGR-S or AGR-O within the object DP, but not both).

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CHAPTER TEN

CONCLUSIONS

This dissertation has presented evidence for the existence of non-manual correlates of the phi-features postulated to occur in Agreement projections found within both IP and DP. We have argued that locations in the signing space are associated with referential person features in ASL, and that these features partake in the same syntactic phenomena in which phi-features participate crosslinguistically (agreement, pronominal reference, etc.). Thus we consider the grammatical processes of pointing to these locations to constitute a grammatical expression of the person features. Various grammatical devices for manually pointing to these locations in the signing space (e.g., for morphological marking of verb agreement or for pronominal reference) have previously been observed and studied. In this dissertation, we suggest that these features can also be signaled non-manually, by head tilt and eye gaze to the same locations in the signing space.

We have shown that the manual morphological markings on verbs that have traditionally been analyzed as subject and object

agreement affixes display the same kinds of distinctions as the non-manual behaviors that we analyze as non-manual expressions of subject and object agreement. Furthermore, we have shown that, like their manual counterparts, these non-manual expressions of agreement suffice to license null subjects and objects.

In analyzing the distribution of head tilt and eye gaze, we have proposed that these non-manual correlates of the phi-features in the heads of agreement projections have the same properties as the non-manual correlates of syntactic features such as +neg and +wh. The non-manual marking optionally spreads over the c-command domain of the node in which the associated syntactic feature occurs, this spread being obligatory if this is the only way for the non-manual marking to co-occur with manual material. We have shown that these independently motivated generalizations about the distribution of non-manual grammatical marking account, to a large extent, for the distribution of head tilt and eye gaze.

Specifically, we see that within IP, the non-manual marking of AGR-S precedes the non-manual marking of AGR-O. Furthermore, since AGR-S and AGR-O do not contain manual material, the spread of non-manual marking over the VP is obligatory, although in some

cases the marking may not extend over the entire VP, and we have offered some speculative suggestions for why this may be.

In transitive clauses, head tilt and eye gaze are ordered differently, depending on which is used to express subject agreement (thus ruling out an articulatory explanation for the ordering). In intransitive constructions, if both head tilt and eye gaze are used, they occur simultaneously. Non-manual agreement markings consistently begin just slightly before the articulation of VP.

This contrasts with the situation in DP, where head tilt or eye gaze co-occurring with a determiner begin simultaneously with the determiner, rather than before it. We suggest that this is because there is manual material—the determiner—in the head of the Agreement projection with which the head tilt and/or eye gaze are associated. For that reason as well, the spread of non-manual marking over the following NP is optional rather than obligatory if a determiner is present.

Otherwise, the distribution of head tilt and eye gaze in IP and DP shows striking parallels, providing strong evidence for similarities in the structure of IP and DP, and specifically, we argue, for the existence of agreement projections in both domains. We have shown

that, in transitive clauses, head tilt is used preferentially to express

subject agreement, and eye gaze is used preferentially to express

object agreement, although this is reversed in the event of a 1st

person object. In intransitive clauses, we have found that either

head tilt or eye gaze or both may be used to express agreement with

the subject. Within DP, we have shown that DP's containing a

possessor pattern with transitive clauses: head tilt may be used to

express agreement with the possessor, while eye gaze may be used

to express agreement with the possessed NP. DP's without a

possessor pattern with intransitive clauses. Head tilt or eye gaze or

both may be used to express agreement with the sole NP.

Furthermore, we have shown that the same kinds of distinctions in

the form of eye gaze, dependent on specificity, are found both in DP

and IP.

     One advantage of this proposal is that it allows a unified

explanation of the distribution of non-manual correlates of syntactic

features. If our analysis is correct, then it suggests that phi-features

have a similar status to that of other recognized syntactic features,

such as +neg and +wh.

While there are still some unanswered questions, we hope to have demonstrated that the existence of non-manual correlates of agreement in American Sign Language provides revealing information of relevance to the ultimate resolution of a number of current theoretical controversies concerning the appropriate syntactic analysis of agreement in language generally.

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APPENDIX: TRANSCRIPTION CONVENTIONS

Example	Explanation
SHOW	gloss for a sign
JOHN	proper names in this dissertation are actually fingerspelled, but are not explicitly marked as such (for ease of reading).
VIDEO-TAPE	multiword gloss for a single sign
FACE^STRONG	contracted or compound sign (these two are not distinguished notationally in this dissertation)
"WHAT"	a wh-sign produced with both hands extended and moving slightly from side to side
IX	a pointing sign using the index finger
POSS	possessive sign
(2h)	signs that are usually one handed are made using two hands.
(2h)alt.	similar to (2h) but both hands move in alternating fashion
ASK$_{[exhaustive]}$	signs inflected for aspect (either temporal or distributional)
SCL:3"vehicle go by"	semantic classifier followed by specific handshape denoting the category type. Information explaining specific actions are placed inside the quotation marks.

