BOSTON UNIVERSITY

GRADUATE SCHOOL

Dissertation

ASPECTS OF THE SYNTAX OF AMERICAN SIGN LANGUAGE

by

DEBRA AARONS

B.A., University of the Witwatersrand, Johannesburg, 1976
(Hons.), University of the Witwatersrand, Johannesburg, 1977
(Hons.), University of the Witwatersrand, Johannesburg, 1985

Submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

1994

Approved by

First Reader

_____

Carol Neidle, Ph.D.
Associate Professor of Linguistics
Boston University

Second Reader

_____

Höskuldur Thráinsson, Ph.D.
Visiting Professor of Linguistics
Harvard University

Third Reader

_____

Judy Anne Kegl, Ph.D.
Research Assistant Professor
Rutgers University

ACKNOWLEDGMENTS

These acknowledgments are unashamedly long. There is an enormous number of people to whom I owe thanks, and I am glad to have this opportunity to be able to express my gratitude as publicly as possible.

Three years of my graduate career were sponsored by a Fulbright Scholarship from the United States Government, and this support is gratefully acknowledged. During the rest of my studies, my graduate student income was vastly supplemented by my parents, Sam and Minnie Aarons, who supported me financially long beyond the call of any sort of duty. For their unquestioning and uncomplaining financial support, and for their total generosity and unfailing faith in me, I thank them. Their constant concern and love has sustained me.

I owe an enormous debt of gratitude to my advisor, Carol Neidle. I need to thank her for so much, it is very difficult to know where to start. She was the person responsible for first teaching me syntax, and making me realize that it might be interesting to think about. She has inspired, supported and encouraged me, every day of this dissertation. She has read every word, probably many more times than anyone would want to. I am continually amazed at her commitment to me as a student, and to my work. She has been constantly available to me for advice, suggestions, ideas, and has always had an astonishingly sharp sense of the right question at the right time. I thank her for so many things: her time, her energy, her generosity, and her guidance. Her scrupulous attention to precision has taught me discipline I never dreamed possible. Our joint work has provided me with an apprenticeship that I think few are fortunate to have.

I also owe thanks and appreciation to the other members of my committee: Höski Thráinsson was an unsuspecting victim of this dissertation. He expressed interest in the work of which this dissertation is a part, and soon, to his surprise, his syntactic expertise was being tapped, and he found himself reading drafts, commenting, and providing useful suggestions and solutions. He has been completely good-humored about my taking up his time, and has been a source of much helpful criticism and thoughtful advice. I am deeply grateful to him.

Judy Kegl has been a challenging and provocative force in the work I have done. We have worked together on various joint projects for a few years, and she has always been extremely generous about sharing her observations, resources and ideas. I value her criticisms, and her extensive and intimate knowledge of the field of ASL linguistics. I thank her for her energy and commitment to this project, as well as her helpful suggestions and guidance.

When I heard that Marina McIntire was moving to Boston, I lost no opportunity in taking advantage of her vast knowledge of and experience with non-manual marking in ASL. Working with her has been a complete pleasure for me: she has posed big and difficult questions, and tried to help me to think about them; she has been available for consultations even when I know she was tremendously busy with the pressures of a new job; she spent some time with me showing me the Facial Action Coding System; and she has been tremendously supportive to me during the process of writing this dissertation, giving me, among other things, some much-needed perspective.

Loren Trigo read my drafts and always came back with difficult questions and ingenious solutions. I appreciate her curiosity, the acuteness of her observations and the gentleness with which she expressed them. She has been quietly supportive of

me for a long time, and always willing to think about problems I have posed to her. I thank her for her concern and for her participation in this project.

Perhaps my greatest debt of all is to my friend and colleague, Ben Bahan. He introduced me to his language and his culture, and did his best to make me comfortable in both. He willingly and good-humoredly acted as the principal consultant for the data in this dissertation, giving me more hours of his time than I can ever pay back. He allowed himself to be interrogated mercilessly, videotaped constantly, his head to be battered by wild distortions of the language which I hurled at him, and amidst it all, he remained humorous, kind and interested throughout. His astonishing sense of language, and his sensitivity to nuance and context, provided me with an exceptional opportunity. His observations and intuitions about ASL often guided me into new areas of exploration and resulted in many of the conclusions reached in this analysis. Working with Ben made data collection a pleasure. I can never thank him enough for what he has given me. He has been responsible for educating me about many aspects of ASL and Deafness, he has been a wonderful and responsive friend, generous and supportive, and I thank him with all my heart.

Janey Greenwald has been through much of this process with me. Although she is an extraordinarily fine and sensitive interpreter, she has also been very much more than that for me. She has been the source of many productive suggestions and observations; she has helped me to scrutinize data; she has educated me about many much broader issues. Finally, she has been an available, caring and encouraging friend.

I am also grateful to Jimmy Challis, Todd Czubeck, Toni Fuller, Patty Trowbridge, Bob Hoffmeister, Alma Bournazian and Nancy Walla for their help in answering my endless questions, and to Janis Cole for her valiant attempts to teach

me ASL. I would especially like to thank Bob Hoffmeister for allowing me the run of the Center for the Study of Communication and Deafness at Boston University, and for his tolerance of my presence, my use of the equipment, and the way that I made myself at home.

My colleagues and friends in the Program in Applied Linguistics, Donna Lardiere, Dawn MacLaughlin and Dalia Cahana-Amitay have been exceptionally supportive and helpful while I have been writing this dissertation and I thank them for their ideas, concern and friendship.

I thank Karen Petronio for the many friendly hours we spent together watching videotapes, discussing data, arguing about analyses, and trying to make sense of what we saw. My discussions with her were very enjoyable and productive: although we disagree about many things, I am extremely grateful to her.

I also thank the people who read and commented on drafts of this dissertation at various times: Anne Vainikka, Karl Reynolds, and Dawn MacLaughlin. I am particularly grateful to Professor Susumo Kuno, who agreed to meet with me to discuss the nature of topics, and clarified my thinking by sharing many helpful insights with me.

I have been supported lovingly long-distance by many kind people, relatives and friends. My family, Michelle, Alan, Debbie, Zahava and Kevin have been consistently interested in my work and my well-being: they have always been there for me, tolerating a sister who seemed to be endlessly busy with something that was not always clear to them (or to her), but their faith in me was never in question. My grandmother, Ethel Aarons, taught me all I could ever learn about the best of being a human being.

My friends in South Africa have been with me through the last six years, taking my word for the fact that I was doing something, and that I would finish eventually. They have been warm and generous and interested, and have believed in me, more than I have believed in myself. I thank them all, particularly Sharon Cort, Letta and Klaas Mashishi, Hilary and John Janks, Anton Harber, Harriet Gavshon, Lionel and Jane Abrahams, Barbara and David Ludman, Karen Harber, Peter Lachman, Lyn Taitz, Norma Rudolph and Shirley Pendlebury. I also thank my friends in England, always a touchstone halfway across the world: Ilan Katz, Julia Meyerowitz-Katz, Mark and Gay Berelowitz, Barbara and Jonathan Fletcher, and Felicity Kaganas.

In North America, I have been well taken care of by many warm and generous friends who have had to put up with sudden unexplained disappearances into computerland: Vivian Carlo, Lilian Gonzalez, David Neuhaus, Toni and Ross-Duncan Brown, Lynn Shakinovsky, Dalia Cahana-Amitay and Oved Amitay, Peter and Ilona Anderson. My friends-for-life in San Francisco, Ruby Gold and Eliott Helman, were the first people I found in Boston, and my original interest in ASL is almost entirely their fault. Brian Siritzky and Roanne Plotnitzky have always been there for me, no matter where they were, and have provided me with a bedrock of stability. Ruth Morgan, Candace Blase and Jack Beinashowitz kept me on the rails when I didn't even know where the rails were, kept me going, nourished and nurtured me, put up with me beyond the point where I could put up with myself, and remained my friends. I am ever grateful to them. Siamak Movahedi has heard more about this dissertation than he might ever have wanted to: he has been a source of wisdom and insight throughout the process.

For my grandmother, Ethel Aarons

with admiration and love

ASPECTS OF THE SYNTAX OF AMERICAN SIGN LANGUAGE

(Order No.)

DEBRA AARONS

Boston University, Graduate School, 1994

Major Professor: Carol Neidle, Associate Professor of Linguistics

ABSTRACT

This dissertation offers an analysis of the syntactic structure of American Sign Language, within the context of X'-theory. The internal structure of the sentence is examined. Despite the difference in modality between signed and spoken languages, one important consequence of this analysis is the conclusion that the basic syntactic structure of American Sign Language conforms to the same fundamental pattern as other natural languages that have been more thoroughly studied by syntacticians.

The first chapter provides background information about the context for linguistic research on American Sign Language, and the methodology involved in the elicitation of native judgments. Chapter 2 discusses previous linguistic research relevant to word order, non-manual marking, wh-questions, and topic constructions in ASL.

Chapter 3 is devoted to non-manual grammatical marking: the use of facial expression and movement of the head and upper torso, simultaneously with manual signing, for expression of syntactic information. Since such marking is characteristically manifested over the c-command domain of the node (specifically, the functional head) with which it is associated, the domain of spread provides crucial information about the hierarchical structure of the language. The internal structure of the ASL clause is

examined, using evidence from the distribution of non-manual marking.

Chapter 4 presents arguments in support of the claim that wh-words move rightward (and to the canonical structural position for wh-words, namely Specifier of CP). An alternative proposal that the Specifier of CP is to the left and that wh-words move leftward in ASL is shown to be incorrect. In addition, despite claims to the contrary, extraction of wh-words out of embedded clauses does occur.

Topics, occurring in a position left-adjoined to CP, are discussed in Chapter 5. A distinction among several types of topics is demonstrated; these topics differ in their syntactic characteristics and their non-manual marking (distinctions not previously recognized in the literature).

CHAPTER FOUR: Wh-Movement in ASL

CHAPTER FIVE: Topics and Topicalization in ASL

LIST OF TABLES

LIST OF FIGURES

NOTATION CONVENTIONS

SIGN	Upper case gloss represents ASL signs with approximately the meaning of the English word.
SIGN_i	Subscripts indicate intended coreference.
IX	This is the use of the index finger to point. Depending on its context, it can establish pronominal reference, be used as a determiner, or indicate a location in actual or abstract space.

A line on top of a sign indicates inherent non-manual marking:

___wh WHAT	wh-marking
_____t JOHN	topic marking
_rh/wh WHO	rhetorical wh-question marking
__y/n SIGN	yes/no question marking
__neg NOT	negation marking

A dotted line over a series of signs shows the spread of the non-manual marking:

_ _ _ _ _ _ _ ____wh
JOHN BUY WHAT

____ _ _ _ _ _ _neg
JOHN NOT BUY BOOK

INTRODUCTION

In this dissertation, I investigate several issues of central importance to the determination of the basic structure of American Sign Language, within the X-bar framework. The results presented in this dissertation are based on a foundation laid in previous research conducted jointly by Aarons, Bahan, Kegl and Neidle (1992-a, b, and c) in which they offer specific proposals for the basic syntactic structure of ASL. The structure proposed in ABKN, for which this dissertation provides additional confirmation, is quite consistent with the syntactic organization proposed for other natural languages that have been studied within the X-bar framework.

The organization of the dissertation is as follows. Chapter 1 describes the context in which linguistic research into ASL is conducted. The chapter provides some background information about American Sign Language and its origins, and discusses issues pertaining to data collection and analysis, as well as outlining the orientation of recent linguistic research on ASL.

Chapter 2 presents a selective overview of the research developments relevant to the major topics covered in this dissertation, notably issues concerning non-manual marking, word order, wh-movement and topics and topicalization. Particular attention is paid to those theoretical accounts that are important for a discussion of the claims made in this dissertation.

Chapter 3 examines non-manual grammatical marking, a particular feature of signed languages and shows that its spread is crucial in revealing the constituent structure of the ASL sentence. It is demonstrated that syntactic features associated with functional heads in ASL may spread over their c-command domains and, using evidence from

several different non-manual markings, I argue for the constituent structure of the ASL sentence.

Chapter 4 provides detailed argumentation in support of the claim that wh-movement is rightward in ASL and that the Spec of CP, to which wh-phrases may move, is to the right of the IP in ASL, contrary to previous claims. I investigate the extraction of wh-words from embedded clauses and examine questions containing multiple occurrences of a wh-word, as such sentences seem to have been a source of confusion in previous analyses of ASL.

Chapter 5 discusses topics and topicalization and argues, in accord with previous proposals, for a structural position left-adjoined to CP. I argue that the ASL sentence can contain a maximum of two topics and also, that extraction out of non-finite embedded clauses is possible in ASL. In addition, several distinctive non-manual markings are identified that accompany at least three different sorts of topics in ASL and the permissible combinations of these different sorts of topics are investigated.

Chapter 6 summarizes the conclusions that have been reached and discusses them in terms of their overall contribution to the field of ASL linguistics. I offer some unsolved puzzles as fruitful areas for future research.

CHAPTER ONE

The Context for American Sign Language Research

1.0 Overview

This chapter presents the context in which American Sign Language research is conducted. Some background information is provided in Section 1.1 about the origins of American Sign Language and its use by the Deaf[1] Community in the United States, as well as about the gradual recognition of ASL as a language. Section 1.2 discusses the various problems faced by the hearing linguistic researcher working on American Sign Language, such as confusion in the minds of many researchers and users of the language about who is the authority on the language itself; the unequal relationships that have existed in the past between deaf people and hearing researchers; and the effect of these relationships on data collection and the dissemination of results. Collection of various different sorts of data is considered, as are issues related to working with native informants. This section also presents an overview of judgment tasks, and some ideas about the elicitation and interpretation of data. Section 1.3 examines the orientation of recent linguistic research on ASL, showing first how some early researchers tried to prove that ASL is not like spoken languages, and then how later researchers concentrated on the similarities between ASL and spoken languages, using evidence from biology, language acquisition and an analysis of ASL's linguistic structure.

[1] In accord with the tradition of literature on the topic of deafness, I use capital D (Deaf) to refer to people who identify themselves culturally with the Deaf community, and small d (deaf) to refer to audiological deafness.

1.1 Background Information about American Sign Language

American Sign Language (ASL) is the visual-gestural language used by deaf people in the United States and parts of Canada. It is the native language of only about 10% of these deaf people, however, as only 10% of deaf children are born to deaf parents. For other deaf individuals, American Sign Language (henceforth ASL) is a second language, or for some, a late-acquired first language. These people learn ASL in a variety of contexts, either in residential schools from other deaf children, through sign language classes, or from social exposure to other deaf people.

1.1.1 Origins of American Sign Language and Deaf Education in the United States

The first school for the deaf, The American Asylum for the Deaf, was established in 1817 in Hartford, Connecticut, by Thomas Hopkins Gallaudet, who travelled to Europe in order to explore methods of deaf education abroad and to bring back a system for educating deaf children to the USA. In France, he encountered the Abbé de l'Épée, who had developed a system for teaching deaf children to read using "methodical signs"; this is generally believed to have been an attempt to "systematize" the indigenous language already in use by deaf people in France. Gallaudet brought back with him to the United States a deaf teacher, Laurent Clerc, who taught him French Sign Language, in return for being taught English. Clerc was the first teacher of the deaf at the first deaf school in the United States. He had a specialized knowledge of the use of the Abbé's "methodical sign" system, and he also brought his own knowledge of French Sign Language. The deaf children who came to the American Asylum for the Deaf (AAD) in Hartford (later the American School for the Deaf) also brought with them their own indigenous sign languages, and various forms of home signs. There was, for example, a strong

community of signing people, both deaf and hearing, on Martha's Vineyard. According to Groce (1985), this community had already been in existence for at least a hundred years by 1817, and, with a high incidence of genetic deafness, had its own sign language. Children from Martha's Vineyard started attending the AAD and constituted the largest group of children at the school from any one area in the United States, and of course, the language used at the school was taken back to the Martha's Vineyard community. It is generally thought that the sign language used by the people on Martha's Vineyard had a very strong influence on what later became American Sign Language.

There were several other communities in the United States with a high incidence of genetic deafness, including one in Maine (with its roots in the Vineyard community), and these probably all contributed some indigenous varieties of sign (Groce, 1985). It is clear that French Sign Language was also a major influence on the development of American Sign Language (Woodward, 1978). Since many deaf people from all over the country were educated at the AAD, ASL spread to most of the places where deaf people lived, and became the language which deaf people used in their communication with each other. As a result of intermarriage among deaf people, ASL became the home language of deaf people in the United States. Over the years, other schools for the deaf were established.

With encouragement from advocates of oralism in the United States, many schools for the deaf later adopted the philosophy of teaching deaf children to lipread and speak English, while forbidding the use of signing. The decision to implement oralism in deaf education, made at the International Congress of the Deaf in Milan in 1880, from which deaf delegates were excluded, led to the adaptation of methods of oralism in American schools for the deaf, and an attempt to abolish the use of ASL. From then on, fewer deaf people were permitted to become teachers of the deaf, because of the requirements to

speak, and a great limitation was placed on the official use of ASL in schools (Lane, 1985, 1992). ASL became stigmatized and for many deaf people it ceased to be regarded as a real language. Even at Gallaudet College, established in 1864 for deaf people, ASL was not used as a medium of communication or instruction in the classroom and was not regarded seriously as a subject of study by faculty or students. To this day, there are only two academic departments at Gallaudet University which use ASL as the official medium of instruction.

1.1.2 Recognition and Study of American Sign Language as a Language

The first attempt to view ASL as a language and as a serious object of study was made by Stokoe (1960). He was largely ridiculed and denigrated by his colleagues at Gallaudet College. However, his work stands as a landmark in the history of signed languages *qua* languages. Stokoe worked with deaf people to encode, describe and study their language, and began training a generation of ASL researchers. He showed that ASL had a morphology and a syntax of its own, quite different from those of English. Moreover, he showed that ASL had a phonology—a completely revolutionary notion for a language distinguished by the absence of sound. His description of the phonology of ASL drew on structural principles, analogous to phonological principles in spoken language. He called ASL's distinctive units, on a par with phonemes, "cheremes" (from the Greek word for hand) and showed that every sign was made up of distinctive features he called "primes"—handshape, location, movement (later, palm orientation was added as a fourth prime). He argued that these cheremes occurred simultaneously, rather than sequentially as phonemes do in spoken language phonology.

A small body of researchers began to uncover the underlying principles of ASL grammar during the 1960's and 70's. The early study of the language was concerned with very basic issues, such as what exactly a verb is in ASL (Fischer and Gough, 1978). In fact, in ASL research nothing has been taken for granted. There is still debate as to what constitutes a pronoun in ASL (Fant, 1973; Friedman, 1975; Gee and Kegl, 1983; Kegl, Lentz and Philip, 1976; Kegl, 1976; Lacy, 1974; Hoffmeister, 1978; Lillo-Martin and Klima, 1990; Meier, 1990). There is also some disagreement as to what can and cannot be considered a verb and whether or not the language has prepositions (Kegl, 1985, 1990; McIntire, 1980). In addition, there are arguments about word order (Friedman, 1975; Fischer, 1976; Kegl, 1976; Liddell, 1980) and dissension about whether or not the language has embedded clauses (Coulter, 1979; Liddell, 1980; Thompson, 1977). This kind of uncertainty is not unusual in research on relatively unstudied languages. For instance, there is still controversy about whether adjectives exist in Chinese (Yip, 1985). Many issues long-resolved for more studied languages remain matters of controversy in ASL, still to be decided by further investigation.

1.2 Problems Facing the American Sign Language Linguistic Researcher

The linguist about to begin research on ASL is faced with a number of constraints and problems. Some of these are specific to work on ASL and some are more typical of linguistic fieldwork in general. Many of these issues are particularly complex since ASL is undervalued by the general community, and not regarded as a true language even by some of its users. This is a characteristic attitude towards creoles and many minority languages.

1.2.1 The Relationship between Deaf People and Hearing Researchers

There have been some very important linguistic investigations into ASL. The best of these studies have involved deaf researchers or a collaboration between deaf and hearing researchers. The relationship between deaf and hearing people in the research situation has serious ramifications for the collection of data and the dissemination of scientific results. This section evaluates the effect of the relationship between deaf and hearing people on the collection of ASL data in the research context. The fact that there are so few deaf researchers who work on ASL is discussed, and reasons for this are considered. With regard to linguistic research, the effects of the relationship between deaf and hearing people on the dissemination of scientific results to the community are also explored.

1.2.1.1 Language Authority

In the case of understudied and oppressed languages, the misconceptions, half-truths, myths, and mistakes of researchers who do not take the trouble to consult adequately with native users of the language are often believed. The power to make judgments about the language, under such circumstances, is in the hands of the "experts." Those deemed to be experts, in cases where native users are not trained to engage in research on their language, are non-native users of the language. To some extent, this has been the case with ASL research. In general, hearing researchers are regarded as the experts on ASL, as they are the ones who publish their results. Deaf people, who frequently have no way to argue linguistically with such "experts," tend to defer to them or to mistrust them deeply, or to ignore them. In any of these events, the interest of research into the language is not served.