Non-manual markers	Explanation

The extended line indicates the domain over which the non-manual marker occurs and indicates where it begins and ends.

___wh___	wh-question marker
___rhq___	rhetorical question marker
___q___	yes-no question marker
___hn___	headnod
___neg___	negative marking consisting of head shake and furrowed brows
___t___	topic marker: tm1= topic marker 1 tm2= topic marker 2 tm3= topic marker 3
___head tilt___$_{neu}$	default non-manual subject agreement marking; head in neutral position (Note this label is sometimes shortened to "tilt")
___head tilt___$_i$	overt non-manual subject agreement marking; head in tilted position
___gaze___$_j$	eye gaze marking syntactic agreement (label sometimes reduced to "eg")
<rs: John___>	indicates the spread of role shift, where (<) signals the beginning and (>) the end. The character being assumed is typed after the colon.

Formal notation	Explanation
MARY_i $\quad$ IX_i	referential indices {$_i$ or $_j$} indicating identity of phi-features; when a noun and pronoun are coindexed, this therefore indicates intended coreference of two elements in a sentence or discourse. (Note that this does not indicate that MARY is signed in the same location in the signing space as IX.)
$_i\text{VERB}_j$	indices on a verb indicate subject and object agreement morphology
$[\quad]_{\text{AGR-S}_{\text{neu}}}$	an AGR-S node containing default subject agreement features
$[\quad]_{\text{AGR-S}_i}$	an AGR-S node containing fully specified subject agreement features
$[\quad]_{\text{AGR-O}_j}$	an AGR-O node containing object agreement features
e	empty element
t	trace (representing the place of origin of a moved element)
pro	a pronominal element that has no overt realization
PRO	a null element that functions as the subject of a tenseless clause
IX-1p	index points marked for first person
POSS-1p	possessive sign marked for first person

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Education

1996	Ph.D., Applied Linguistics, Boston University
1987	M.Ed., Education of the Deaf, Boston University
1978	B.A., Biology, Gallaudet University, Washington, DC

Professional Experience

1996-	Assistant Professor, Gallaudet University, Washington, DC.
1979-	Vice-President, Dawn Sign Press, San Diego, CA.
1990-1995	Instructor, Graduate & undergraduate programs in Deaf Studies, Boston University.
1987-1995	Director, Undergraduate program in Deaf Studies, Boston University.
1987-1990	Lecturer, Graduate & undergraduate programs in Deaf Studies, Boston University.
1984-1985	Language Analyst, Signing Naturally: American Sign Language Curriculum, Vista College, Berkeley, CA.
1983-1985	Residence Counselor, California School for the Deaf, Fremont.
1982-1985	Instructor, Department of American Sign Language, Ohlone College, Fremont, CA.
1982-1984	Instructor, American Sign Language Program, Vista College, Berkeley, CA.
1979-1981	Research Assistant, The Salk Institute for Biological Studies, La Jolla, CA.

| 1980-1981 | Instructor, American Sign Language Department, San Diego Community College District, San Diego, CA. |
| 1978-1979 | Research Assistant, Linguistics Research Laboratory, Gallaudet University, Washington, DC. |

Publications

1. Articles

Kegl, J., Neidle, C., MacLaughlin, D., Hoza, J., and Bahan, B. (1996) The Case for Grammar, Order, and Position in ASL: A Reply to Bouchard and Dubuisson. Sign Language Studies 90: 1-23.

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Bahan, B. (1986-89): Many articles published first in Deaf Community News and reprinted in S. Wilcox (ed.), American Deaf Culture: An Anthology. Silver Spring, MD: Linstok Press, 1989.

2. Books and Educational Materials

Lane, H., Hoffmeister, R., and Bahan, B. (in press) A Journey into the Deaf World. San Diego: Dawn Sign Press.

Supalla, S. and Bahan, B. (1994) American Sign Language Literature Series: A Teacher's Guide and Student Workbook San Diego, CA: Dawn Sign Press.

Bahan, B. and Dannis, J. (1990) Signs For Me. San Diego, CA: Dawn Sign Press.

Bahan, B and Paul, F. (1984) The American Sign Language Handshape Game Cards. San Diego, CA: Dawn Sign Press.

3. Videotapes

Bahan, B. and Supalla, T. (1994) Co-producer. Charles Krauel: Profile of a deaf filmmaker. San Diego, CA: Dawn Pictures.

Bahan, B. and Supalla, S. (1994) American Sign Language Literature Series Collector's Edition, Teacher's Videotape and Student Videotape: Bird of a Different Feather & For a Decent Living. San Diego, CA: Dawn Pictures.

Bahan, B. and Marbury, N. (1992) Once Upon A Time: Children's Classics Told in ASL. San Diego, CA: Dawn Pictures. Series of 6 videotapes and storybooks.

4. Working Papers

Bahan, B. and Petitto, L. (1980). Aspects of Rules for Character Establishment and Reference in ASL Storytelling, Unpublished manuscript, La Jolla, CA: The Salk Institute for Biological Studies.