1.2.1.2 The Effect of the Relationship on Data Collection

The power relations between hearing and deaf in the research situation cannot be overestimated in terms of their effects on the quality of the research. In general, the hearing researcher is in a position of superiority and authority relative to the deaf person. On this basis, the deaf person frequently feels, consciously or not, the desire to please the hearing researcher and, as informant, to produce the judgments that the researcher wants. In some cases, particularly where the situation is exploitive, the deaf person resents the hearing researcher and does not really care enough to consider the data very carefully, as the project will never be regarded as his or her work: the hearing researcher will claim the credit.

Frequently, the results of linguistic research are not shared with deaf colleagues. When hearing researchers do discuss their results with their deaf colleagues, the deaf people sometimes accept their claims without challenging them, or dismiss them out of hand as coming from a hearing researcher who cannot even sign well. However, the power relations in the research situation being what they are, in either case the deaf research assistants who often serve as informants seldom challenge their superiors directly.

1.2.1.3 The Dearth of Deaf American Sign Language Researchers

A major part of the oppression of deaf people has been that for many years their education has been inadequate, and so very few deaf people actually manage to reach the level of education where they can choose to become researchers. Deaf people, in general, in the research situation, work as assistants, and their function is often to serve as informants for the hearing researcher. In the course of working on the language, researchers often do not discuss their results with their deaf assistants. Because of their

limited educational background, it is thus rare that deaf people become researchers; moreover, many deaf people say that even when they participate in research, they rarely receive in-service training.

Another reason that few deaf people tend to become linguistic researchers is that research into ASL linguistics is not perceived as a high research priority in the Deaf community. Many deaf people are concerned with what are perceived as more immediate issues, such as educational reform and the language acquisition of deaf children. The importance of a better understanding of the language itself to other long-range goals of the community is generally not perceived.

In any event, for as long as ASL linguistics remains the domain in which hearing linguists have the expertise, deaf people will be alienated from feeling that they have a share in ASL linguistic research. The problems detailed in 1.2.1.2 will continue to affect the study of the language.

1.2.1.4 Effects of the Relationship on the Dissemination of Results

The nature of the relationship between hearing researchers and deaf colleagues has an effect on the way results of research are disseminated. Researchers report their results publicly, either at conferences or in journals. Useful communication between hearing researchers and deaf colleagues would ideally bring forth corrections of misrepresentations of data as well as suggestions of new ideas. Deaf researchers presented with data and analyses from hearing researchers are not infrequently somewhat skeptical, although most often they keep their reactions to themselves or share them only with other deaf colleagues. There are several contributing factors. With respect to the data, deaf people who disagree with claims made about their language are often hesitant to speak out in public fora (e.g., at conferences), for many reasons, some of which have

been previously discussed. Other reasons include an unwillingness to challenge the authorities, hesitation about appearing critical of data that are attributed to other deaf people, and the perception that the hearing linguists are so far off base that it is not worth attempting to correct them. The presentation style of some hearing linguists also seems designed to impress through obfuscation, through the use of technical jargon used by the "theoretical linguists," which is not accessible to deaf people in the audience. All too rarely is the attempt made to communicate the fundamental ideas in a way that is understandable to deaf researchers who may not be steeped in "theoretical" linguistics. If the content of the analyses is not accessible to the deaf people listening to a conference talk, they are all the less likely to offer comments on the data offered to support the claims. The hostility that is felt toward hearing linguists who are perceived to care very little about communicating with deaf people in the audience does not help to improve relations between hearing and deaf researchers, nor does it stimulate deaf people's interest in linguistics generally (which may be a contributing factor to the shortage of deaf linguistic researchers). However, Deaf people are now demanding that not only the research results, but the theoretical training, as well, be made accessible to them in a culturally appropriate format.

As yet, these demands have not really been met. In the present context, the normal checks and balances provided by public dissemination of results are absent. As a result, faulty research goes unchallenged and unexamined, and makes its way into the mainstream research literature and into linguistics textbooks, and thus is further propagated, laying a very shaky foundation for future research. As long as linguistic theories remain arcane and in the custody of the few, concerned users of the language will never have control over the generalizations that are made about their language, and the misconceptions that pass for fact will remain unchallenged.

In summary, the results of research on ASL presented publicly are not open to sufficient scrutiny. The relationships that exist between hearing linguists and the deaf community are not optimal for the scientific study of the language. The sooner native users of ASL are given the opportunity and the training to become knowledgeable linguists and experts on their own language and the sooner true collaborative work becomes the expectation rather than the exception, the more rapidly linguistic research on ASL is likely to progress.

1.2.2 Availability of the Data

As far as ASL is concerned, linguistic data are much less readily available to the researcher in the form in which linguistic data from other languages might be obtained. ASL is a language without an orthography. There have been attempts to develop a writing system for ASL (Sutton, 1981; Newkirk, 1976, 1987; Stokoe *et al.*, 1965) but none of these has caught on and been accepted on a grand scale. Thus, there are no written texts containing linguistic data to which the researcher can refer. ASL also differs from most other languages (including other non-written languages) in that the majority of the users of ASL are not native. This is because the majority of deaf people are not born to deaf parents, and not all deaf parents of deaf children use ASL (although those that do not are a very small minority). As is standard when linguistic researchers work with informants, the most trustworthy data are to be obtained from and by native users of the language. However, the assumption cannot be made that any native signer will automatically provide reliable grammaticality judgments.

1.2.3 Data Collection

ASL data should, thus, be collected from native users of ASL, who constitute less than 10% of the deaf population. In the current research situation, the majority of ASL researchers are hearing, although this does not have to be the case. The relationship that exists between the researcher and the informant is crucial in ensuring that the data collected are valid.

Different types of ASL data can be found. Naturalistic data can be collected in so-called natural settings. In order for these data to be collected, some kind of recording device, most typically a videocamera, must be used. This means that if the participants are aware that they are being recorded, there is usually some effect, and the data are not necessarily as natural as they might be if the camera were not present (Ochs, 1979, based on the classic concern within the philosophy of science, expressed by Popper, 1959). A different kind of data can also be found in prerecorded videotapes of stories, lectures, plays, etc.. These data vary in their degree of naturalness. Often the videotapes are of rehearsed performances.

Naturalistic data, although illuminating, are often not sufficient for certain kinds of linguistic analysis. Grammaticality judgments on sentences that happen not to be part of any particular corpus are often required. Elicited data may be collected in a number of different ways, some of which will be described here. Videotaping of informant sessions is probably the simplest and most efficient way of preserving primary data and facilitating analysis.

1.2.3.1 Naturalistic Data

Some ASL researchers believe that the most reliable data are those extracted from naturalistic contexts. Their argument is that under laboratory conditions, the language produced is artificial, does not emerge from a context, and is not an accurate reflection of the real nature of the language in use. They also argue that experimental conditions may affect the data, as might the relationship between the researcher and the informant. At the extreme, there are those who do not consider that elicited data are a valid source of information about the language.

Whereas natural or naturalistic contexts, of course, provide an important source of information about the language, standard linguistic procedures (used in the study of spoken languages) often necessitate questioning the informant about specific data required to test hypotheses. The crucial examples cannot usually be found in naturalistic data. It also cannot be assumed (for any language) that all utterances produced in a naturalistic context are grammatical. Furthermore, examining only naturalistic data will tell us about some of the utterances that are possible, but will never tell us about those that are absolutely ruled out. The ungrammaticality of particular sentences can provide information essential to the testing of linguistic hypotheses, in both spoken and signed languages.

1.2.3.2 Elicited Data

Data can be elicited from native informants in a number of ways. Different types of activities can be used by the researcher for specific purposes. For instance, some tasks are designed to facilitate the researcher's understanding of how a certain process works in the language. Data collection may also be performed to obtain evidence relevant to a particular hypothesis.

Informants may need some experience in doing a particular kind of task so that they know what is expected of them. If the informant does not fully understand the task, he may nevertheless perform it, but the results may be very far from what the elicitor believes has been collected. Thus, it is very important that the elicitor and the informant are satisfied that they agree on what the task involves. While the researcher will frequently try to replicate the data using another task, results based on miscommunication between researcher and informant may still lead the researcher astray.

Researchers who do linguistic fieldwork often ask native informants for grammaticality judgments. The informant needs to be perfectly clear about the difference between prescriptive and descriptive notions of grammaticality. In the case of ASL, some researchers find it useful to have as expert a signer as possible to sign the stimulus utterance. Other researchers use interpreters or videotaped examples, while yet others sign for themselves. Sometimes a very tiny change in facial expression can make the difference in an ASL grammaticality judgment. In terms of data collection, it is essential to have the informant sign the item s/he is being asked to give a judgment on, so that it is clear that both the researcher and the informant are referring to the identical utterance, and so that the informant actually produces the utterance, rather than giving a judgment on what might be an approximation. It may also be useful to have the informant sign correct alternatives if s/he finds the original sentence ungrammatical. One of the reasons for the importance of videotaping examples for which judgments are given is that the written representation of ASL data uses some form of gloss notation. However, gloss notation is inadequate for recording the full complexity of the language, and furthermore, it is not yet clear what all the relevant characteristics of the ASL data are. The videotaping of both example sentences and of the stimuli, at present, constitutes the only complete and accurate record of actual ASL data.

Researchers may also wish to pose specific questions about the meaning of an utterance (perhaps relative to another utterance). The researcher might ask the informant about contexts in which the utterance would be appropriate. Informants may be asked which of a number of similar utterances they find most natural, or to rank their preferences. Once again, the most effective way of collecting these data is to ensure that the informant signs all the utterances that are discussed, so that there is a videotaped record of every utterance, whether judged grammatical or ungrammatical.

Depending on how bilingual the informant is, a researcher may request that s/he translate an English sentence into ASL. The chances are that the informant will produce more than one alternative. Translation tasks are potentially very risky and depend on the degree of the informant's bilingualism. Such tasks often trigger code-shifting.[2] Furthermore, the kinds of judgments being asked for are often very fine, requiring that the informant's understanding of English be sophisticated. Native users of ASL with the degree of bilingualism required to provide totally reliable and nuanced translations in English are very rare.

Some informants are able to answer questions about data they provide, which makes possible interesting and important exploratory work. For example, the researcher can ask an informant to speculate on any discernible difference between two utterances, or ask about the informant's intuitions about specific aspects of sentence structure—such as whether a given sequence feels like one sentence or two. The researcher is certainly not bound to accept such information as fact, but might use it as a clue to the grammatical structure. Informants who have a very keen sense of their language can frequently provide intuitive answers to questions about the language, and researchers may pursue

[2]Code-shifting occurs when, in an attempt to make themselves maximally understood by interlocutors who speak a different language, people tend not to use their own most natural way of expressing themselves, but rather, accommodate their use of language to what they believe the other person will most easily understand. This is often not conscious.

these intuitions further. Generally, once an informant knows what is expected, the researcher can vary the tasks in a session, depending on what seems the most appropriate way to pursue a line of inquiry.

1.2.4 Working with Native Informants

For obvious reasons, standard practice among linguistic researchers is to work with native informants. In ASL research, however, because so few deaf people are native users of ASL, there may be a temptation to work with informants who seem to have excellent ASL skills but who are not native users of the language. On occasion, hearing researchers have not been sufficiently careful about this issue. Linguistic research in many languages has shown that there really is a difference between native judgments and the judgments of other users of a language. However, native knowledge of the language is not sufficient to ensure that an informant will provide the kind of data needed by the researcher for linguistic analysis.

1.2.4.1 Metalinguistic Awareness of the Informant and Collective Knowledge about the Language

In order for an informant to perform the kinds of elicitation tasks described above, a certain awareness is required, particularly for answering questions related to his or her intuitions about the grammar of the language. The issues for researchers in working with native informants are not the same for all languages. In some measure, an informant's knowledge about his or her language is based on the extent to which the language has been studied and the kind of metalinguistic knowledge about the language that is common in the community. In addition, the linguistic sophistication of an informant can vary, depending upon many factors including past exposure to and training in linguistics.

Finally, some informants are simply better than others in understanding the nature of judgment tasks.

Working with a native informant, the researcher can indirectly tap the collective linguistic knowledge a community has about its language. While such information may or may not hold up on linguistic analysis, such received wisdom is sometimes based on some serious linguistic insight, and thus can be useful information for linguists. Furthermore, the community's tradition of language analysis also is helpful in developing individuals' abilities for metalinguistic reflection. However, traditions vary greatly in this regard.

There are at least two sorts of situations in relation to a community's level of linguistic awareness. In certain communities, people have reflected on their language collectively and individually for many years. This probably has to do with the community's attitude towards its language (and frequently, the attitude of other communities to the language, too) and the fact that for generations it has regarded its language as being worthy of serious consideration and study. The users of such languages may have access to the conclusions of collective reflections on the language, as well as being accustomed to thinking about their own language analytically. The high level of linguistic awareness of their own language may facilitate metalinguistic discussion. In the second sort of situation, languages have been systematically undervalued socially and politically. This is usually because their users have been colonized or oppressed by some dominant group, whose language is consequently much more highly valued (Fishman, 1971; Bell, 1976; Trudgill, 1983). The users of these languages themselves have often internalized the dominant attitudes towards their language, and as a result, they do not regard their own language as a serious object of study. The users of these oppressed languages have been neither enabled, nor in some

cases allowed, to regard their languages as worthy of serious study. Unfortunately, many users of these languages believe their own language to be inferior, not a real language, and as they have never really been given the opportunity to reflect on it linguistically and come to their own conclusions, they tend to believe what the "experts" tell them about the specific properties of their language. In many cases, then, users of undervalued languages tend to believe, or adopt, proclamations made by researchers about their languages.

An example of this phenomenon is to be seen in the early work done on African languages by missionaries. Many of these missionaries were not linguists, but they transcribed oral languages in Africa, which they then codified into grammars. The grammars were often based on what the missionaries regarded as grammatical rules in English, French, or German (the languages of the colonial powers) and constructions that appeared to be analogues in the African languages were given similar names. Often these structures are entirely different from their supposed equivalents. However, over the years, missionary grammars became standard texts for the teaching and learning of prescriptive grammar in African languages. As a result, generations of users of those African languages have been taught the "rules" of their language. If the rules do not make internal sense, people think that their language is strange, or that their language does not obey the rules of (western) grammar. They may then feel rather alienated from the "western" grammatical tradition, or believe, perhaps, that their language is not a real language.

Beyond the collective knowledge that a community has about its language and the access people have to the conclusions which have been drawn about its properties, the individual linguistic sophistication of the informant is naturally an important consideration for the researcher. An informant who knows something about linguistics is

likely to make the researcher's job a lot easier. Of course, if the informant is comfortable with terminology like "verb" and "adjective," or knows what a relative clause is, the researcher can engage the informant in discussion at a more metalinguistic level. However, there is a *caveat* here. Sometimes, if an informant knows a little elementary linguistics and believes some preconceptions that s/he has learned about language, this might be a hindrance to obtaining his or her real judgments. This is, of course, not necessarily the case, particularly when the informant is linguistically sophisticated, and knows what is involved in accessing his or her own judgments. Naturally, such an informant can influence the direction of the research, by producing unelicited examples that illuminate the issues under investigation, and by suggesting other interesting and fruitful issues.

1.2.4.2 Judgment Tasks

The researcher needs to work with an informant's real judgments, which he or she must be able to offer without fear of ridicule or punishment. Not all native users of a particular language are equally talented in the particular practices involved in being an informant. This is no reflection on their abilities and expertise in the use of their own language. There are specific skills that the most reliable informants either possess or can learn to use. Informants need to be very comfortable with their language. They must understand the difference between prescriptive rules, passed down authoritatively (and often mythologized), and actual use of the language. Thus, they really need to trust their own intuitions about their language.

Some tasks can require very fine judgments. Native informants of ASL do not always agree on these judgments. This is the case in other languages too. As with all languages, a certain amount of individual variation is to be expected. There are, in

addition, dialectal differences. For ASL, these dialectal differences are often associated with different residential schools for the deaf, as the residential school is, in fact, the place where many Deaf children acquire ASL.

In the case of ASL informants, their knowledge of English can sometimes create a problem for their judgments of ASL. This is less likely when the informant has a great pride in his or her own language and regards it as a real language. The complication arises when the informant regards English as a better language. Because of the negative status ASL has in schools for the deaf, and the fact that English is stressed as the model for language, many deaf people tend to think that the more English-like a signed utterance is, the more "correct" it is.[3] This is further reinforced by the higher social status in the hearing community that is achieved by deaf people who have good English skills (i.e., speech-reading and speaking), and the fact that, as users of an oppressed language, many deaf people have internalized the belief that their language is inferior. Often, then, the more educated ASL informants are, the better their English is likely to be, and the greater the risk that they will base their reported judgments of ASL on their knowledge of English. Of course, native ASL informants who have a fine command of English and of ASL, and who view ASL as the language they are most comfortable with, not inferior to English, are extremely valuable informants. In this case, the effects of interference from English on their judgments of ASL (ideally) can be minimized.

---

[3]Many deaf people use a form of signing called PSE (Pidgin Signed English). Essentially, this consists of using ASL signs in an English-like word order. This form of communication was actively encouraged in some schools for the deaf. Subsequently, the invention of invented manual codes for English (Signed Exact English and its various incarnations) was imposed as the "language" of communication in many schools for the deaf. In addition, Deaf people often switch to an English-like order when signing to hearing people. The ASL/English continuum is a vast and interesting area of study. Readers are referred to Reilly and McIntire (1980) and Lucas and Valli (1992).

1.2.4.3 Data Elicitation

The analysis of a particular researcher can only be as good as the collection, transcription and checking of the data being used. There are a number of pitfalls for the hearing researcher embarking on elicitation of ASL data. Non-native researchers need to be sure that their native informants are prepared to offer judgments in front of other native users, or to discuss them with other native users. An obvious check on reliability is for the researcher to verify the informant's judgments on videotaped material with other native users. The use of different elicitation tasks to replicate data is another way of increasing reliability. Also, the researcher can use repeated elicitation tasks at spaced intervals as a check on the internal consistency of the data. Frequently, hearing researchers who elicit data from native informants do not verify the judgments to be sure that the utterances mean what they seem to mean, or do not check the judgments with other native signers. This often gives rise to the situation where data from native signers are misused for a particular analysis and thus the conclusions are unreliable.

One way of eliciting native judgments is to ask the informant to imagine a context in which either s/he or a member of his or her family might use a given utterance. Informants who say: "I don't use it myself, but I have seen it; it is possible that other deaf people use it," are often being polite in not wishing to criticize the language of other deaf people. If the informant does not use the utterance himself, it should not be considered to be grammatical.

Sometimes the actual elicitation procedures researchers use are not very reliable. In the past, some researchers have transcribed the data while the deaf informant was signing. This method is not accurate or reliable, nor are the actual data available to be checked by other native signers or researchers. With the advent of videotape, data

elicitation can be subjected to much closer scrutiny. It is possible to view videotapes at many different speeds, both forward and backward, to freeze frames, and, of course, to play tapes back to informants themselves, and show them to other deaf people to get their judgments. For researchers, videotape provides the means to preserve raw data and to show data to other researchers. Data at conferences are normally provided in English gloss notation only. Videotape, when it is available, provides an invaluable means for the precise presentation of data, and for the resolution of disputes about the data that may arise.

Techniques of data elicitation have been the subject of some controversy. Naturally, the ideal elicitation situation is one in which the researcher is a native user of the language, eliciting judgments from other natives. In the situation where the researcher is not a native signer, he or she should be careful not to introduce unintended sources of error into the data. Thus, if the researcher signs the stimulus sentence imperfectly, the informant might well judge the utterance to be ungrammatical but for reasons that are entirely independent of what the researcher believes is being tested. The signing skills of researchers frequently cause problems in ASL research. If the researcher does sign the utterance to the informant, both the researcher and the informant should be seen on the videotape. Furthermore, if another method of eliciting data is chosen, whether the researcher uses videotaped examples of another native signer, or elicits data through a skilled interpreter, there should be a record of the way in which the data were elicited, as well as a videotaped record of the data themselves.

The transcription of ASL data may prove to be problematic. There are many different transcription systems used for ASL, and choosing the most appropriate for a particular research purpose can be very tricky. Obviously, the more accurate the transcription and the more detailed with respect to aspects of the language relevant to the

research, the better the analysis is likely to be. However, the variety of transcription systems has not facilitated productive communication among different ASL researchers, and when this is coupled with a situation in which the data appear only in transcribed form, researchers tend not to be able to evaluate one another's work with a great degree of certainty. To some extent, the transcription reflects the implicit analysis of a particular researcher (Ochs, 1979). Furthermore, very few of the numerous transcription systems used for ASL make the data accessible to a reader who is not already quite knowledgeable about ASL. Technological advances, particularly the availability of videotape and CD-ROM, should make it much easier for data to be preserved, presented and accessed. Data being discussed in a public forum ought to be accessible for other researchers to view.

1.2.4.4 Interpretation of Data

In ASL research, interpreting the data can be a very complicated activity. If the data are on videotape, researchers can watch the videotape, then transcribe what they see. People do not always agree about what they see. It is helpful to look at tapes of data with another researcher, or a native signer, and ideally, with informants themselves, to check that what is to be transcribed is agreed upon.

Once the researcher has collected the data on videotape and transcribed them, using whatever transcription system best suits the analysis being engaged in, the data need to be interpreted. The analysis will only be as good as the powers of observation and the transcription of the researcher. Researchers who seek precision in the interpretation of their data should solicit help from deaf people, other researchers, ASL bilinguals, and interpreters in looking very closely at the data they have collected.

Since Stokoe's proposal that ASL does indeed have linguistic structure and can therefore be studied in the same way as all other natural languages can be studied, there

has been a steadily growing body of linguistic research into ASL. The orientation that ASL research has taken has probably been seriously influenced by some of the conditions just described.

1.3 The Orientation of Recent Linguistic Research on American Sign Language

Researchers into ASL linguistics have been torn between the desire to convince people that ASL is not just an inferior, broken form of English, on the one hand, and the desire to show the relation between ASL and all other natural languages within a linguistic framework, on the other. Thus, some research has been geared toward showing that ASL is not like spoken language, and particularly, that it is not English. Other research, however, has shown that ASL is similar to spoken languages (and, in fact, all natural languages) in fundamental ways.

1.3.1 Proving that American Sign Language is not like Spoken Language

Early researchers in the field of ASL concentrated their efforts on demonstrating that ASL, as a language that uses the eyes and hands, is not at all similar to any language that uses the ears and the vocal apparatus. Enormous efforts were made to show that signed languages are different from, but not inferior to, spoken languages. Researchers tried specifically to show that ASL is not a form of English, and that ASL has a very different grammar from spoken languages, because its grammar is spatial.

1.3.1.1 American Sign Language is not English

Early ASL researchers were very concerned to show that ASL was a language quite independent of, and different from, English. Researchers dwelled on what they perceived to be the differences between ASL and English. They wanted to show that

ASL was not merely an inferior form of English, but that its grammar was quite different from that of English. One strongly-held belief was that ASL sentence structure is determined by the discourse organization of ASL, which follows a topic-comment style of discourse presentation. A claim was made by Friedman (1975) that ASL had no strict word order rules, but that ASL sentence structure itself was ordered in terms of the discourse principle of topic-comment: introduction of the topic, followed by the comment; and that grammatical relations, such as subject, verb and object were not relevant to ASL sentence structure. Many other researchers did not adopt such extreme views about the ways in which ASL is different from English, but there was great emphasis on showing that ASL behaved very differently from English. Thus, the aspects of ASL that were highlighted, were those features that are most strikingly not like English: the variable word order, the classifier system of ASL, non-manual grammatical marking, and crucially, the use of space in ASL.

1.3.1.2 American Sign Language has a Spatial Grammar

When Deaf people started to claim their language, and developed pride in ASL as the special language used by Deaf people as the mainstay of their cultural identity, they dwelled on the very particular properties that signed languages have. There was an emphasis on how signed languages are special, how they are different from spoken languages. This is a rich and exciting field of inquiry, and was engaged in with gusto by deaf and hearing researchers alike. Perhaps the greatest quantity of research on ASL has focussed on how signed languages are different from spoken languages.

The most obvious difference between signed and spoken languages is that spoken languages are made through the medium of sound. They involve the use of the ears and the vocal apparatus. Signed languages involve the use of the hands, the face and the

eyes, and they use the medium of space to express the relationship of the elements in the language to one another. Despite the fact that they occur in different modalities, the rate of production and processing of whole propositions in signed and spoken languages is more or less equivalent. Thus, although signed languages are processed visually, whereas spoken languages are processed aurally, processing research has shown that "[a]lthough the production of individual words is faster than that of individual signs, the production of spoken language sentences (propositions) was found to be equally as fast as the production of spoken language sentences with the same information (Bellugi and Fischer, 1972)." (Boyes-Braem and Kolb 1990:101)[4] The packaging of information in the different modalities is different. Because simultaneity of different pieces of information is an available option in the spatial modality, more information can be packed into one sign, even though individual spoken words seem to be produced more quickly than individual signs.

Signed language grammar utilizes the modality of space. The spatial modality allows for simultaneity, i.e., more than one piece of information can be communicated at one time. A good example of this can be found in the morphology of ASL. The different subcomponents of the sign are all visible more or less simultaneously; so, in some cases, what might require a sequential stream of morphemes or words in spoken language can be achieved simultaneously in a signed language. For example, different morphemes can be embedded in the path of a sign to convey additional information simultaneously with the path of the sign. Another example of simultaneity is morphological inflection to indicate the aspect of certain verbs.

The syntax of ASL is built on spatial contrasts. ASL uses three-dimensional space to set up points to represent places or people or things. Once these points have been

[4]In the exposition that I present here, I have drawn extensively from the excellent overview of research into signed languages by Boyes-Braem and Kolb (1990).

established, they can be referred back to (by pointing), allowing the cohesion of the discourse to be maintained. These points can function as locations for different places or things. Reference to people can also be established in space at particular points. Once a point has been set up for a particular person, then further reference to that point refers to that person. The subjects, objects and indirect objects of verbs can be established spatially. Subject-verb agreement, and verb-object agreement can be achieved by showing spatial agreement of the verb with the point established for the subject or object.

ASL also uses space to represent time (Frishberg, 1975; Cogen, 1977). The notion is that there is a metaphoric time line running through the signer's body (or just under his or her ear), from back to front. Metaphorically, reference to space to the front of the signer's body represents future time, space to the back of the signer's body represents past time and space directly in front of the signer's body represents present time. The signer can use the body to move backwards and forwards to represent time changes in discourse. Adverbials representing future time are made in a forward direction, and past time in a backward direction.[5] Thus, in ASL, the notion of time can be represented through the medium of space.

Space is also used in ASL to show narrative point of view (Bahan and Pettito, 1980; Loew, 1984). A signer can shift the head, shoulders, or entire torso to assume the role of another person in a discourse. This device is used to portray dialogues or reported speech, or to shift perspective to another character's point of view. Shifting exploits the fact that characters are established at a spatial location. This is a use of space that maintains the cohesion of the discourse, as unique referents are set up and referred to

[5]Thus, the sign for TOMORROW is made with an A-handshape (a balled fist with the thumb extended) with the thumb touching the cheek and then moving forward to a point in front of the signer's face: the sign for YESTERDAY is made with the thumb touching the signer's cheek and then moving backwards to a point on the face below the signer's ear.

consistently by means of spatial identification. Establishing unique referents in space, thus, is an essential part of ASL discourse, and the language fully exploits these contrasts, both at the syntactic and discourse level.

These examples show how the use of the spatial modality makes signed languages very different in their execution from spoken languages. Researchers have dwelled on these differences as they reveal that human languages can exploit different modalities to achieve analogous grammatical effects. Thus, signed languages can be shown to be rule-governed, exhibiting linguistic contrasts and patterns in ways that are most efficient for the modality in which they are produced and processed.

1.3.2 Proving that American Sign Language is Similar to Spoken Languages

Many linguists and psychologists, basing their research on claims that the human brain is essentially similar in all cognitively unimpaired people, and that all human languages have essentially the same structure, attempted to prove that if ASL is a naturally occurring human language, its structure is like any other human language, irrespective of its modality. To prove that ASL is similar to spoken languages, researchers investigated the language in terms of the hemispheric specialization of signers' brains, the ways in which the language is acquired, and the linguistic structure of the language.

1.3.2.1 Biology

Very important research conducted by Poizner, Klima, and Bellugi (1987), and confirmed in other studies (Poizner and Kegl, 1992, 1993, e.g.), has demonstrated that in terms of hemisphere specialization for language, deaf people have language, specifically syntax, localized in the same hemisphere of the brain as do hearing people,

i.e., in the left (in all but one case, so far). Thus, although spatial relations are usually right-hemisphere functions,[6] research conducted on deaf stroke victims has revealed that where there are left hemisphere lesions, deaf signers show language impairment, and where there are right-hemisphere lesions, language functions *per se* are not impaired, although the comprehension and production of other non-linguistic spatial relations are affected. This is a far-reaching result, because it shows that language is located in the left hemisphere of the brain, irrespective of language modality, and that the processing of sign language is more akin to that of spoken language than to the processing of other spatial relations. This similarity has to do with the fact that, although they occur in different modalities, there is something essentially the same about signed and spoken languages. Thus, it is language, rather than modality, that determines lateralization. The results on hemisphere specialization in deaf people also provide further evidence for the dissociation of language from non-linguistic cognitive functioning.

1.3.2.2 Acquisition

Research on the acquisition of ASL as a first language in children shows that, developmentally, deaf children exposed to ASL from birth acquire ASL at the same rate as hearing children acquire their first language. Moreover, evidence is provided by Maestas y Moores (1980) and later, Pettito and Marentette (1991), who conducted research on very young deaf babies of deaf parents, that deaf babies babble in sign language, using certain handshape patterns in repeated combinations, in a way that is quite analogous to the oral babbling of hearing children of the same age. General findings about the acquisition of ASL as a first language suggest that deaf children go through all the same stages in the acquisition of their language as do hearing children learning their first language (Bellugi, 1988; Bellugi and Klima, 1982; Loew, 1982;

[6] Praxis, however, can have a spatial component that engages the left hemisphere.

Newport and Meier, 1986; Pettito, 1983; Supalla, 1982). Furthermore, Newport (1988) and Newport and Singleton (1990) have shown that late learners of ASL show very similar critical period effects to late learners of other languages.

1.3.2.3 Linguistic Structure

Signed languages are very similar in their structure to spoken languages. However, relatively little research has focussed on the linguistic similarity of ASL to all other human languages. Liddell and Johnson's (1989) work on ASL phonology is one illustration of such research. Bearing in mind Stokoe's demonstration that ASL allows the simultaneous presentation of different phonological information, which at the time seemed to be extremely unusual compared to other languages (although it has been subsequently suggested that spoken languages, too, have simultaneous as well as sequential ordering of phonological information), Liddell and Johnson, following in the tradition of research initiated by Newkirk (1981), Ellenberger (1977), Kegl and Wilbur (1976), argued that ASL has a sequential ordering of phonemes, too. They showed that the ASL sign stream could be segmented into a series of movements and holds. They proposed that movements are analogous to vowels, and holds to consonants. They argued that the occurrence of movements and holds is rule-governed and predictable and that ASL obeys phonological rules that apply to spoken languages. They showed that ASL phonology is quite analogous to the phonology of spoken languages, in that it can be segmented sequentially, it has features that can be minimally contrasted, and it exhibits processes such as epenthesis, deletion, and assimilation. As with ASL phonology, it can be shown that ASL syntactic structure is quite like the syntactic structure proposed for other human languages, irrespective of the fact that it uses an entirely different modality

to manifest its grammar.

1.4 Conclusion

This chapter has considered the context in which research on ASL is conducted. It has provided some background information about the origins of ASL and its use by the Deaf community and in the education of deaf children in the United States. The chapter has detailed various problems facing the linguistic researcher working on ASL and examined the kinds of data that are helpful for different kinds of linguistic research. Various ways of working with native informants were explored, as well as issues relating to the interpretation of data. There was some general discussion about the orientation of recent linguistic research on ASL, contrasting earlier research which focussed on the different nature of signed languages with the current research emphasis on the similarity of ASL to all natural languages.

CHAPTER TWO

Recent Developments in ASL Syntax

2.0 Overview

This chapter contains an overview of recent research developments. This is by no means a comprehensive survey of the field, but rather, a summary of some of the more important developments that have direct bearing on the topics to be discussed in more detail in the body of this dissertation.

Section 2.1 summarizes descriptive and theoretical accounts of ASL, particularly with respect to questions of word order in the language. Section 2.2 presents a very brief overview of the theoretical framework used in this dissertation. Section 2.3 discusses non-manual marking in ASL, which plays an important role in the expression of grammatical information. Proposals made by different researchers about the nature of non-manual marking and the scope of its spread over particular domains are described briefly. Section 2.4 is concerned with word order in ASL, and details the attempts made to establish the underlying word order in the ASL sentence through the examination of prosody, non-manual marking, and the morphological properties of certain verb classes. Attempts to define ASL word order within a current X-bar theory are discussed.

In Section 2.5, studies of wh-movement in ASL are discussed briefly. Specific proposals about the position of the Specifier of CP, and thus about the directionality of wh-movement, are presented. Section 2.6 reviews previous research on topics and topicalization in ASL. Proposals that ASL sentence structure is based entirely on a topic/comment discourse organization, as well as proposals which challenge that claim,

are discussed. This section presents generally held beliefs about the single non-manual marking said to accompany topics and investigates claims about extraction to topic position.

Section 2.7 presents the basic arguments made for ASL clause structure by Aarons, Bahan, Kegl and Neidle (hereafter ABKN) (1992-a, b, and c) which form the basis for much of the analysis contained in this dissertation. Specifically, certain proposals, notably that every ASL sentence contains grammatical tense and structural agreement, which have not appeared in the ASL literature previous to ABKN,[1] are set out in this section.

2.1 Existing Accounts of ASL

Much of the research on ASL syntax has been descriptive. In the early years of ASL research, the concern was to describe the basic word order of ASL. Many studies were conducted in order to show that ASL is really quite different from English. In fact, the description of ASL sentence structure reveals many different surface word orders. A strongly-held belief was that ASL sentence structure is determined by the discourse organization of ASL presentation (Friedman, 1975; Anderson, 1978). Other researchers argued that ASL does, indeed, have a syntactically governed word order, and attempted to describe it (Fischer, 1975; Liddell, 1977). Non-manual marking accompanying manual signs was used by some early researchers to argue for the basic word order of the ASL sentence.

There have been relatively few theoretical accounts of ASL sentence structure. Kegl (1976) and Padden (1983) attempted to analyze ASL in the framework of Relational Grammar, and Fischer (1990), Lillo-Martin (1986, 1991), and Kegl (1985, 1986, 1987,

[1]Future references to ABKN, without any specific date, refer to all three papers: 1992-a, 1992-b, and 1992-c.

1990) have all proposed analyses in a Chomskyan framework. None of these accounts has proposed an overall syntactic structure for the ASL sentence. ABKN (1992-a, b, and c) propose a tree structure for ASL within the expanded INFL version of the X-bar framework (as proposed by Pollock, 1989; Chomsky 1991).[2] Petronio (1993) adopts essentially the same tree structure proposed in ABKN (1992-a), with a variation on the position of the Specifier of CP.[3]

2.2 Syntactic Framework of this Dissertation

Principles and Parameters

In this work, I assume the Principles and Parameters framework (Chomsky, 1986-a and b, 1991, 1992). This framework postulates that there is a Universal Grammar, and that this grammar consists essentially of a small number of principles that are invariant for all human languages. Particular languages are an instantiation of this rule system and vary systematically along certain "finitely valued parameters" (Chomsky, 1992:5). In this framework, there are different levels of representation: d-structure is the underlying representation of the sentence; s-structure (which consists of the level of LF (Logical Form) and PF (Phonetic Form) is the surface realization of the sentence.

The mechanism by which d-structure is related to s-structure (PF and LF) is "move α." Any element may be moved into any other empty position, subject to principles of well-formedness.

In addition to Movement Theory, the Principles and Parameters framework consists of a number of other separate modules, such as X-bar Theory, Case Theory, Theta

---

[2] See Section 2.7 for the ABKN tree.

[3] Petronio (1993) discusses only some of the the projections included in the ABKN tree. Her account differs fundamentally, however, from that proposed by ABKN (1992-a) in relation to wh-movement. Her proposal is that Spec, CP is to the left of the IP. She further proposes that Comp, postulated by her to be to the right of IP, provides a position for focussed elements. Proposals in Petronio (1993) that differ radically from the account presented in this dissertation will be addressed in detail in the relevant chapters, particularly Chapters 3 and 4.

Theory, and Binding Theory. X-bar Theory is essential to an understanding of the research presented in this dissertation.

X-bar Theory

X-bar Theory first evolved as a result of work by Jackendoff, Bresnan and Chomsky (Jackendoff, 1977; Chomsky, 1970; Bresnan, 1973). The essential insight of X-bar Theory is that all phrases conform to the same basic structure. For example, each phrase consists of a projection of the head; the essential features of the head, such as category, are shared by the phrase. So, NP is headed by N, VP is headed by V, AP is headed by A, etc..

In the version of X-bar Theory used here, all branching is assumed to be binary (Kayne, 1983). A phrase may contain, in addition to the head, a complement phrase (YP). The head and the complement phrase together form a new constituent, which shares the categorial properties of the head. This new constituent is a projection of the head, but not the maximal projection. The basic configuration for phrases of all categories is illustrated in Figure 1.

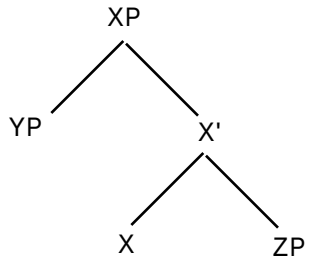

Figure 1 Basic X-bar Structure

Note that X^0 represents the head, and XP the maximal projection. The sister to X^0 is referred to as the complement, and the sister to X' is known as the Specifier.

The relative ordering of the binary branches may differ from language to language, and may moreover vary within different categories in a single language (Koopman, 1984; Travis, 1984, 1989; Georgopoulos, 1991; Giorgi and Longobardi, 1991; Jung, 1992). Kayne (1993), however, has proposed the linear ordering axiom, which suggests that all phrases are head-initial in all languages, and that different surface word orders are derived by movement.

X-bar theory was originally intended to account only for lexical categories, such as Noun, Verb, Adjective, etc.. However, it is now accepted by many linguists (see, e.g., Chomsky, 1986-a) that abstract grammatical information essential to syntactic representation also conforms to the same hierarchical structure. Categories that express such inflectional information are called functional categories and include Tense, Agreement, and Aspect. Initially, such information was included within a single node called Inflection. The sentence was analyzed as a projection of INFL, namely, as an Inflectional Phrase, or IP. However, more recently, it has been proposed that there are a number of separate functional categories, each having their own functional projection (Pollock, 1989; Chomsky, 1991). Figure 2 shows the basic tree proposed by Pollock.

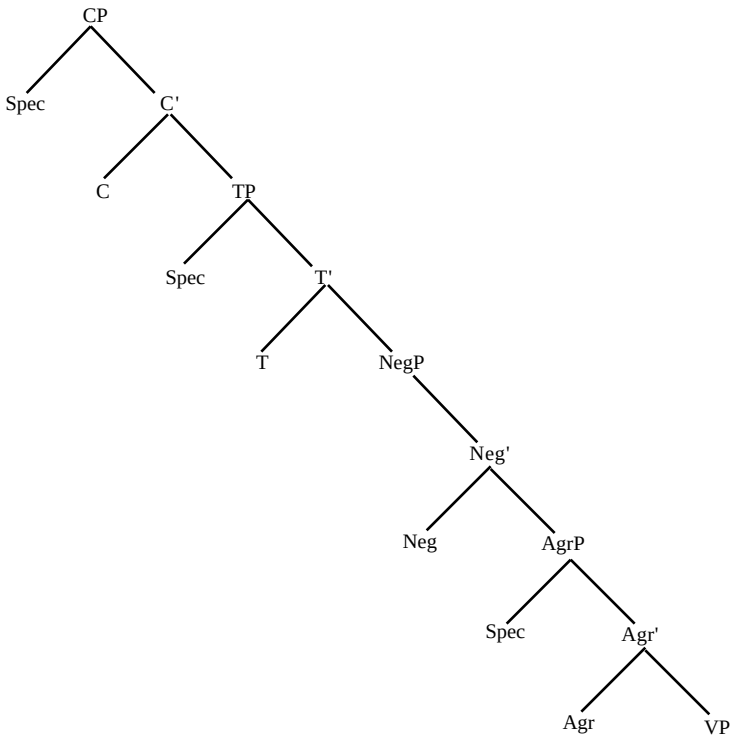

Figure 2 Pollock's Expanded INFL Tree

Expanded IP

Pollock (1989) proposed the Split-Infl Hypothesis, which expanded the Inflectional Phrase in order to account for other grammatical categories that required representation. This tree was further expanded by Chomsky (1991) to allow for Subject and Object Agreement as separate nodes. In the most current formulation, when the IP is expanded, there are separate maximal projections for Tense (TP), Subject Agreement (AgrSP), Object Agreement (AgrOP), Aspect (AspP) and whatever other functional projections are required in order to represent grammatical information present in the language. The

relative ordering of the different maximal projections within the expanded IP may vary according to the language. The ASL sentence structure proposed by ABKN (1992-a) is illustrated in Figure 3. The details will be discussed with respect to ASL data in subsequent chapters of this dissertation.