Meier, R., Loew, R., Bahan, B., Fields, J., Launer, P. and Supalla, S. (1980). An overview of one child's acquisition of American Sign Language, La Jolla, CA: The Salk Institute for Biological Studies.

Funded Research

Presentations

At many universities, schools for the Deaf, conferences, and other institutions:

Boston University; Brandeis University; California State University, Northridge; Educational Testing Service (Princeton, NJ); Gallaudet University; Harvard University; N.T.I.D.; University of Miami; Northeastern University; The Salk Institute for Biological Studies; San Diego State University.

American Society for Deaf Children Convention; Association for the Hearing Handicapped Family Camp (Calgary, Canada); Corliss Institute (Newport, RI); D-PRO (Tokyo, Fukui, & Hiroshima, Japan); Governor Baxter School for the Deaf (Portland, ME); Horace Mann School for the Deaf (Boston, MA); Maryland School for the Deaf (Columbia & Frederick, MD); Milton School (Ontario, Canada); Model Secondary School for the Deaf Professional Day (Washington, DC); National Theatre for the Deaf Summer School; Pennsylvania School for the Deaf (Philadelphia, PA).

American Sign Language Teachers Association; ASL Literature Conference; Association of College Educators in Hearing Impairment Convention; Canadian Hearing Society (Toronto); Deaf Studies IV Conference; Deaf Studies Whats Up?; Deaf Way Conference, Massachusetts; Parents Association for the Deaf; New York State American Sign Language Teachers Association convention; New Jersey State Conference on Education of Hearing Impaired Children and Youth for Parents and Professionals; Procter & Hoar conference; TESOL Convention; 4th Annual Conference on Theoretical Issues in Sign Language Research; Tilburg Conference on Rightward Movement.

Center on Deafness (Denver, CO); Massachusetts Commission for the Deaf and Hard of Hearing and MSAD; Massachusetts Eye and Ear Infirmary (Boston).

Awards

Whitney M. Young, Jr. Fellowship, Boston University, 1991-1992.

Best Supporting Actor Award – for Dr. Moriarty in Sherlock Holmes, 1979.

Velez Book Award – for excellence in theatrical use of ASL, 1979.

Consulting

The Learning Center for the Deaf, Framingham, MA, development of a bilingual/bicultural (ASL/English) curriculum for deaf children, 1992-1994.

Horace Mann School for the Deaf, Boston, MA, set-up and implementation of ASL/English Literacies Laboratory, 1990-1991.

Educational Testing Service, Princeton, NJ, for development of ASL version of Listening Skills Section of NTE Core Battery Test of Communication Skills, 1990.

Horace Mann School for the Deaf, Boston, MA, in-service training on bilingual/bicultural (ASL/English) program models for deaf children and development of Deaf Studies curriculum, 1988-1990.

Northeastern University, Boston, MA, evaluate and provide goals for the direction of the American Sign Language Program, 1988-1990.

Duffy Engineering, Mashpee, MA, consult on development of technological equipment for Deaf people, 1989-1990.

DEAF Media, Emeryville, CA. consulted on script development for the production of Rainbow's End II, 1984.

Committee Membership

Board of Trustees, The Learning Center for the Deaf, Framingham, MA. 1993-present.

Steering Committee, Conference on Operating under the Americans with Disabilities Act: A practical approach to managing access issues at Goodwin, Procter & Hoar, Boston, MA. 1994-1995.

Evaluation Team, Middle States Association of Colleges and Schools; for the accreditation of Model Secondary School for the Deaf, Washington DC, November 13-16, 1990.

Advisory Committee for the Development of Educational Interpreting Guidelines for Deaf and Hard of Hearing Children, Massachusetts Department of Education, 1988-1989.

Advisory Committee for the Development of Education Certification for Teachers of the Deaf and Hard of Hearing, Massachusetts Department of Education, 1988-1989.

Advisory Board Member for the development of a Bilingual-Bicultural program at the Learning Center for the Deaf, Framingham, MA, 1990-1993.

Personnel Committee, Boston University, School of Education, Boston, MA, 1992-1993.

Professional Membership

AAUP

Gallaudet University Alumni Association

Linguistic Society of America

Courses Taught

SED DE 550 Deaf History and Culture

SED DE 551 Deaf Literature and American Sign Language
Literature

SED DE 552 Selected Topics in Deaf Studies

SED DE 554 Field Experience in Deaf Studies

SED DE 570 American Sign Language 1

SED DE 571 American Sign Language 2

SED DE 572 Psychology, Sociology and the Deaf

SED DE 576 Advanced Language and the Deaf Child

SED DE 590 American Sign Language 3

SED DE 591 American Sign Language 4

SED DE 672 Structure of American Sign Language

Introduction to Deaf Education

Introduction to Deaf Studies

Languages: ASL (native), English, International Sign Language