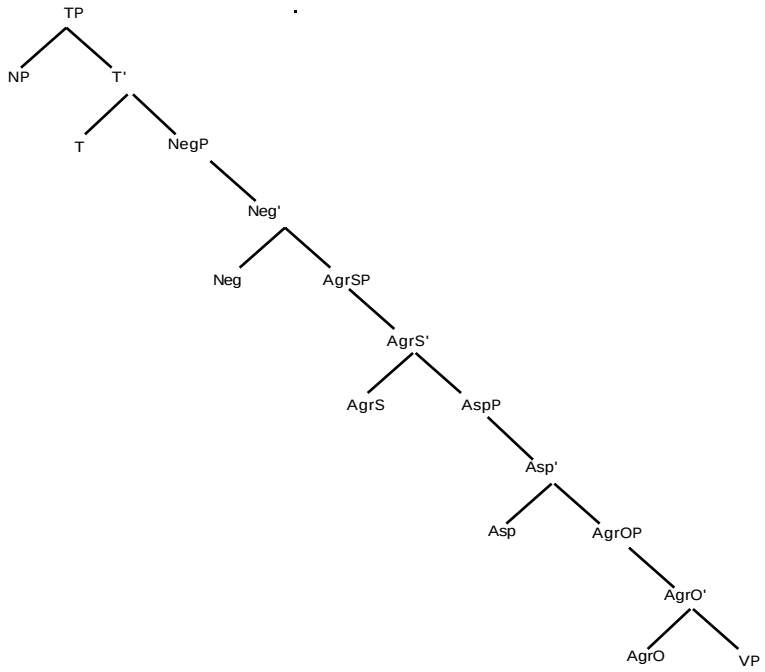

Figure 3 TP (ABKN, 1992)

Embedded clauses are frequently introduced by a complementizer. If the structures containing the Complementizer and IP are to conform to X-bar theory, then it is reasonable to propose that the Complementizer is, in fact, the head of a regular X'

projection. Indeed, the existence of the Specifier position that would be predicted by such an analysis is supported by the presence, crosslinguistically, of material outside of the phrase containing the Complementizer and the IP. Under this analysis, wh-words occupy this Specifier position in many languages. The X-bar structure for the English CP is shown below in Figure 4.

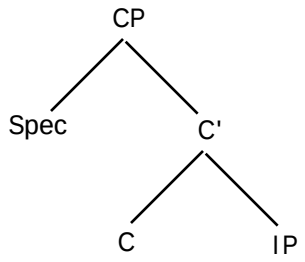

Figure 4 CP

C-command

C-command describes a certain structural relation among nodes in a tree that has been found to be relevant to a large number of different syntactic phenomena. It was originally defined by Reinhart (1979, 1983) as follows:

"α c-commands β iff every branching node dominating α dominates β."

C-command is defined by Chomsky (1986-a) as follows:

"α c-commands β iff α does not dominate β and every branching category that dominates α dominates β" (Chomsky, 1986-a:8).

In order to accommodate the binary branching hierarchical structures of X-bar Theory, Chomsky modified the definition of c-command and termed the revised relation "m-command:"

> "α m-commands beta iff α does not dominate β and every maximal projection that dominates α dominates β" (Chomsky, 1986-a:9).

The structural domain now defined as m-command is still loosely referred to as c-command (see Chomsky, 1992-a:14, e.g.). C-command is the term used in this dissertation; nothing described here relies on the distinction between m-command and c-command.[4]

2.3 Non-manual Marking

A milestone in ASL research was the discovery that manual signs in ASL are frequently accompanied by facial expressions which are not affective but appear to have some grammatical function. Thus, a string of manual signs can mean different things depending on the non-manual marking that accompanies it. Sometimes a string of signs is regarded by native signers as ungrammatical, but would be considered grammatical with the addition of a certain non-manual marking. Over the years, these non-manual markers have been carefully described in terms of the component parts of their articulation, such as raised or lowered eyebrows, angle of the head, mouth movements, etc.. To date, non-manual markings that have been identified include those accompanying wh-questions; yes/no questions; rhetorical questions; topics; conditional clauses; relative clauses; and negation. Facial expressions can also function as intensifers and modulation markers.[5] Most of the work on these markings (Baker and Padden, 1978; Baker and Cokely, 1980, e.g.) is descriptive. Such work states, for

---

[4]Several subsequent revisions to the definition of c-command have been proposed recently. See for example, Kayne (1993).

[5]Intensifiers and modulation markers are usually made with the mouth and lower part of the face, concurrently with the manual sign, and function adverbially or adjectivally. An example of this is the non-manual marker glossed as 'th,' which means "in a careless manner." Thus the non-manual marking 'th' (made with the mouth pattern associated with the sound 'th' as in "think") when it accompanies the sign DRIVE, yields the meaning, "drive carelessly."

instance, that in order for a wh-question to be grammatical, it must be accompanied by the non-manual marking expressing the wh-question function; sentences expressing negation must be accompanied by the negation marker, and so on. However, few accounts propose generalizations about the part of an utterance over which the non-manual marking is obligatory, and how far it may or must spread.

Liddell (1977) put forward the generalization that non-manual marking of negation in a sentence is accounted for in terms of command (a notion now modified somewhat and referred to in many current theoretical frameworks as "c-command"). Baker and Padden (1978), Fischer (1990), Lillo-Martin and Fischer (1992), Romano (1991), ABKN (1992-a), and Petronio (1991, 1993) have all referred to the c-command domain to explain the spread of non-manual marking in ASL.

If the generalization about spread of non-manual grammatical markings over c-command domains is correct, then different structures hypothesized for the ASL sentence make different predictions about the spread of non-manual marking. ABKN (1992-a) show that non-manual marking provides important evidence about the hierarchical organization of the language, and use non-manual marking to argue for the syntactic structure that they propose for the ASL sentence. Petronio (1993) argues that non-manual material subject to autosegmental spread is necessarily linked to the head Complementizer position of a sentence, and spreads over its m-command domain.[6] Lillo-Martin and Fischer observe that when a wh-question contains no manual wh-word,

---

[6]Petronio (1993) says, "In spoken languages, the intonational contours are sequences of tones that spread over a string of signs (sic). Analogously, the nonmanual sentential markers discussed in this section spread over a string of signs." (p. 45) "I will suggest that the nonmanual markers are located on autosegmental tiers, link to the head of CP, and spread over their m-command domain." (p. 47)

the spread of wh-marking across the IP becomes obligatory.[7] Likewise, ABKN (1992-a) suggest that, in general, non-manual marking must be borne by manual material. If no manual material is available in the head association with the non-manual marking, then this has the effect of making the otherwise optional spread over the c-command domain obligatory.

2.4 Word Order

Because of the wide variety of surface word orders in ASL, it has proved difficult to ascertain the underlying word order of the ASL sentence. Important prosodic clues have been used to distinguish neutral from non-neutral word orders. Early work by both Fischer and Liddell claim that there is an underlying Subject-Verb-Object (SVO) word order in ASL, such as the example shown in 1, and that topic marking reflects a disturbance in this order, such as that shown in 2.[8]

1. DOG CHASE CAT
   'The dog chased the cat.'

2. $\underline{\text{CAT}}^{\text{t}}$, DOG CHASE
   'The cat, the dog chased.'

---

[7] Lillo-Martin and Fischer (1992) argue that in wh-questions, non-manual marking must be borne by manual material. They do not make any claims about the spread of non-manual markings in other constructions, and the structure they propose for the ASL sentence makes different predictions about the spread of non-manual wh-marking than the structure proposed by ABKN. Moreover, the proposal made by Lillo-Martin and Fischer that non-manual wh-marking must accompany manual material, does not, in and of itself, account for the optionality vs. obligatoriness of the spread of non-manual marking over the c-command domain of the +wh-feature.

[8] ASL signs are indicated by a gloss in capital letters determined by the most frequently associated English word. Glosses are presented only at the level of detail required for the analysis, not in their full complexity. The scope of non-manual markings is shown by a dotted line drawn over the signs with which they co-occur. Non-manual marking that is intrinsic to a sign is shown by a solid line over the sign. Examples taken from other researchers use their original glosses.

Work by Fischer (1974), followed by research by Liddell (1977, 1978), suggests that items that show non-manual topic marking (i.e., raised eyebrows and chin), have been moved to the beginning of the sentence (i.e., that they have been topicalized).[9] Fischer argues that word order in ASL is SVO, and that this has changed historically from a hundred years ago when, she claims, the unmarked word order was SOV. She cites Keep (1871), who provides some evidence of ASL sentences from the 1870's with SOV word order, but she does not discuss how the change to an unmarked SVO word order might have occurred. Fischer attempts to show (for modern day ASL) that where the order of elements in a sentence is other than SVO, it is because of topicalization of one of the elements, either of the object alone or of the entire VP. Some perturbation in the prosody can be shown by patterns of pausing in such sentences, as compared to sentences without topicalization. Fischer also allows for a somewhat freer order when the NP's are clearly not reversible, i.e., when it is clear from the context which NP is the subject and which the object. She claims, furthermore, that the word order in subordinate

[9]The early claim made by both Fischer and Liddell separately seems to deal with cases of (object) movement, which show disturbances in neutral word order, rather than with sentences that have items base-generated in topic position; topic marking borne by the latter would obviously provide no information at all about neutral word order in the sentence.

clauses is always SVO.[10] Kegl (1985, 1986, 1987, 1990) has shown that both NP arguments of a verb can occur extrasententially, i.e., adjoined to the left of the sentence.[11] In general, however, researchers concur that word order in ASL is essentially SVO (although the NP corresponding to subject and the NP corresponding to object can occur in different positions in the sentence (Padden, 1983, 1988), and that the appearance of elements in topic position produces variations of this SVO structure.

Fischer (1990), working within a Government and Binding X-bar framework and concerned with the position of heads in ASL, proposed that ASL is underlyingly head-initial, i.e., that heads precede their complements. Moreover, she claims that ASL is specifier-initial too. ASL, however, frequently appears to be head-final on the surface, according to Fischer, particularly in the case of what she calls "definite complements." This has led her to propose that in any cases in which Specifier positions are unfilled, they are available for topicalized elements to occupy. She claims that ASL has a process of mini-topicalization that allows an XP to topicalize to the Specifier position of the maximal projection of which it is the complement, in case it is a definite complement. One might expect that if there are mini-topics in ASL then there might well be some sort of non-manual topic marking on such topicalized elements, which Fischer asserts can be

---

[10] This claim is contradicted, although the contradiction is not acknowledged, by Fischer's later claim (1990) that topicalization is possible to the Specifier position of any phrase. In any event, sentences such as (i) are attested in my data.

i. ____t _____neg ____t
JOHN$_i$ IX-1st NOT EXPECT BOOK, IX-3rd$_i$ SEND ANN
'As for John, I do not expect him to send the book to Ann.'

In the transcription system used in this dissertation, IX represents the use of the index finger to point to a particular location. In the ASL transcription system used here, pronouns are represented by IX, followed by a number, 1st, 2nd or 3rd, that indicates the person they refer to (e.g., IX-2nd means second person pronoun). Where necessary, IX will also be accompanied by a subscript to indicate intended coreference with another NP in the sentence.

[11] Kegl (1986) argues that full NP's can be base-generated in topic position, with coreferential arguments cliticized to the verb. New support for Kegl's analysis of clitics is provided in Chapter 5.

found, but does not demonstrate. She argues that an account of ASL sentences in which complements precede their heads is quite in accord with her postulation that phrases in ASL are underlyingly head-initial, and that word order in ASL is thus unequivocally underlyingly SVO.

In recent syntactic theory, however, the description "SVO" has ceased to have much meaning. The notion of underlying VP-internal subjects has gained credence, and it is becoming more and more common to assume that at least some subjects are base-generated within VP and then either raise, or remain in place, depending on the language (Zagona, 1982, 1988; Kitagawa, 1986; Speas, 1986; Contreras, 1987; Kuroda, 1988; Koopman and Sportiche, 1991). On such an analysis, labels such as "SVO" are inadequate, since the subject position of older frameworks is effectively replaced by two different nodes that differ in position relative to the verb. Objects, also, are often associated with two different nodes in current formalisms.[12] ABKN (1992-a) suggest that the subject is generated in the Spec of VP and that this position is VP-final in ASL.[13]

---

[12] In the minimalist framework (Chomsky, 1992), it is assumed that there is a symmetry between the subject and object inflectional systems and that subjects and objects are both base-generated in VP. Subjects, which are generated in the Spec of VP raise to the Spec AgrSP, and Objects, which are generated as the complement of V raise to Spec AgrOP, while T raises to AgrS and V raises to AgrO. Languages differ with respect to whether this raising takes place in the overt syntax or at LF.

[13] ABKN (1992-a) propose underlying VP-internal subjects for ASL which surface in certain constructions, such as (ii) below.

i. IX-1st NEVER SEE YOU
   _ _ _ _ _ _ _ _ _neg

ii. NEVER SEE YOU IX-1st
   _ _ _ _ _ _ _ _ _ _neg
   'I never see you.'

Furthermore, as seen in (ii), this VP-internal subject position is phrase-final.

Further evidence for underlying VP-internal subjects comes from research on aphasics reported in Poizner and Kegl (1992). These aphasics with a limited command of inflection and syntactic movement show a tendency to use postverbal pronominal subjects.

They argue that the subject normally raises to the Spec of TP[14] (the Tense Phrase, part of the expanded Inflection Phrase), but that under certain conditions, i.e., when movement is blocked, it can remain in its base-generated position.[15]

2.5 Wh-movement

Since the late 1980's, debates about word order in ASL have given way to controversy over how different syntactic processes work in ASL. Most descriptive accounts state that wh-words in ASL occur either sentence-finally, or in their argument positions in the sentence. Descriptive grammars of ASL, in general, say that wh-questions in ASL are formed by putting the question word at the end of the sentence (Baker and Cokely, 1980; Valli and Lucas, 1992). Perlmutter (1991) simply states that wh-questions have the wh-word sentence-finally in ASL. Coulter (1979) says that wh-words are commonly found both at the beginning and end of wh-questions. Kegl (1976) claims that the wh-word can occur *in situ*, or sentence-finally with a copy sentence-initially.

Typologically, there are some languages that form wh-questions with wh-words that do not move to a position external to the IP (these are known as wh-words *in situ*) and there are some languages in which a wh-word moves to an empty slot external to the IP. There are also languages which use both strategies to form wh-questions, such as

---

[14] As seen in Figure 3, the basic sentence in ASL is analyzed by ABKN (1992-a, b, c) as a projection of Tense, and therefore IP and TP are used synonymously in this dissertation. In general, I will use IP unless I am specifically referring to the expanded IP, in which case I will use TP.

[15] Petronio (1993) also assumes that the subject is base-generated in the VP, but claims that the Spec of the VP is phrase-initial. The generation of subject in the *Spec-initial* VP is crucial to her account of sentences such as (i), which differ from (ii)—on her analysis—in that the subject NP remains in its VP-internal d-structure position. Such an analysis would be unavailable if subjects are base-generated VP-finally.

	_____hn	
i.	SHOULD JANIE WIN	ii. JANIE SHOULD WIN
	'Janie should win.'	'Janie should win.'

colloquial French, although it has been claimed by Cheng (1991) that languages use one or the other strategy, but not both. Crosslinguistically, when a wh-word moves from its base-generated position in a sentence, it moves into the Specifier of CP position (Koopman, 1984; Chomsky, 1986-b; Radford, 1988).

Most of the recent theoretical accounts of ASL have claimed that wh-words move leftward. Lillo-Martin (1990), working within the Principles and Parameters framework of Chomsky (1986-b), claims that wh-words in ASL may either remain *in situ* or else can move to the Spec of CP, which, she assumes, is to the left of the IP in ASL. She also maintains that wh-words in ASL cannot move out of an embedded clause to the Spec of the matrix CP. She analyzes wh-words appearing sentence-finally as either object wh-words *in situ*, or as a copy of the wh-word in the sentence-initial Spec of CP. She analyzes all sentence-initial wh-words as having moved to the Spec of CP. Many of the clause-initial wh-words she examines are, however, subjects, and few examples in which wh-objects are found to be clause-initial are examined. Furthermore, the examples that Lillo-Martin presents with sentence-initial wh-objects are (at the least) controversial, and are considered by many native users of the language to be unacceptable. Fischer (1990) also assumes that the Spec of CP is to the left in ASL.

Petronio (1992-b), adopting Lillo-Martin's assumption that the Spec of CP is to the left of the IP in ASL, argues that wh-words appearing sentence-finally in ASL are part of what she calls a Focus Phrase. She claims that these elements are repeated forms of wh-words that occur either *in situ* or in the Spec of CP, but that they are sentence-final copies, more stressed, and that they take a somewhat different phonological form from wh-words occurring elsewhere in the sentence. Part of Petronio's justification for postulating a Focus Phrase, right-adjoined to the CP, is her (1991) analysis of rhetorical questions, in which she claims that the wh-words in rhetorical questions, as opposed to

wh-words in information-seeking interrogative questions, occur in the Focus Phrase.

Thus, Petronio's analysis of ASL sentence structure is based on Lillo-Martin's assumption that the position to which wh-words move is sentence-initial. For Petronio (1992-b), any wh-word appearing sentence-finally is either an *in situ* wh-object, or a focused wh-word, i.e., a wh-word occurring in what she has called the Focus Phrase, which has not moved to that position but is base-generated there for the purpose of emphasis. Petronio (1993) in a revised version of her 1992 position, eliminates the Focus Phrase, and—consistent with prior claims by ABKN (1992-a, b, and c)—now places wh-words within, rather than external to, the CP. Her claims differ radically from the proposals made by ABKN, however. She argues that sentence-final wh-words occur in C^o and attempts to provide evidence that this position is available only for X^o rather than XP elements. She further claims that items occurring in Complementizer position must contain a +focus feature, and that when wh-words appear in this position, they are licensed by a corresponding +focus feature[16] which moves to the (in her account, clause-initial) Spec of CP at LF. She still maintains that wh-movement is to the Spec of CP, to the left of IP on her account, and now argues that the focused element in C^o is licensed by Spec-head agreement.

ABKN (1992-a, b, and c) argue that the Spec of CP is to the right of IP in ASL and that wh-movement in ASL is rightward. They observe that wh-words may move or remain *in situ*and that the pattern of the spread of non-manual marking is different in those two situations. In both cases, the non-manual marking extends optionally over the c-command domain of the trigger but must be manifested on lexical material. Thus the situations in which the spread of the non-manual marking is obligatory are precisely those in which the marking associated with the +wh feature in Comp position of questions is not borne by

[16] Petronio (1993) claims that the items that can bear +focus features are modals, verbs, and wh-constituents.

lexical material unless the spread occurs, a situation that arises if the wh-word remains *in situ*. ABKN further observe that extraction of wh-subjects and wh-objects out of embedded clauses is possible in ASL, contrary to claims of Lillo-Martin (1990).

2.6 Topics

Related to the question of wh-movement in ASL is the issue of movement to topic position (topicalization), and the matter of the sorts of constituents that may occur base-generated in topic position. Most researchers who have worked on ASL structure, or observed native signers, note that ASL discourse seems to be organized in a topic-comment structure. Friedman (1975, 1976) claims that the structure of the ASL sentence itself is essentially topic followed by comment. She further claims that the first item appearing in an ASL utterance, irrespective of the structure of the utterance, is a topic. Additionally, she claims that an NP does not need to be topic-marked by non-manual marking in order to be a topic. Like many other researchers working on ASL during the seventies, Friedman shows the influence of Li and Thompson's (1976) work on Subject and Topic, which essentially claims that in certain languages topic—rather than subject—is prominent. Friedman argues that Subject is an irrelevant notion in a language like ASL. Liddell (1977), however, argues that the ASL sentence clearly has subjects, and Liddell (1977) and Fischer (1974, 1975) both present arguments to show that ASL has basic SVO order and that ASL has a certain non-manual marking on items that have moved to topic position. Fischer (1975) demonstrates that subjects or objects or Verb Phrases can occur in topic position. Liddell (1977) identifies and describes a particular non-manual marking associated with topics or topicalized elements in ASL as consisting of a brow-raise and a lifted chin, occurring throughout the duration of the articulation of the element in topic position. The non-manual topic marking spreads over the topic-

marked element only and there is a slight break between the topic-marked element and other parts of the sentence. Liddell also claims that topic-marked elements can only appear sentence-initially. He makes no distinction in describing the topic marking accompanying moved and base-generated topics.

Liddell (1977) and Coulter (1979) both argue that topic position in ASL is adjoined to the left of the main clause. They both claim that phrases may *move* into topic position, i.e., that they may topicalize. Furthermore, a subject or object NP may occur in topic position and be coreferential with a pronoun in argument position. Such constructions, too, have the left-dislocated phrase[17] marked by non-manual topic marking (Coulter, 1979). Liddell shows that it must always be a phrase that is in topic position, never just a head. Thus, the only condition under which a verb can appear alone as the element in topic position is when it is intransitive. Liddell also points out that when VP's are topicalized (or fronted, a term that Fischer (1975) prefers), a headnod obligatorily occurs over the subject in the main clause. This is part of a more general phenomenon described by Liddell. He shows that when no lexical verb is present, the presence of headnod is obligatory over remaining lexical material.

Coulter (1979) shows that the notion "topic" in the ASL literature has been understood and defined in a number of different ways. For instance, he says, topic has been defined, rightly or wrongly, as:

- the NP in sentence-initial position
- the NP accompanied by raised eye-brows
- the NP most accessible to relativization
- the NP the verb agrees with
- the NP that is the topic of the discourse.

Coulter suggests that there are certain other conditions that a topic in ASL must meet in

[17] The term "dislocation" is used in this dissertation not to refer to moved constituents, but rather to constituents base-generated in a position adjoined to the CP.

order to be grammatical: it must be definite or it must be generic. If the notion of topic is based on the discourse requirement that the topic of a sentence present old information, or information already known to the addressee, either from previous world knowledge or from earlier in the discourse, this would explain the restriction that topics be definite or generic. Coulter notes that ASL marks items in topic position uniformly. He shows that an item in topic position can be rather loosely related to the main clause, by establishing the discourse topic that the main clause will subsequently provide more information about. He also demonstrates that some ASL sentences contain topicalized elements which are moved out of the sentence and are grammatically related to the sentence through coindexation with a trace. He notices, as well, that ASL also allows phrases to be base-generated in topic position and grammatically related to the main sentence. He claims that the non-manual marking that extends over items in topic position is the same irrespective of the relation of the phrase to the sentence, as illustrated below.[18]

3. $\overline{\text{MEAT}}^{\text{t}}$, IX-1st LIKE LAMB

   'As for meat, I like lamb.'

4. $\overline{\text{JOHN}_i}^{\text{t}}$, MARY LOVE t_i

   'John, Mary loves.'

5. $\overline{\text{JOHN}_i}^{\text{t}}$, MARY LOVE IX-3rd$_i$

   'John, Mary loves him.'

[18] Example 6 is taken from Kegl, using her notation, and shows the object argument cliticized to the verb, with the coreferential NP base-generated in topic position.

6. $\underline{\quad\quad t}$
JOHN$_i$, MARY cl#HIT$_i$

(John, Mary him-hit.)

'John, Mary hit him.'

In general, it is agreed by most ASL researchers that the topic position in ASL is sentence-initial. It has further been established that ASL allows a maximum of two topic positions adjoined to the main clause (ABKN, 1992-a). Fischer's (1990) claim that ASL has multiple topicalization and that mini-topics can occur in the Specifier position of phrasal categories has not been directly addressed thus far by other ASL researchers.

With respect to the movement of an NP from an embedded clause to the topic position of the main clause, Lillo-Martin (1986, 1991) claims that this is impossible in ASL. Acknowledging the occurrence of topics in ASL sentences containing embedded clauses, Lillo-Martin describes the occurrence of NP's in topic position in terms of what she calls 'extraction' out of the embedded clause. She uses the term *extraction* to mean movement, and the term *'extraction'* to mean movement that is "saved" by the occurrence of a resumptive pronoun in argument position. The terminology she uses is confusing. Her claim is actually that extraction out of embedded clauses is not possible. Cases that she calls 'extraction,' in fact, on the analysis to be presented in Chapter 5 of this dissertation, are cases of base-generation of NP's in topic position, coreferential with either an overt or null pronoun in argument position.[19]

Lillo-Martin attempts to account for the occurrences of what appear to be cases of movement of arguments from the embedded clause to the topic position of the main clause. Since clearly there are examples of NP's appearing in topic position with an

[19] However, Lillo-Martin does not argue against the alternative possibility that the word occurring in topic position is base-generated there.

empty category in an argument position of the embedded clause, Lillo-Martin tries to show that all such examples are cases in which the embedded verb is a member of the morphological class of "agreeing verbs."[20] With such verbs, object agreement licenses a null object. Her claim is that the object in such constructions is *pro* rather than an NP-trace. As far as the morphological class of "agreeing verbs" in ASL is concerned, Lillo-Martin claims that when object NP's are 'extracted' from embedded clauses containing "agreeing verbs," it is not necessary that an overt resumptive pronoun occur in argument position. However, it should be noted that simple sentences containing agreeing verbs may or may not contain resumptive pronouns. Given that agreeing verbs freely allow *pro* in object position, the argument about 'extraction' from embedded clauses containing agreeing verbs is not relevant in establishing the situation with reference to extraction. Lillo-Martin does not make clear how it would be possible to ascertain whether a null resumptive pronoun occurs in argument position in such sentences, or whether the empty category in argument position is, in fact, an NP-trace.

Lillo-Martin (1990) assumes that the position in which topics occur is the Spec of CP, which she claims is to the left of the IP. She does not present evidence that wh-words move to the left in ASL, nor does she present arguments for the claim that topics move to the same position as wh-words. Furthermore, as will be demonstrated in Chapter 4, it should be noted that sentences containing both a topic (pre-clausally) and a wh-word (sentence-finally) can be found in ASL, thus demonstrating that topics and wh-

---

[20] Lillo-Martin claims that an NP may appear in topic position with an empty category in argument position just in case the verb is "agreeing" and thereby licenses an empty category in object position. A simpler account might unify these cases with other similar constructions involving non-agreeing verbs, where the only available account involves movement. The latter type of sentence (shown below as (i)) does exist, and would pose a problem for Lillo-Martin's account.

_____t

i. MOTHER TEACHER REQUIRE JOHN LIPREAD
'Mother, the teacher requires John to lipread.'

See Chapter 5 for evidence that movement out of embedded clauses is indeed possible, across all morphological classes of verbs in ASL.

words move to distinct positions.

2.7 The ASL Clausal Structure proposed by Aarons, Bahan, Kegl & Neidle

Using evidence from the scope of non-manual markings in ASL, ABKN (1992-a) propose a basic clausal structure for ASL. They argue that non-manual marking can extend over the c-command domain of the functional head with which it is associated, and can therefore provide information about the hierarchical organization of the language. The basic tree proposed by ABKN (1992-a), including the positions in which optional topics, tags and right dislocated constituents may occur, is shown in Figure 5. Their arguments for establishing certain positions in the hierarchical structure are discussed below.

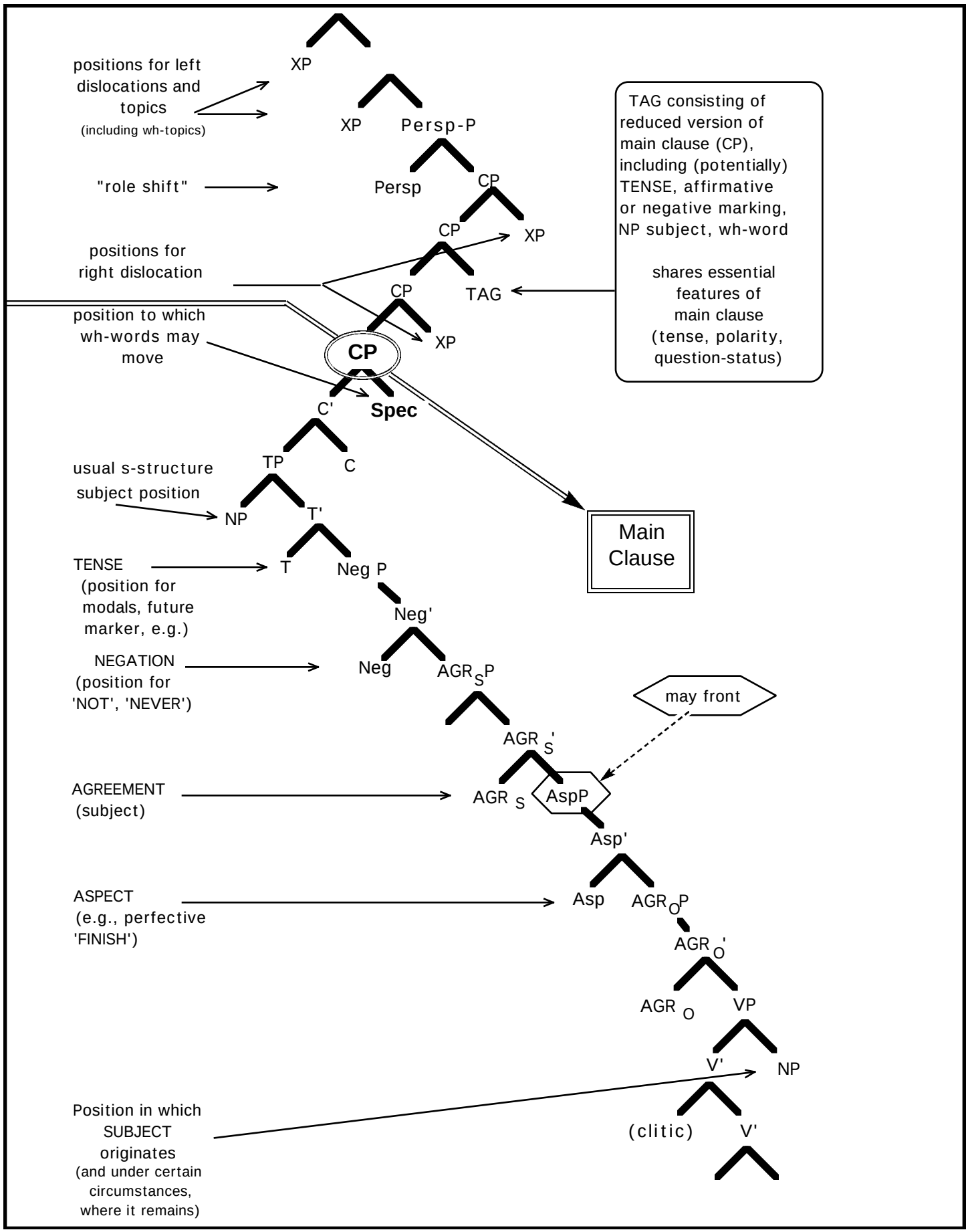

Figure 5. The ABKN tree

The Specifier of CP Position

Since wh-movement is standardly assumed to be to the Specifier of CP position,[21] ABKN argue that the Spec of CP is to the right in ASL, given:

1) the occurrence of either subject or object wh-words in a sentence-final position that is to the right of IP-final adverbs. Sentence 6 has SVO word order with an IP-final adverb.[22] Sentence 7 shows that an adverb may not intervene between a verb and its object. Sentence 8 shows a moved wh-object and 9 a moved wh-subject.

6. JOHN BUY BOOK YESTERDAY

7.* JOHN BUY YESTERDAY BOOK

'John bought a book yesterday.'

8. JOHN BUY YESTERDAY $\overline{\text{WHAT}}^{\text{wh}}$

'What did John buy yesterday?'

9. BUY BOOK YESTERDAY $\overline{\text{WHO}}^{\text{wh}}$

'Who bought a book yesterday?'

2) the complementary distribution of a wh-word in a sentence-final position and a corresponding NP in argument position within the IP. Sentences 10 and 11 are grammatical. The wh-object either appears in its d-structure position, or in a post-IP position. Sentence 12 is ungrammatical as it is missing the object NP-argument, while 13 is ungrammatical because it contains both an object NP-

[21] Cf. Koopman (1984), Chomsky (1986-b), Radford (1988:602).

[22] This example was provided by Perlmutter (1991).

argument and a wh-word that questions that argument.

10. JOHN BUY BOOK YESTERDAY

'John bought a book yesterday.'

11. JOHN BUY YESTERDAY $\overline{\text{WHAT}}^{\text{wh}}$

'What did John buy yesterday?'

12.* JOHN BUY YESTERDAY

13 * JOHN BUY BOOK YESTERDAY WHAT

3) the distribution of non-manual wh-marking distinguishing moved from *in situ* wh-questions. Using evidence from the obligatory spread of non-manual marking over the c-command domain of the node with which the syntactic +wh-feature is associated in wh-questions, ABKN (1992-a) distinguish between *in situ* and moved cases. They show that when there is a lexical wh-word appearing to the right of IP, in Spec of CP, as in 14, it may bear the non-manual wh-marking, and the non-manual marking need not spread over the IP. However, when there is no wh-word occupying Spec of CP, the non-manual marking spreads obligatorily over the whole IP, as in 15.

14. JOHN BUY YESTERDAY $\overline{\text{WHAT}}^{\text{wh}}$

15. $\overline{\text{JOHN BUY WHAT YESTERDAY}}^{\text{wh}}$

'What did John buy yesterday?'

ABKN propose that the syntactic +wh-feature is associated with C, spreading obligatorily over its c-command domain—the entire IP—when there is otherwise no lexical material in CP to bear the non-manual wh-marking.

The Position of Neg

The non-manual marking accompanying negation is associated with the head of NegP, Neg. When a lexical item appears in Neg, it bears the non-manual negation marking, which can also extend optionally over the c-command domain of the node, Neg, with which the feature +neg is associated. However, in a sentence containing negation, but no overt lexical item in Neg, the non-manual negation marking extends obligatorily over the c-command domain of Neg. ABKN show that non-manual negation marking does not extend indefinitely rightward, but only over items in the c-command domain of Neg. Thus it does not extend over items in the Spec of CP, nor over right-dislocated elements.

ABKN show that Neg precedes the VP, as well as a lexical aspect marker, if present, as in 16 and 17.[23]

neg _ _ _ _ _ _ _ _ _
16. JOHN NOT READ BOOK
'John did not read the book.'

neg _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
17. JOHN NOT PERFECTIVE READ BOOK
'John has not read the book to completion.'

[23]The gloss PERFECTIVE is used here to indicate perfective aspect. This sign is frequently glossed as FINISH. It may appear either as an autonomous lexical item, or it may be realized as a suffix on the verb:

i. JOHN NOT READ-PERF BOOK
'John has not read the book to completion.'

ABKN also demonstrate that Neg occurs after lexical items (such as modals) occurring under Tense, as shown in 18.

		neg_ _ _ _ _ _ _
18.	JOHN SHOULD	NOT EAT EGG

'John should not eat eggs.'

Further, they note the particular phonological reactivity between modals occurring in the head of Tense and NOT occurring in the head of NegP, as shown by the existence of contractions such as WILL^NOT and SHOULD^NOT. ABKN also note that the spread of the non-manual marking associated with the syntactic Neg feature extends over AgrSP.

The Position of Tense Phrase

Although research prior to ABKN claimed that ASL does not have grammatical tense, ABKN (1992-c) show that there are several lexical tense markers including past and future. They show that these differ from morphologically related temporal adverbials in that the path length of the tense sign is frozen, and they occur with a much more limited distribution syntactically than temporal adverbials. Lexical tense markers appear immediately to the right of s-structure subject position (Spec of IP—in the expanded INFL framework assumed here, this is the Spec of TP position). Lexical tense markers occur with exactly the same distribution as modals in the ASL sentence. Thus, ABKN argue that modals and lexical tense markers are base-generated in the head of TP, and that Tense precedes NegP, as shown in 19.

19. JOHN WILL $\overline{\text{NOT BUY BOOK}}^{\text{neg}}$

The Position of Aspect Phrase

ABKN argue that the Aspect Phrase occurs preceding the verb. Sentence 20, with optional spread of negation marking, shows the relative ordering of the functional elements thus far discussed.

20. JOHN FUTURE-TENSE $\overline{\text{NOT PERFECTIVE READ BOOK}}^{\text{neg}}$

‘John will not have read the book to completion.’

The tree structure used in this dissertation is based on the foundation laid in previous research by ABKN, and arguments made here provide additional confirmation for that structure.

CHAPTER THREE

Non-manual Marking in ASL

3.0 Overview

This chapter contains a discussion of non-manual grammatical marking in ASL. A distinction is drawn between linguistic and non-linguistic uses of non-manual marking. The functions of non-manual grammatical marking are discussed and the articulation of different grammatical non-manual markings is described, specifically the non-manual markings accompanying yes/no questions, wh-questions, topics and negation. The chapter examines the syntactic distribution of non-manual marking and shows that it optionally spreads over the c-command domain of the functional head with which a particular syntactic feature is associated. The spread of non-manual marking is then used to determine certain characteristics of the syntactic structure of the ASL sentence, specifically the position of Topics and Neg. The role of a particular kind of headnod, associated with the Tense node in ASL, is investigated, with specific reference to the Tag construction. Several phenomena are accounted for in terms of the Tag construction in ASL, and it is shown that an alternative proposal for ASL sentence structure that relies on the postulation of a sentence-final focus position results from a conflation of several different constructions, including the Tag. The clausal structure of the Tag is identifiable from the occurrence of the particular non-manual marker known as headnod, which is obligatory in the presence of a null V.

3.1 Introduction

American Sign Language is produced using the hands, the face and the upper torso. Although the use of facial expressions and body shifts was identified as important early in the study of the language (Stokoe *et al* ., 1965), non-manual markers have not received the same degree of attention as have the manual components of the language. The research on non-manual marking has been primarily descriptive in nature (see particularly Baker-Shenk, 1983) and has focussed on the phonetic realization of different non-manual expressions. There has been relatively little study of the syntactic aspects of non-manual marking and its distribution.

An early observation with reference to a specific non-manual marking occurring over (c-)commanded constituents was made by Liddell (1980).[1] Lillo-Martin and Fischer (1992) recognize that non-manual marking must co-occur with manual material. They propose that in the absence of manual material, the non-manual wh-marking must spread over the c-command domain of the node in which the wh-word would be expected to appear. However, Lillo-Martin and Fischer cannot adequately account for their own wh-question data in terms of the syntactic structure they assume for the ASL sentence, and they do not generalize further about the spread of non-manual markers.[2] ABKN (1992-a) adopt the generalization that in the absence of associated manual material, non-manual markers spread obligatorily over the c-command domain of the nodes with which they are associated, and, using this generalization in conjunction with information from the distribution of non-manual marking, they elucidate the syntactic configuration of the language.

---

[1]The notion "command" essentially corresponds to the current usage of c-command. Liddell noticed that the non-manual marking accompanying negation extends over the domain that is "commanded" by the node in which the lexical negation marker occurs.

[2]This will be discussed in Chapter 4 of this dissertation.

3.2 Functions of Non-manual Marking

Non-manual marking involves the use of the face, head and upper torso to convey information. It has been shown that facial expression is used differently for affective and linguistic purposes (Baker-Shenk, 1983). When the term "non-manual marking" is used in this dissertation, it does not refer to the affective uses of facial expression.

3.2.1 Linguistic vs. Non-linguistic Uses of Non-manual Marking

Baker-Shenk (1983) distinguishes between the use of facial expression to show universal human emotions like joy, surprise, etc., and the use of facial expression for linguistic purposes in signed languages. There is confirmation of this distinction from research on neural processing. Important neurolinguistic evidence shows that for signers, there are differences in the processing of linguistic and non-linguistic facial expressions. It is already widely accepted from neurolinguistic research on spoken languages that there is (usually left) hemisphere specialization for language in the brain. Further findings from studies of signed languages reveal that language, specifically syntax, is a left-hemisphere function, irrespective of language modality (Poizner, Klima, and Bellugi, 1987). Corina (1989) found that while general facial expressions are processed by the right hemisphere of the brain, linguistic facial expressions are processed by the left hemisphere. Furthermore, other neurolinguistic research on production (Bellugi, Corina, Norman, Klima, and Reilly, 1989), confirms that linguistic facial expression is a left hemisphere function, while affective facial expression is not. In a comparison of signers with left and right hemisphere lesions, linguistic facial expression where required is far more likely to be produced correctly by the right hemisphere lesioned patients, while affective expression in such patients is likely to be omitted where

it might normally be expected to appear.[3] This is also shown by Poizner and Kegl (1992) and Kegl and Poizner (1991). Conversely, precisely the opposite effect is shown with the left hemisphere lesioned signers, i.e., the left hemisphere lesioned signers retain full use of affective facial expression, but show impairment of linguistic facial expression (Poizner and Kegl, 1992). Since the same muscular system is involved, these results must be accounted for in terms of a dissociation between the linguistic and affective processing and production of facial expression. It is the particular linguistic, rather than affective, use of facial expression that is referred to here as non-manual marking in ASL. Moreover, work by Reilly, McIntire and Bellugi (1990) on the acquisition of ASL in deaf children shows that non-manual grammatical marking is frequently mastered later than manual signs are, and much later than affective uses of facial expression. Further support for distinguishing affective from linguistic uses of facial expression comes from their work on mother-child interaction.[4]

3.2.2 The Syntactic Function of Non-manual Grammatical Marking

Non-manual marking in ASL has two primary linguistic functions. (1) Certain lexical items require particular non-manual material as part of the sign. Such non-manual

---

[3]In many cases, the affective expression is stereotyped rather than omitted. A stereotypic mouth gesture (smile, frown) is produced. This is argued by Poizner and Kegl to be a "linguistically generated label."

[4]This support comes specifically from their observation that mothers appear to use affective facial expression exclusively in addressing children under the age of two. They argue that the non-manual grammatical marking is part of a fixed linguistic system and they hypothesize that this marking is in some conflict with early communicative interactions between mothers and their children. In their study, Deaf mothers communicating with children under the age of two years omit the grammatical markings required for adult speakers in wh-questions, while they exclusively make use of (affective) facial expressions which are not considered to be consistent with the required grammar for wh-questions, but which seem to be communicatively appropriate. Thus, the unconscious differentiation by mothers between grammatical marking (which is omitted in interaction with their young children) and affective facial expressions (used exclusively at early stages of development) provides support for the claim that linguistic and affective uses of facial expression are different, as does the fact that linguistic uses of facial expression are acquired later by their children.

marking is used productively in adverbs and adjectives. The non-manual components of individual lexical items are not, however, the focus of this dissertation and will not be discussed further here. (2) Certain types of grammatical information are provided by the non-manual marking accompanying manual material. A central claim of this dissertation is that such non-manual grammatical marking is associated with the heads of functional categories and optionally spreads over the c-command domain. Traditionally non-manual marking has been described in terms of its correspondence to clausal type. For example, it has been observed that certain non-manual markings are associated with particular types of clauses, i.e., that there is a distinct non-manual marking that accompanies relative clauses, conditional clauses, wh-questions, yes/no questions, rhetorical questions, negative clauses, etc. (see for example, Stokoe, 1960; Bellugi and Fischer, 1972; Baker and Padden, 1978; Liddell, 1977; Baker and Cokely, 1980; Baker-Shenk, 1983). The analysis proposed in this dissertation accounts for the claim that different non-manual markings accompany particular clauses by postulating that particular syntactic features, correlated with different non-manual markings, are associated with functional heads. Thus, for example, the complementizer that heads the clause may contain syntactic features with non-manual correlates. In such cases, non-manual marking over entire sentences results from the spread of the particular syntactic feature in Comp over the c-command domain—the sister IP—thus producing entire clauses marked in the ways described above. While others have observed, for instance, that there is a particular non-manual marking accompanying wh-questions (Baker-Shenk, 1983; Coulter, 1979, e.g.), it is proposed in this dissertation that this is a consequence of the +wh feature in Comp. However, under the analysis proposed here, syntactic features

may be associated not only with Comp,[5] but also with other functional heads, occurring at lower levels, such as Neg.[6] Thus, to account explanatorily for what others
(Stokoe, 1960; Bellugi and Fischer, 1972; Liddell, 1978, 1980; Baker and Cokely, 1980; Baker-Shenk, 1983) have described as the non-manual marking accompanying negation, it is proposed here that the feature +neg is in Neg, the head of NegP in a simple negative sentence.[7]

3.3 Articulation of Non-manual Marking

Non-manual marking in ASL is achieved by a combination of physical realizations involving the various elements listed below. There may be shifting of the shoulders and upper body side to side or backwards and forwards. The whole head may be moved from side to side; or up and down. It may also be tilted forwards or backwards or to one side or the other. The eyebrows may be lowered or raised. Eyes may be opened or closed, or may be widened. They may maintain steady gaze, or may look away and then

---

[5]Petronio (1993) suggests, contrary to the proposal in ABKN (1992-a) and in this dissertation, that *all* non-manual markers are associated with the head of Comp.

[6]The use of non-manual marking associated with features in the head Det of a DP, such as definiteness and specificity, represents another instance of non-manual marking associated with a functional head distinct from Comp.

[7]Liddell (1980) suggests that one possible analysis of the negative headshake is that it represents the surface realization of an underlying single predicate of negation, i.e., that it is a V, adjoined to the sentence. The examples of negation he provides are translated into English by Liddell as, "It is not the case that...." In all the cases he illustrates, the non-manual marking of negation extends over the whole sentence. He says, "As a result of ... confusing evidence, the syntactic status of the negative headshake will be left open." (p. 41) Petronio (1993) proposes that non-manual markers are on different autosegmental tiers and are all linked to Comp and spread over their m-command domain. Petronio suggests that if cases exist where the negative non-manual marking excludes the subject, then the subject does not occupy Spec, IP; instead, she claims, it occurs in a position outside the spreading domain of the neg marker, although she does not specify what this position is. Petronio states, however, that she has been unable to find such cases. However, the spread of negative non-manual marking excluding the subject has been independently confirmed by M. McIntire (p.c.), as reported in McIntire, Reilly, and Anderson (1994).

back again. There may also be blinking. The lips may be pursed or spread; the upper lip may be raised. The cheeks may be puffed or tensed. The nose may be wrinkled.

Coulter (1979) proposes that all non-manual markings in ASL can be decomposed into these basic physical elements, each of which, for him, constitutes a separate morpheme.[8] He demonstrates how different combinations of these basic elements result in all the possible non-manual markings that have been described for ASL, and he attempts to show how the different non-manual markings are systematically related. He argues, for instance, that despite the fact that relative clause marking and topic marking had been traditionally considered to be distinct, what have been called restrictive relative clauses in ASL, are, in fact, left-adjoined topics, bearing the non-manual elements of topic marking: raised brows and the head tilted back and slightly to one side. He notes, moreover, that there are two additional elements, i.e., raised lip[9] and wrinkled nose, that often combine with the non-manual topic marking to produce the effect of a distinctive relative clause marking. His claim is that these additional elements correspond to definiteness and specificity, and that their use adds these properties to the topic-marked constituent. The proposal for a feature decomposition made by Coulter has not yet been explored fully and systematically. In any event, different non-manual elements can be combined to convey different grammatical information. Some of these markings are described below.

3.3.1 Questions

Yes-no questions are accompanied by what has been termed in the ASL literature the "y/n-question marking" which consists of raised brows, widened eyes, forward

[8]Baker-Shenk (1983) concurs with Coulter that these are all separate features, although she does not believe he has sufficient evidence for some of his claims.

[9]Van Hoek (1991) argues that this is best described as "tense cheeks" rather than raised lip.

tilting of the head and torso, eye-gaze at the addressee, and a slight pursing of the lips (Baker-Shenk, 1983). This is shown in Figure 6.

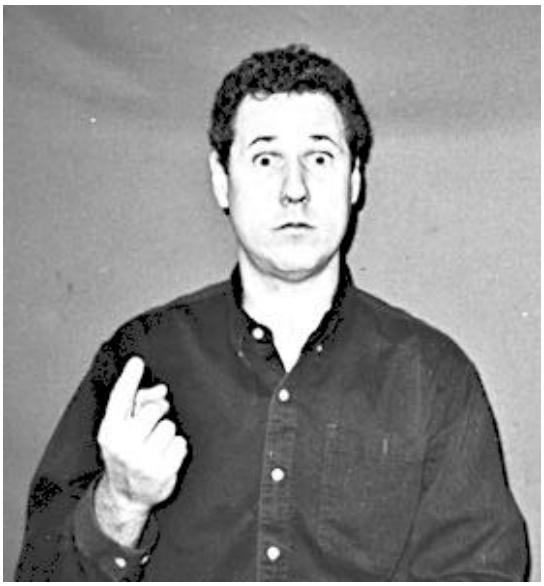

Figure 6. Yes/no question marking

Rhetorical questions, in contrast, are accompanied by what has been called the "rhq-feature," which consists of a brow raise, different head tilt from that characteristic of yes/no questions,[10] the torso in neutral position and eye-gaze towards the addressee (Baker-Shenk, 1983). This is shown in Figure 7.

[10]The realization of +/-wh rhetorical marking appears to be the same. Rhetorical questions are discussed in more detail in Chapter 4 and the non-manual marking accompanying these is marked as wh/rh.

Figure 7. Rhetorical question marking

Wh-questions are accompanied by the +wh-marking, which consists of lowered brows, narrowed eyes, a slight frown, the torso shifted forward, head tilted, somewhat rounded lips and often a slight sharp side-to-side headshake (Baker-Shenk, 1983). This is shown in Figure 8.

Figure 8. Wh-question marking

3.3.2 Topics

The topic part of the sentence is generally set off prosodically from the rest of the sentence by a pause. Topics are usually accompanied by a specific non-manual topic marking, which typically consists of raised eyebrows and backward tilt of the head. Frequently the head is lowered concurrently with the latter part of the sign. Non-manual topic marking may also involve widening of the eyes, and may be followed by a few rapid headnods. There are other ways of signalling topics non-manually. One of these is bodyshifting from side to side. The signer shifts and uses the space to the one side of his body to sign the topic part of the utterance, then shifts to the other side to sign the rest of the utterance. One kind of topic marking is shown in Figure 9.

Figure 9. Topic marking

Traditionally, descriptions of topic marking have made no distinction among the different kinds of topics that may occur. In fact, distinct non-manual markings appear over items in topic position, and these are correlated with different kinds of topics. See Chapter 5 for a detailed description of the different kinds of topic marking.

3.3.3 Negation

The non-manual correlate of the syntactic feature neg may consist of a side-to-side headshake, frown, brow squint, wrinkling of the nose and a raised upper lip. This has been described by Stokoe (1960); Bellugi and Fischer (1972); Liddell (1977, 1980); Baker and Cokely (1980); Baker-Shenk (1983). The non-manual marking of negation is shown in Figure 10.

Beginning of Marking End of Marking

Figure 10. Negation marking

3.4 The Syntactic Distribution of Non-manual Marking

ABKN (1992-a) use the spread of non-manual marking to argue for the

hierarchical structure they propose for ASL.[11] Their analysis is based on the claim that a syntactic feature associated with a functional head can spread over the c-command domain of the head. The syntactic feature is realized as a particular non-manual marking corresponding to that feature. The spread of non-manual marking over the c-command domain is optional. However, non-manual marking must be borne by manual material. Consequently, spreading over the c-command domain is obligatory when there is no manual material to bear the non-manual feature.[12]

Thus, in the case of yes/no questions in ASL, the +yes/no feature in Comp is associated with no lexical material in Comp, so the non-manual marking obligatorily spreads over the IP. Sentence 1 shows a yes/no question with the obligatory y/n-marking appearing over the c-command domain of the Comp in which the +y/n-feature is postulated.[13]

1. $\underline{\text{\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ y/n}}$
   IX-2nd LIKE CHOCOLATE

   'Do you like chocolate?'

The sentence would be ungrammatical if the non-manual marking did not spread over the entire c-command domain.

Items not c-commanded by Comp do not bear the non-manual question marking. Thus in 2, where the embedded clause is an indirect yes/no question, the non-manual y/n marking extends only over the c-command domain of the Comp of the embedded clause

---

[11] See Chapter 2, Section 2.7, for the hierarchical structure proposed by ABKN (1992-a).

[12] The point that non-manual marking must be borne by manual material was made for wh-questions by Lillo-Martin and Fischer (1992), although they do not generalize it to other non-manual markings.

[13] Yes/no questions may be preceded or followed by a manual item, known as a "question mark" or a wiggle, sometimes glossed as I-ASK-YOU. There is no difference in the non-manual marking found in y/n questions, with or without this "question mark."

and not over the matrix clause.

2. MARY CURIOUS IX-3rd LIKE CHOCOLATE $\overline{\text{y/n}}$

'Mary is curious (whether) he likes chocolate.'

Thus, in the absence of a manual item to bear syntactic non-manual marking, the non-manual marking spreads obligatorily over the c-command domain of the functional head. If, however, the functional head associated with the non-manual marking is lexically filled with a manual item, then that lexical item bears the non-manual marking. In this case, spread over the c-command domain of the head is not obligatory and non-manual marking may spread optionally over the c-command domain of the functional head with which the syntactic feature is associated. Examples demonstrating this will be presented in Section 3.5.3.

3.5 The Use of Non-manual Marking in the Determination of Syntactic Structure

As has been demonstrated, non-manual grammatical markings that are correlates of syntactic features contained in functional heads must be borne by manual material. Such non-manual marking spreads obligatorily over the c-command domain of the head if that spread is required to enable the non-manual marking to be borne over manual material. It is thus possible, by identifying the extent of the spread of specific non-manual markings, to obtain crucial information about the syntactic position of the nodes with which they are associated, relative to other nodes.

3.5.1 The Specifier of CP position

ABKN (1992-a) claim that Spec of CP occurs to the right of IP in ASL. This analysis for ASL is, however, not universally accepted. Other linguists have made different claims about wh-movement in ASL, placing the Specifier of CP to the left of IP (cf. Lillo-Martin, 1990; Petronio, 1992-a, 1992-b, 1993). Arguments against such claims will be presented in Chapter 4. One argument that the Spec of CP is, in fact, to the right of IP in ASL, is based on the domain of the spread of non-manual wh-marking.

3.5.2 The Position of Topics

Topic marking in ASL is generally described as consisting typically of raised eyebrows and chin. See Chapter 5 for a detailed description and analysis of the different kinds of topic marking that are found in ASL. Topics occur at the beginning of the sentence in ASL, and are accompanied by some form of non-manual topic marking. Topics tend to be set off prosodically from the rest of the sentence by a pause or a headnod before the signing of the rest of the sentence. In order to establish the position of topics, it is necessary to establish whether topics are within the c-command domain of the head Comp. Since it has been established that the +y/n feature is associated with the head Comp and spreads over its c-command domain, the position of Topic relative to Comp can be ascertained by examining the spread of the non-manual y/n marking in sentences containing topics. In 3, where JOHN occupies topic position, the non-manual +y/n-marking does not extend over JOHN. Sentence 4, in which the y/n marking extends over the item in topic position, is ungrammatical.

3. $\underline{\text{JOHN}_i}^{\text{t}}$, $\underline{\text{IX-3rd}_i \text{ LIKE CHOCOLATE}}^{\text{y/n}}$

‘As for John, does he like chocolate?’

4. * $\underline{\text{JOHN}}^{\text{t}}$, IX-3rd LIKE CHOCOLATE $\underline{\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad}^{\text{y/n}}$

Similarly, the +wh feature associated with Comp in wh-questions cannot spread over items in topic position, confirming that topic position must be outside of the c-command domain of Comp. This is shown by the contrast between 5 and 6, where VEGETABLE is in topic position and cannot bear the wh-non-manual marking.[14]

5. $\underline{\text{VEGETABLE}}^{\text{t}}$, JOHN BUY YESTERDAY $\underline{\text{WHAT}}^{\text{wh}}$

‘As for vegetables, what did John buy yesterday?’

6. * $\underline{\text{VEGETABLE}}^{\text{t}}$, JOHN BUY YESTERDAY $\underline{\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad}^{\text{wh}}$ WHAT

It is important to note that topics are postulated to be adjoined to CP, as shown in Figure 11,

[14] The non-manual markings of wh-questions and topics are not incompatible *per se,* as is demonstrated in Chapter 4.

rather than heading a separate functional projection.[15] Non-manual marking associated with a particular functional head may spread over the c-command domain of that head. If Topic structures had their own functional heads, we would expect the non-manual topic marking to spread over the c-command domain of that head. As this is not the case, it seems more likely that Topic Phrases are adjoined structures, rather than functional projections. However, topic marking does not spread over neighboring constituents.

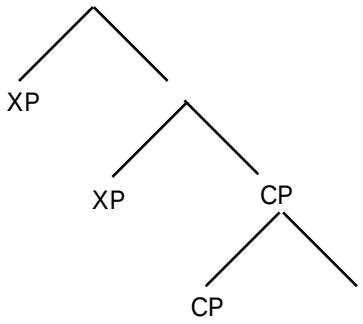

Figure 11 Topic Phrases Adjoined to CP

---

[15] One argument that Topics do not head their own functional projection comes from embedded clauses containing tensed or tenseless CP's. Verbs subcategorize for tensed and tenseless complement clauses but do not distinguish between clauses with and without topics. Thus, in ASL the matrix verb PREFER may only subcategorize for a tenseless clause (ABKN, 1992-a), as shown in i and ii.

i. JOHN PREFER LIPREAD MOTHER
'John prefers to lipread Mother .'

ii. * JOHN PREFER WILL LIPREAD MOTHER
'John prefers that [he] will lipread Mother.'

Notice that the embedded clause can contain a topic but that a tenseless clause is required regardless of whether or not a topic is present.

iii. JOHN PREFER BREAD$_{____t}$, EAT BAGEL
'John prefers, as far as bread is concerned, to eat bagels.

iv. * JOHN PREFER BREAD$_{____t}$ WILL EAT BAGEL

3.5.3 The Position of Neg

ABKN (1992-a) argue that TP dominates NegP, which in turn dominates AgrSP, as shown in Figure 12 below.

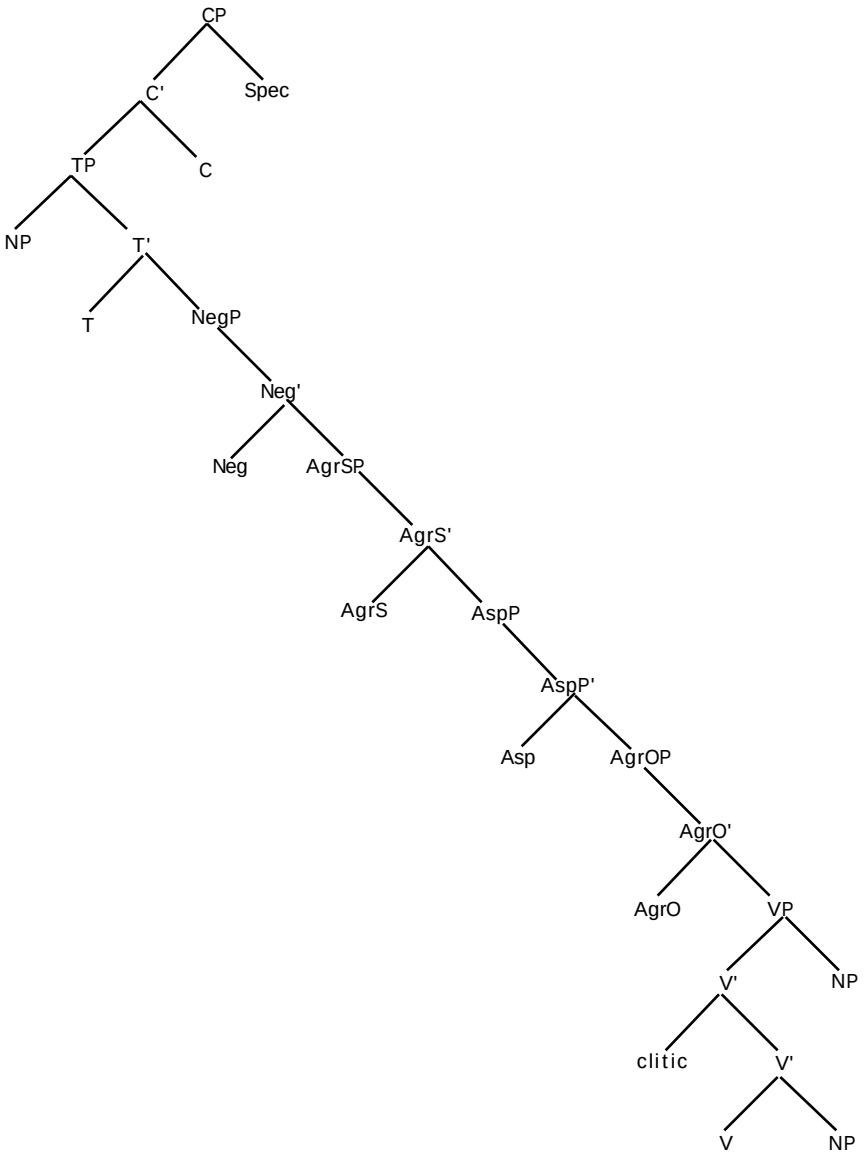

Figure 12 CP in ASL (ABKN, 1992)

Evidence (first presented in ABKN 1992-a, c) for the linear ordering

Tense < Neg < AgrS

comes from the following observations:

1) the fact that Neg precedes the VP, as well as a lexical aspect marker, or a role prominence marker if either or both are present;[16]

2) the fact that Neg occurs after lexical items occurring under Tense (such as modals).

Evidence for the hierarchical structures proposed comes additionally from the spread of non-manual marking. The spread of the non-manual marking associated with the syntactic Neg feature over AgrSP but not over Tense (see ABKN, 1992-a) is consistent with the structure proposed in Figure 12. In a sentence with a modal (in the head of Tense) and a lexical element in the head Neg, the non-manual negation marking does not extend over the modal, unless the modal and the negation contract. Sentence 7 shows that the non-manual marking does not extend over the modal in the head of Tense; 8 is ungrammatical.

7. JOHN MAYBE NOT SHOW-UP
   neg
   'John may not show up.'

8. * JOHN MAYBE NOT SHOW-UP
   neg

This provides evidence that Tense is not c-commanded by Neg.

It is important to note that there are cases where the neg marking extends over the entire IP, as shown in 9. However, informants say that the meaning of such sentences is different from the cases where the negation marking extends optionally from the head of

[16] ABKN argue that this marker (the RPM) is associated with the Agr Phrase.

NegP over the AgrP, as in 10.

9. JOHN BUY TOMATO^{neg}

'It is not the case that John buys tomatoes.'

10. JOHN NOT BUY TOMATO^{neg}

'John does not buy tomatoes.'

In the case of sentences such as 9, the +neg feature is not associated with the head of Neg, but rather with a negative operator having scope over the IP.[17]

The +neg feature may not spread over items in topic position. While MARY in 11 bears neg marking as part of the VP, MARY in 12, which has been moved to Topic position, cannot.

11. JOHN NOT LOVE MARY^{neg}

'John does not love Mary.'

12a. MARY$_i^{t}$, JOHN NOT LOVE t_i^{neg}

'Mary, John does not love.'

12b.*MARY$_i^{t}$, JOHN NOT LOVE t_i^{neg}

'Mary, John does not love.

[17] The analysis of such sentences is beyond the scope of this dissertation.

It has been already been demonstrated in 3.4 that in the case of a node containing no manual material, the non-manual marker spreads obligatorily over the c-command domain of the head with which the syntactic feature is associated. However, it can be shown that when there is a manual item appearing in the functional head with which the syntactic feature is associated, the manual item bears the non-manual marking and the spread of the non-manual marking over the c-command domain of the functional head is optional. Thus, in the case of a manual item appearing in the head Neg and bearing the non-manual marking associated with that node, the spread is optional over the c-command domain of the head Neg.

The non-manual marking may be borne by the manual item only, as in 13, or may extend optionally over the c-command domain of the node containing the +neg feature. The c-command domain of Neg must thus be the entire VP (actually, AgrSP), as shown in 14.

13. JOHN $\overset{\text{neg}}{\underline{\text{NOT}}}$ BUY TOMATO

14. JOHN $\overset{\text{neg}}{\underline{\text{NOT BUY TOMATO}}}$

'John does not buy tomatoes.'

As argued in Section 3.4, in the event that there is no manual item to bear the non-manual marking, it extends obligatorily over the c-command domain of the functional head with which it is associated. In 15 there is no manual sign of negation. It can be seen that the non-manual negation marker extends over the VP (actually, AgrSP). The structure proposed for 15 must therefore be as shown in 16.

15. JOHN BUY HOUSE (neg)

'John did not buy a house.'

16. JOHN [[Neg (+neg)] [BUY HOUSE]] (neg)

It was also argued in Section 3.4 that non-manual marking may not extend indefinitely rightward, but only over the constituents c-commanded by the node with which the non-manual marking is associated. Thus, where right-dislocated elements are adjoined to the CP, they should not bear Neg marking, if the Neg node dominates AgrSP as proposed here. This is shown by 17 to be a correct prediction. The pronominal IX ('him') is thus not in the c-command domain of the Neg node. On the same reading, 18, with the negation marking spreading over the IX, is ungrammatical.

17. JOHN$_i$ NOT BUY TOMATO, IX-3rd$_i$ (neg)

'John does not buy tomatoes, him.'

18. * JOHN$_i$ NOT BUY TOMATO, IX-3rd$_i$ (neg)

'John does not buy tomatoes, him.'

However, a construction with the negative headshake occurring over the final IX, is grammatical under a different structural analysis, and has a different reading. Sentence 19 involves a tag.

19. JOHN$_i$ NOT LIKE TOMATO, IX-3rd$_i$
neg neg

'John does not like tomatoes, he doesn't.'

In 20 through 23, it is shown that the neg marking cannot extend over the wh-word that has moved to the Spec of CP.[18] Thus the Spec of CP cannot be within the c-command domain of Neg. (See the structure in Figure 12.)

20. NOT BUY HOUSE WHO
neg wh

'Who did not buy a house?'

21. JOHN NOT BUY YESTERDAY WHAT
neg wh

'What did John not buy yesterday?'

22. * NOT BUY HOUSE WHO
neg wh

23. * JOHN NOT BUY YESTERDAY WHAT
neg wh

However, those wh-words that are *in situ* objects do bear the neg headshake as well as the wh-marking, as predicted, since they are within the c-command domain of Neg. This can be seen in 24.

wh

[18] Arguments that wh-words in such constructions move to a Spec, CP position to the right of IP are presented in Chapter 4.

24. JOHN NOT BUY WHAT YESTERDAY
    neg

'What did John not buy yesterday?'

The non-manual marking over WHAT in 21 is quite different from that in 23. In both cases, the negative headshake extends from Neg over the entire VP. In sentence 21, however, there is no headshake on WHAT. This difference in the spread of the non-manual negation marking demonstrates clearly that the wh-word is outside of the c-command domain of Neg, i.e., not within the VP, but rather in Spec of CP.

In 25, the negation marking extends from the Neg node over the embedded clause as well. (See Padden, 1988: 89-90.) This constitutes evidence that the embedded clause is within the c-command domain of Neg, and provides further confirmation for the part of the structure in Figure 12 that shows that Neg c-commands the VP.

25. BILL NOT THINK JOHN BUY HOUSE
    neg

'Bill doesn't think John bought a house.'

Moreover, as shown in 26, when the negation is in the embedded clause, the non-manual marking does not extend into the matrix clause. In 26, the matrix clause is to the right of the embedded clause and it can be seen once again that the non-manual marking does not extend indefinitely rightward.

26. JOHN NOT BUY HOUSE, BILL THINK
    neg

'Bill thinks John did not buy a house.'

The spread of the non-manual negation marking can be accounted for in terms of c-command domain if the position of Neg is as proposed in Figure 12. Only the analysis proposed here for the position of Neg, in relation to TP and AgrSP, makes correct predictions for the spread of non-manual marking.

3.6 The Role of Headnods

There are a number of different sorts of headnods in ASL, described in some detail by Liddell (1980), Baker and Padden (1978), and Baker-Shenk (1983). Liddell makes some distinction among those that he considers to be merely pantomimic or non-linguistic in function, and those that he considers to be linguistic. He also describes a series of rapid headnods extending over an entire sentence as having the linguistic function of assertion. While Liddell did not specifically say so, this sort of headnodding appears to be pragmatic rather than strictly grammatical. However, there is one headnod, called an affirmative headnod (hereafter hn) by Liddell, that has a definite grammatical function.[19] He describes hn as a large, deep, slow headnod in which the head moves down from neutral position, stops moving briefly, then returns to neutral position.

Liddell characterizes hn as being an existential predicate. His observation is that this affirmative headnod may follow an utterance, as a sort of tag, asserting the proposition of the utterance. Thus, the affirmative headnod, hn, may be found following a non-negative sentence, as shown in sentence 27.

---

[19] Wilbur (1992) discusses this headnod, with particular reference to the answer portion of a rhetorical question.

27. JOHN BUY BOOK $\overline{\text{\_hn}}$

'John bought a book, (he did).'

Liddell observes that the headnod may also accompany a pronoun occurring to the right of the main clause, coreferential with the subject of the sentence, as in 28.

28. JOHN$_i$ BUY BOOK $\overline{\text{\_\_\_\_hn}}$ IX-3rd$_i$

'John bought a book, he (did).'

The affirmative headnod may not, however, follow a negative sentence, although negative headshakes may follow negative sentences.[20]

Liddell (1980) further points out that hn is obligatory in contexts where a V has been deleted. He observes that the constituent preceding an empty category (a deletion site, on his analysis)[21] tends to be "emphasized," in the sense that it bears hn. This is found not only with gapping (29a), but also in VP deletion (29b), null copula constructions (29c), and tags (29d), which Liddell describes briefly (1980: 31-36) and in terms somewhat different from those used in the analysis that follows.[22] For a more detailed description of the tag, see ABKN (1992-c).

---

[20] The negative headshake, previously labelled as 'neg,' must, however, co-occur with manual material.

[21] As suggested in ABKN (1992-a), the headnod seems to be the counterpart of the kind of phonological compensatory lengthening that is found before null categories, as in the following English examples:

i. John left. He *did.*

ii. John is tall and Mary *is,* too.

[22] Liddell's original notation is used for the examples in 29. He uses PRO.1, to mean first person pronoun; PRO.3 to mean third person

29a. HAVE WONDERFUL PICNIC. PRO.1 BRING SALAD, JOHN ___hn BEER, SANDY _____hn CHICKEN, TED _____hn HAMBURGER

'We had a wonderful picnic. I brought the salad, John (brought) the beer, Sandy (brought) the chicken and Ted (brought) the hamburger.'

29b. _____t CHASE CAT, ___hn DOG

'As for chasing the cat, the dog did it.'

29c. JOHN _____hn DOCTOR

'John is a doctor.'

29d. BILL BUY CAR, ____hn PRO.3

'Bill bought a car, he did.'

Thus, hn must appear in all contexts in which there is a null V.[23] Sentence 29b, which has the VP occurring in topic position, requires a headnod over the remaining lexical material in the main clause. This is not required when an NP subject or object appears in

[23]Liddell provides 29c as an example as one of the environments in which hn occurs. It should be noted that 29c contains a null V, rather than a null VP. It seems like the proper generalization, then, is that the hn is obligatory in the presence of a null V.

topic position.[24]

ABKN (1992-a, c) claim that the hn is associated with the Tense node. This claim is based on the distribution of hn in simple sentences, where the hn can begin over the manual sign generated in the Tense node and extend over its c-command domain.[25] They show that there are certain contexts, however, in which the appearance of the hn in the tag is obligatory. In a CP tag with a null V, the hn occurs obligatorily, thus providing a non-manual indication of the clausal structure of the tag.

3.6.1 Phenomena That Can be Accounted for in Terms of the Tag Construction

ABKN (1992-a, c) discuss the productive tag construction in ASL. According to their formulation of Liddell's basic observation, when a tag is present, it occurs adjoined to the right of CP. They characterize the tag in ASL as being similar in structure to tags in other languages. In ASL, the tag consists of a duplication of the essential syntactic material of the main clause. Although the architecture of the CP in the tag mirrors that of the main clause CP, many of the constituents need not be overtly realized. When there is a tag adjoined to the main CP, it must match the main CP in certain crucial respects: it must be of the same polarity as the main clause; tense information in the tag must be

---

[24] If either an NP subject or an NP object appears in topic position, then the V is not null as shown below in (i) and (ii). Thus, both (i) and (ii) are grammatical without hn.

i. ____t
DOG CHASE CAT
'As for the dog, it chased the cat.'

ii. ___t
CAT DOG CHASE
'The cat, the dog chased it.'

[25] In a simple sentence, such as (i), if there is a headnod, it begins concurrently with the signing of WILL and can extend as a series of smaller headnods over the rest of the sentence.

i. ___hn_ _ _ _ _ _ _
JOHN WILL BUY BOOK

consistent with that of the main clause; if the main CP is a wh-question then the tag is also a wh-question and must contain the wh-word.

The tag minimally requires some instantiation of material in the Tense node; this can be a lexical tense marker or a modal, accompanied by the affirmative headnod. In the case where there is no overt VP in the tag, the lexical tense marker or modal is obligatorily accompanied by the headnod, as shown in 30.

30a. JOHN MUST GO, $\overline{\text{MUST}}^{\text{hn}}$

'John must go, (he) must'

30b. JOHN WILL GO, $\overline{\text{WILL}}^{\text{hn}}$

'John will go, (he) will'

When the headnod is the only manifestation of Tense in the tag, then it obligatorily spreads over any other lexical material in the tag, as shown in 31a.[26]

31a. JOHN MUST GO, $\overline{\text{IX-3rd}}^{\text{hn}}$

'John must go, he must'

When there is no overt modal or lexical tense marker in the Tense node preceding the null VP as in 31b, and there is no other lexical material in the tag, the Tense node is

[26] In 31a, the tag contains an IX accompanied by the headnod. The hn is the instantiation of the Tense node in the tag which is realized over the available manual material in the tag. It is possible that IX, the subject of the tag, remains in its base-generated position in Spec VP, where it is c-commanded by Tense.

Sentences followed by an unstressed pronoun that does not bear a headnod over IX, as in (i), are cases of right dislocation, and do not involve a tag.

i. JOHN MUST GO, IX-3rd
'John must go, him.'

reduced solely to the occurrence of the obligatory headnod.[27]

31b. JOHN MUST GO, $\underline{\text{hn}}$

'John must go, he must'

3.6.2 An Alternative Account of Some Sentence-final Elements

Petronio (1993) proposes to account for the appearance of sentence-final "doubles"[28] by arguing that wh-words, modals, and verbs are base-generated in the head-final Comp.[29] Her proposal is that the "double," i.e., the sentence-final item in such constructions, is matched with a "twin," elsewhere in the sentence. She claims that in sentences such as the following (taken from Petronio, 1993), the second WILL serves to emphasize or stress the notion that John will indeed win. Figure 13 shows the structure proposed by Petronio.

[27] It is unusual to find a non-manual marker without manual material. However, if there is no lexical material in the tag CP, it is not possible for the hn to spread onto manual material. The headnod must nevertheless be realized. This is different from non-manual negation marking, which must be realized over manual material.

[28] This is Petronio's terminology, which she uses whenever she describes sentences that contain a word in final position that has appeared previously in the sentence.

[29] It should be noted that Petronio proposes that in ASL, Spec, CP is to the left of IP, whereas Comp is to the right of IP.

32. _____hn
JOHN WILL WIN WILL

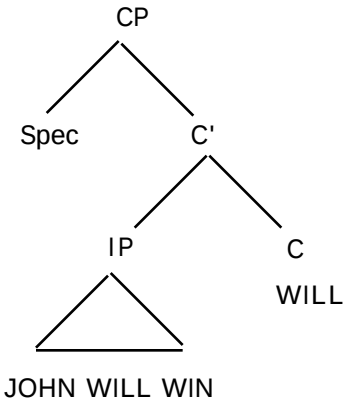

Figure 13 Spec of CP in ASL (Petronio)

Petronio does not analyze the final WILL as belonging to a tag of the kind proposed by Liddell, although she does discuss the existence of tags. Her proposal fails to account for the fact that the hn is obligatory in the portion of the sentence that ABKN refer to as the Tag. No mention is made by Petronio of the fact that the headnod need not, in fact, occur over the main clause (i.e., that part of the sentence not contained in the Tag). In other words, she does not have an explanation for the contexts in which the headnod is and is not obligatory. Furthermore, Petronio's argument involves a number of rather complicated mechanisms to account for the sentence-final double. She argues that the double is an X^0, not an XP. Her argument is based on her contention that the double may only be a word-level constituent, not a phrase. Thus, she presents data such as 33 and 34 (both taken from Petronio, 1993) to argue that only single words, but not whole phrases, can be doubled.

33. ANN CAN'T READ CAN'T

34.* ANN CAN'T READ CAN'T READ

In the case of wh-words, it is unclear how these would function as heads, rather than phrases, since wh-phrases clearly appear in that position, as, for instance, in 35.[30]

35. JOHN BUY YESTERDAY _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ WHICH COMPUTER (wh)

'Which computer did John buy yesterday?'

Additionally, Petronio claims that there may be only one lexical item fuctioning as a double per sentence. (By "one double per sentence," she means that there may be only one lexical item occupying the sentence-final position, and that it should be a copy of the "twin," somewhere else in the sentence. Data such as 35, showing a wh-phrase that has *moved* to a sentence-final position, make this claim unintelligible.) It is essential to Petronio's analysis—and she tries to make the case that this is correct— that in a wh-question, only the wh-word may be doubled, and that it occupy Comp. In order to argue for this, she uses contrasts such as the following (taken from Petronio, 1993).

36.* WHO WILL BUY HOUSE WILL

37. WHO WILL BUY HOUSE WHO

However, it is not clear how she could maintain this requirement, when data such as 38

[30] This will be discussed in greater detail in Chapter 4.

are attested.

wh

38. JOHN WILL BUY TOMORROW WHAT, WILL WHAT

‘What will John buy tomorrow, what will (he)?’

Petronio does not acknowledge or discuss data such as those shown in 35 and 38.

ABKN account for these data straightforwardly by arguing that the architecture of the tag mirrors that of the main clause, and that if the main clause is a wh-question, then the tag must also be +wh. ABKN’s tag analysis is not constrained by the requirement that the sentence-final element be an X^o, nor that the tag contain only one element. Indeed, as argued above, ABKN argue that the tag must minimally contain an instantiation of Tense, and may contain as much repetition of the main clause elements as is pragmatically appropriate.

In order to substantiate her proposal that the sentence-final double is a focussed element, Petronio relies on an argument that Spec of CP is available for a focus feature [+f]. When an item in a sentence is doubled, she claims that the twin is assigned a focus feature, and that there is [+f] raising of the focus feature of the Spec of CP, and that the sentence-final double, occurring, as she claims, in the [+f] C^o, is licensed in the head position by Spec-head agreement with the [+f] feature in Spec, CP.

Petronio’s analysis of repeated elements in the sentence is based on several assumptions and stipulations, as well as some data omission. She relies on intuitions from her informants that repeated sentence-final elements “feel” emphasized in some data. This emphasized interpretation, however, is neither well-understood nor universally agreed upon. She also invokes a licensing requirement involving the postulation and matching of focus [+f] features in the Spec and head of CP. Additionally, she needs to demonstrate, in order for this matching to be successful, that the sentence-final item is an X^o, and not an XP (see, however, sentence 35). Moreover, her proposal is unable to

account for data that involve both a modal and a wh-word repeated sentence-finally, as in a sentence like 38.

Petronio has no syntactic account of why the hn appears over repeated modals, or indeed, in some cases over the wh-word in final-position (a phenomenon she herself has described (1992), although in somewhat different terms). Her account of the headnod is based crucially on her interpretation of the double as being emphasized or focused.

Moreover, because Petronio argues for the Spec of CP position being to the left of IP, she is frequently unable to account for data in which wh-words appear sentence-finally without a twin elsewhere in the sentence. ABKN argue for the Spec of CP position occurring to the right of the IP and therefore account naturally for the sentence-final occurrence of wh-phrases in simple sentences; in other constructions they suggest that the final wh-phrase occurs as part of the tag. In this way, they account for all instances of sentence-final wh-words and phrases. Petronio tries to account for sentences of these two types by proposing that all sentence-final wh-words occur in the head-final Comp. As a result, she encounters difficulty in accounting for sentence-final modals or wh-words that do not have a twin within the sentence, and for sentences involving more than one sentence-final element and she has to rely on an account involving a null focus operator.

3.7 Conclusion

This chapter discussed grammatical non-manual marking in ASL. The articulation of various grammatical non-manual markings was described, specifically the non-manual markings accompanying questions, topics, and negation. The syntactic distribution of non-manual marking was examined, and found to occur over the c-command domain of the functional head with which the particular syntactic feature is associated. The spread of non-manual marking was then used in the determination of parts of the syntactic structure of ASL, specifically the determination of the position of Topics and Neg. One

non-manual grammatical marking involves a particular kind of headnod. This headnod, associated with the Tense node in ASL, was discussed with special reference to the Tag construction. Alternative accounts of ASL sentence structure that rely on the postulation of a sentence-final focus position were shown to result from a conflation of several different constructions, one of which is the Tag, the clausal structure of which is identifiable by the occurrence of the headnod associated with null V's.

CHAPTER FOUR

Wh-Movement in ASL

4.0 Overview

ABKN (1992-a) argue that wh-movement is rightward in ASL. This chapter provides further detailed argumentation in support of that analysis and considers a number of interesting and important consequences. Section 4.1 presents evidence that the Spec of CP, to which wh-phrases may move, is to the right of the IP in ASL. Further evidence for rightward wh-movement, and for a distinction between moved and *in situ* wh-elements, is provided by the scope of non-manual wh-marking accompanying wh-questions. Extraction of wh-words is investigated. Despite claims to the contrary, movement of a wh-word out of an embedded clause is shown to be possible. Wh-extraction from both subject and object position of the embedded clause is discussed. In Section 4.2, there is an examination of questions containing multiple occurrences of a wh-word; such sentences seem to have been a source of confusion in previous analyses. Section 4.3 presents an analysis of rhetorical wh-questions in ASL, in which they are shown to be structurally identical to information-seeking questions, despite differences in the manifestation of the non-manual marking accompanying them. In Section 4.4, alternative proposals that wh-movement in ASL is leftward are considered, and shown to be incorrect.

4.1 Wh-questions in ASL

Like many other languages, ASL uses question words to form interrogative wh-questions. The wh-signs in ASL are WHO, WHAT, WHEN, WHERE, HOW, WHY

and WHICH. There is also a generic wh-question sign, which is often used in the place of WHAT, and which may in fact appear as a substitute for any of the other question words, usually in sentence-final position. In the examples that follow the wh-question sign is always glossed as WHAT, to make the meaning of the sentences more transparent.[1] Sometimes an extremely reduced form of this sign is used (sentence-finally), consisting of upturned palms, and always accompanied by the wh-facial expression.

Questions containing wh-words are accompanied by a particular non-manual expression. The non-manual marking consists of a lowering and squeezing together of the brows. A discussion of the domain of the spread of this non-manual marking is contained in 4.1.2.

Arguments for wh-movement in ASL can be found that closely parallel the classic arguments for wh-movement in other languages. The analysis proposed in this chapter is that the alternations shown in 2a and 2b below can be explained analogously to the English examples in 1a and 1b, namely that the wh-word base-generated in argument position undergoes movement to the Spec of CP.[2]

English: 1a. John bought a book yesterday

1b. What did John buy yesterday?

---

[1]In the dialect reported here, the wh-question sign is used in preference to the sign normally glossed as WHAT, i.e., the sign in which the index finger of one hand brushes down the open palm of the other hand. There are also other variants meaning 'what' such as the fingerspelled loanword #WHAT. However, throughout this dissertation, when the gloss WHAT is used, it refers to the sign made with two upturned B-hands.

[2]Note that the non-manual marking in 2c extends beyond the last manual sign. This particular notation reflects the fact that the wh-marking perseverates for a short time after the clause in sentences like this. This observation is based on the data. This phenomenon will be explained by the analysis proposed in Section 4.1.2. For the time being, it is sufficient to note for such sentences that the wh-marking extends over the entire clause.

ASL: 2a. JOHN BUY BOOK YESTERDAY

2b. JOHN BUY YESTERDAY WHAT (wh)

2c. JOHN BUY WHAT YESTERDAY (wh)

The arguments motivating wh-movement in English for examples like 1b, apply equally well to ASL. For instance, in English, wh-words in Specifier of CP position occur in complementary distribution with NP's in the corresponding argument positions. However, whereas in English, movement of the wh-word is obligatory in simple questions, while the wh-word remaining in its base-generated position yields instead an echo question reading, in ASL, as in colloquial French,[3] the wh-word can remain *in situ*[4] in ordinary questions, as in 2c.

It is clear that a wh-word remaining *in situ* in ASL does not necessarily yield an echo question reading. In fact, echo questions in ASL are accompanied by a different facial expression, as shown in Figure 14 below.

---

[3] French:

i. Où vas-tu?
'Where are you going?'

ii. Tu vas où?
'You are going where?'

[4] The term *in situ* is intended to distinguish those occurrences of IP-internal wh-phrases—which can alternate with non-wh full NP's—from those wh-phrases that have moved to an IP-external position by wh-movement.

Figure 14 Echo Question Marking

The particular non-manual marking accompanying these questions identifies them as echo questions.[5]

Arguments will be presented to show that the alternation shown in 2a and 2b results from rightward movement of the wh-word to Spec of CP. This analysis for ASL is, however, not universally accepted. Other linguists have made different claims about wh-movement in ASL, placing the Specifier of CP to the left of IP (cf. Lillo-Martin, 1990; Petronio, 1992-a, b, 1993).

[5]Although the non-manual markings for echo and non-echo questions differ, the domain of the spread of non-manual marking is the same for both types of questions.

4.1.1 Rightward Wh-movement in ASL

Wh-words may occur in argument positions in ASL, as shown in 4.[6]

3. JOHN BUY BOOK

'John bought a book'

4a. $\underline{\text{WHO BUY BOOK}}^{\text{wh}}$

'Who bought a book?'

4b. $\underline{\text{JOHN BUY WHAT}}^{\text{wh}}$

'What did John buy?'

They may also appear sentence-finally, as illustrated in the examples shown in 5, which include indications of the possible non-manual markings.

5a. BUY BOOK $\underline{\text{WHO}}^{\text{wh}}$

5b. $\underline{\text{BUY BOOK}}$ $\underline{\text{WHO}}^{\text{wh}}$

'Who bought a book?'

When wh-words occur outside of IP, they appear in complementary distribution with NP's in the corresponding argument positions within the IP. Thus, sentences 6 and 7 are

[6]Arguments that 4a necessarily involves the wh-word *in situ* rather than moved to a position to the left of IP will be presented in Section 4.1.2.

possible in ASL, while 8 is not.[7]

6. [JOHN BUY BOOK]

7. [BUY BOOK] $\overline{\text{WHO}}^{\text{wh}}$

8.* [JOHN BUY BOOK] WHO

Notice that in a sentence like 9, it is difficult to determine whether WHAT occupies argument position, or whether it, too, might have moved rightward to the Spec of CP.

9. $\overline{\text{JOHN BUY WHAT}}^{\text{wh}}$ [4b]

'What did John buy?'

There is, however, a way to test whether the wh-word in such sentences moves: that is, to consider the position of wh-words relative to IP-final adverbs. In basic SVO surface structure, such as is shown in 10, adverbs, such as YESTERDAY, may not intervene between a verb and its object. The adverb may appear sentence-finally, as in 11 (or in fact, sentence-initially), but not between the verb and its object, as in 12.

10. JOHN BUY BOOK [3]

'John bought a book.'

11. JOHN BUY BOOK YESTERDAY

'John bought a book yesterday'

12.* JOHN BUY YESTERDAY BOOK

[7]Non-manual markings are not shown on sentences which would be ungrammatical regardless of the non-manual marking.

'John bought a book yesterday'

As already mentioned, in 9 (shown below as 13), it is unclear, in fact, whether WHAT is in the same position as the NP argument it questions or whether it has moved to the end of the sentence. This ambiguity is shown to be genuine by examination of the position of the wh-word relative to an IP-final adverbial, as illustrated in 14 and 15, both of which are grammatical. In 14, the *in situ* WHAT occupies the same position as the NP it questions. In 15, however, WHAT clearly does not occupy object position, as shown by the contrast in the grammaticality of 15 and 12. Only a wh-word, not a non-wh NP, may appear in the slot following an IP-final adverbial. Thus, it appears that in 15 the wh-word has moved rightward to a position external to the IP.[8] This wh-movement, however, is optional, as shown by 14.

13. JOHN BUY WHAT (wh) [9]

'What did John buy?'

14. JOHN BUY WHAT YESTERDAY (wh) [2c]

'John bought what yesterday?/What did John buy yesterday?'

15a. JOHN BUY YESTERDAY WHAT (wh)

15b. JOHN BUY YESTERDAY WHAT (wh)

'What did John buy yesterday?'

[8]This sentence is used by Perlmutter (1991) to show that wh-words appear sentence-finally in ASL.

Again, the IP-external wh-word occurs if and only if there is a missing NP argument within the IP.

16. * JOHN BUY BOOK YESTERDAY WHAT

The claim, then, is that wh-words can move rightwards in wh-questions. Since the standard assumption (Chomsky, 1986-b; Koopman, 1984; Radford, 1988) is that wh-words move to the Spec of CP, I will assume that the Spec of CP is to the right of IP in ASL. Rightward wh-movement clearly affects not only objects (as in 15) but also subject wh-words, such as is shown in 17.

17a. BUY BOOK ___wh WHO [5a]

17b. _ _ _ _ _ _ _ ___wh BUY BOOK WHO [5b]

'Who bought a book?'

Note that the subject wh-word can also move into the same position illustrated in 15, to the right of an IP-final adverbial. This is shown in 18.

18a. BUY BOOK YESTERDAY ___wh WHO

18b. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ ___wh BUY BOOK YESTERDAY WHO

'Who bought a book yesterday?'

Thus, it is clear that wh-words can appear in positions other than argument positions. While a wh-word may appear in argument position, it appears there if and only if it does not also appear to the right of IP. This is illustrated for subject and object wh-words in 19 and 20 respectively.[9]

19a. $\underline{\text{\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_}}^{\text{wh}}$
YESTERDAY WHO BUY BOOK

19b. YESTERDAY BUY BOOK $\underline{\text{\_\_\_\_}}^{\text{wh}}$
WHO

19c. * YESTERDAY WHO BUY BOOK WHO
'Who bought a book yesterday?'

20a. $\underline{\text{\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_}}^{\text{wh}}$
JOHN BUY WHAT YESTERDAY

20b. JOHN BUY YESTERDAY $\underline{\text{\_\_\_\_\_}}^{\text{wh}}$
WHAT

20c. * JOHN BUY WHAT YESTERDAY WHAT
'What did John buy yesterday?'

The above examples support an analysis in which a wh-word moves rightward to a position outside of the IP, leaving a trace in the argument position from which it has moved. If wh-words move to Spec of CP, then this means that the Spec of CP is to the right of IP in ASL, as illustrated below in Figure 15.

---

[9] 19c is ungrammatical without a pause before the final WHO. An analysis of the tag construction, which allows 19c with a pause, is found in section 4.2.

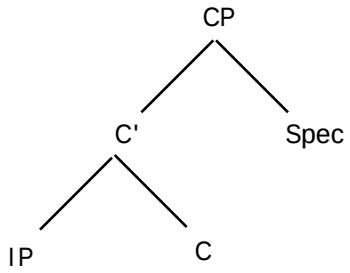

Figure 15 Specifier of CP

That phrases may undergo this movement is illustrated in example 21, which thus would constitute evidence against an alternative analysis that such movement involves Head to Head movement (e.g., movement to C rather than the Spec of CP).[10]

21a. JOHN READ YESTERDAY WHICH BOOK (wh)

21b. JOHN READ YESTERDAY WHICH BOOK (wh)

'Which book did John read yesterday?'

As already mentioned (and illustrated in 19 and 20), this movement is optional. Further evidence for the structures proposed here is provided by the distribution of the non-manual marking of wh-questions in ASL.

---

[10] This is therefore evidence against Petronio's (1993) analysis in which she claims that there is a sentence-final position (for wh-words, among others) in which only heads and not phrases may occur. Furthermore, Petronio claims that items occurring in this sentence-final position must be base-generated there. Sentence 21 is clearly a case of movement as (i) below is not grammatical, and therefore WHICH BOOK cannot be *in situ* in 21.

i. * JOHN READ YESTERDAY THAT BOOK

See Section 4.4.2 for a discussion of Petronio's account of wh-movement.

4.1.2 Non-manual Marking in ASL

As demonstrated in some detail in ABKN (1992-a), and in Chapter 3 of this dissertation, non-manual marking expresses certain types of grammatical information in ASL. When a manual lexical item, such as a question word, is associated with such non-manual grammatical marking, the non-manual marking may extend over the c-command domain of the functional head with which the syntactic feature (+wh, in this case) is associated. If the manual portion of the lexical item is non-overt, the otherwise optional spread of non-manual marking over the c-command domain of the functional head with which it is associated becomes obligatory. (See Chapter 3 for a detailed analysis of the spread of non-manual marking in ASL.)

The non-manual marking associated with wh-questions is obligatorily found over the wh-word in questions. This can be seen in 4.1.1 above. The non-manual grammatical marking may spread over the entire IP, but there are cases where the utterance would be ungrammatical *unless* the non-manual marking spreads over the IP in which it is contained. The following (b) sentences show these cases.

22a. _ _ _ _ _ _ _ _ _ _ wh
WHO BUY BOOK [4a]

22b. * ___wh
WHO BUY BOOK [4b]

'Who bought a book?'

23a. JOHN BUY WHAT YESTERDAY [wh] [14]

23b. * JOHN BUY [wh] WHAT YESTERDAY

'John bought what yesterday?/What did John buy yesterday?''

For other sentences, the spread of the non-manual wh-marking over the rest of the sentence is optional.

24a. BUY BOOK [wh] WHO [5a]

24b. BUY BOOK [wh] WHO [5b]

'Who bought a book?'

25a. JOHN BUY YESTERDAY [wh] WHAT [15a]

25b. JOHN BUY YESTERDAY [wh] WHAT [15b]

'What did John buy yesterday?'

26a. BUY BOOK YESTERDAY [wh] WHO [18a]

26b. BUY BOOK YESTERDAY [wh] WHO [18b]

'Who bought a book yesterday?'

Note that sentences 22 and 23 contain wh-words *in situ,*whereas 24, 25, and 26 are clear examples of movement. There is a fundamental difference in the pattern of non-

manual marking of the moved vs. *in situ* cases. This distinction can be explained in terms of the generalization about non-manual marking in ASL that when there is no overt lexical item associated with the non-manual marking, the otherwise optional spread over the c-command domain becomes obligatory.[11]

In the case of wh-questions, the +wh-feature is postulated to be associated with Comp. Assuming that this feature is shared by the Spec of CP at s-structure, as ensured by Spec-Head agreement, the requirement that the non-manual marking associated with the +wh-feature extend over lexical material correctly predicts the obligatory spread of wh-marking over the c-command domain, just in case there is no lexical wh-word in Spec of CP to bear that marking (as in 27).[12] Notice that since there is lexical material in the Spec of CP in a sentences like those in 28, non-manual marking may—but need

---

[11] Lillo-Martin and Fischer (1992) first propose, in order to account for what they call "covert wh-movement"—i.e., wh-questions without overt wh-words—that when there is no overt manual item associated with the non-manual wh-marking, the non-manual wh-marking over manual material in the c-command of the (missing) wh-word is obligatory. However, as is argued below, their analysis of wh-movement leftwards makes incorrect predictions about the optional vs. obligatory spread of wh-marking in the presence of an overt wh-word.

[12] As mentioned in 4.1, a common occurrence at the end of ASL wh-questions is a small, often unobtrusive, sign, a somewhat reduced version of the generic wh-question sign, formed with upturned palms and accompanied by a wh-face, which I have glossed as WHAT. This sign (although slight and unobtrusive) can often be observed in videotaped data of wh-question words that remain *in situ*. This reduced wh-word may occur in tags as well.

not—spread over the IP.[13]

27. JOHN BUY WHAT YESTERDAY [wh] [2c]

'John bought what yesterday?/What did John buy yesterday?'

28a. JOHN BUY YESTERDAYWHAT [wh] [15a]

28b. JOHN BUY YESTERDAY WHAT [wh] [15b]

'What did John buy yesterday?'

This pattern of non-manual marking distinguishing sentences containing moved wh-words from those containing wh-words *in situ,* as shown in 27 and 28a provides further support for an analysis according to which sentences like 22 and 23 contain IP-internal wh-words, while 24, 25 and 26 contain wh-words external to the IP. Furthermore, this distinction furnishes further evidence for the analysis that wh-movement is rightward in

[13] In the cases where I have glossed questions using a line extending further over than the last manual sign, I am suggesting that this is a minimal instantiation of the wh-feature, and on closer examination may be a very reduced form of the wh-sign, particularly since the wh-face perseverates beyond the last manual sign. Controversial examples such as (i) that have been presented in the literature as grammatical, but which are considered to be ungrammatical by my informants, as glossed below, in fact may be 'saved' by the occurrence of the very unobtrusive reduced version of the wh-sign after the IP, as shown in (ii):

(i) * WHO STEPHANIE LOVE [wh]
'Who does Stephanie love'
(considered grammatical by Lillo-Martin, but not by my informants.)

(ii) WHO STEPHANIE LOVE [REDUCED WH-SIGN] [wh]
'Who does Stephanie love'

It would be interesting to reconsider the data of the kind reported in (i) to determine whether such subtle wh-signs may, in fact, be present at the end of the sentence. A fuller analysis of the role of the reduced wh-sign awaits further research.

ASL, contrary to an alternative proposal by Lillo-Martin and Fischer (1992) that it is leftward, to be discussed further in Section 4.4. Lillo-Martin and Fischer (1992) analyze cases of *in situ* wh-subjects—for which spread of wh-marking across the entire IP is obligatory—as structurally ambiguous (involving either a wh-word *in situ* or a wh-word that has moved leftward to Spec of CP). However, they assume that all cases of sentence initial wh-subjects are cases of wh-words that have moved leftward. They have no account of wh-subjects that remain *in situ.* Thus, their generalization about the distribution of non-manual marking, based on their observation about non-manual wh-marking needing to occur over manual material, takes a very different form from the generalization proposed in Section 4.1.2. They are forced to say that wh-marking may occur only over the wh-phrase just in case the wh-word is an **object** *in situ.* Not only does this formulation fail to distinguish between *in situ* and movement constructions generally, but it also makes precisely the wrong prediction for the spread of wh-marking in 27. Their claim about the spread of non-manual wh-marking for the *in situ* wh-objects actually holds only for cases where the wh-word can be analyzed (as it has been here) as having moved rightward (as in 28), although their own examples are all structurally ambiguous, and they therefore do not distinguish between the two sentence types. In fact, they have no explanation at all for why the sentences they analyze as involving *in situ* wh-objects should pattern differently from all other sentences with wh-words.

Additionally, the argument made by ABKN (1992-a), and in this chapter, that wh-movement in ASL is rightward, has consequences for X-bar theory, as it demonstrates that the Spec of CP is to the right of IP in ASL, thereby calling into question Kayne's (1993) linear constraint axiom that crosslinguistically specifiers must precede their heads, and that heads must precede their complements.

4.1.3 Non-overt Wh-words

It is not always necessary for a wh-word to be lexically overt in a wh-question in ASL (Lillo-Martin and Fischer, 1992). The following sentences all bear non-manual wh-marking, and are therefore understood as wh-questions, even though there is no overt wh-word.[14]

29. _ _ _ _ _ _wh
NAME

'What's your name?'

30. _ _ _ _ _ _ _wh
WRONG

'What's wrong?'

31. _ _ _ _ _ _ _wh
HAPPEN

'What happened?'

32. _ _ _ _ _wh
SAY

'What did she say?'

Each of the above sentences, however, is equivalent in meaning to a sentence that

[14] In rich discourse contexts, it is possible to omit the overt wh-word in longer questions, too. Thus, as long as it occurs in a clearly understandable context, (i) is acceptable.

i. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _wh
JOHN BUY YESTERDAY

'What did John buy yesterday?'

contains a specific, uniquely determined, wh-word, as shown below in sentences 33-36.

33. $\underline{\quad\quad\quad\quad}^{wh}$
NAME WHAT

'What's your name?'

34. $\underline{\quad\quad\quad\quad\quad\quad}^{wh}$
WRONG WHAT

'What's wrong?'

35. $\underline{\quad\quad\quad\quad\quad\quad}^{wh}$
HAPPEN WHAT

'What happened?'

36. $\underline{\quad\quad\quad\quad}^{wh}$
SAY WHAT

'What did you say?'

The sentences in 29-32 can in fact be analyzed as wh-questions containing an empty category in the position that would otherwise (see sentences 33-36) be filled by a wh-word. Lillo-Martin and Fischer (1992) discuss what they call "covert wh-questions," i.e., the kinds of wh-questions without overt wh-words as shown in 29-32. However, despite the fact that most of their paper is devoted to "covert" wh-questions, which obligatorily occur with wh-marking over the whole IP, their misanalysis of the basic structure of wh-questions (as discussed in 4.1.2) prevents them from providing a unified account of the distribution of non-manual marking in wh-questions with and without overt wh-words.

As they are wh-questions, it is postulated in this dissertation that there must be a null wh-word in each of the examples in 29-32. The non-manual wh-question marking is the realization of the syntactic +wh-feature over the c-command domain of Comp. As

argued above, when there is a +wh-feature present, it must be realized over lexical material. There is no lexical wh-word in the Spec of CP in the sentences above. Therefore, the non-manual wh-marking spreads obligatorily over the entire sentence. This pattern is identical to that shown in the *in situ* examples 22 and 23, where there is no lexical wh-word in the Spec of CP, and therefore the +wh-feature associated with Comp causes the non-manual wh-marking to spread over the lexical material in its c-command domain. Thus in the sentences above, the presence of the +wh-feature in Comp, despite the absence of a manual wh-word, ensures that the non-manual wh-question marking is realized over the IP.

In summary, the non-manual wh-marking spreads obligatorily when the wh-word is *in situ,* or is null, i.e., just in case there is no manual sign external to the IP to bear the non-manual +wh marking. The spread of the non-manual marking is optional when the wh-word has moved rightwards to the Spec of CP. Moreover, this analysis provides a unified account of covert wh-questions and constructions in which the wh-word remains *in situ.* Thus, the obligatory vs. optional spread of non-manual wh-marking demonstrates a distinction between sentences that do and do not involve movement of a wh-word to the Spec of CP.

4.1.4 Extraction

Now that it has been established that ASL has rightward wh-movement to the Spec of CP, the next question is: what are the constraints on movement for wh-words in ASL? Contrary to other claims (Lillo-Martin, 1990), it will be shown that the embedded wh-word can move to the Spec of the matrix CP in ASL.

4.1.4.1 Wh-Movement Within an Embedded Clause

Consider sentence 37, which contains an embedded clause with the wh-subject *in situ*. It should be noted that WONDER in ASL can take a +wh complement.

37. TEACHER WONDER $\overline{\text{WHO PASS TEST}}^{\text{wh}}$

'The teacher wonders who passed the test.'

One construction that can be used in case the wondering pertains specifically to the subject of the embedded clause in 37, is sentence 38, which is an indirect question. Example 39 illustrates the structure proposed for 38: WHO moves from the subject position of the embedded clause (to the left of PASS) to the Spec of the lower CP.

38a. TEACHER WONDER PASS TEST $\underline{\text{WHO}}^{\text{wh}}$

38b. TEACHER WONDER $\overline{\text{PASS TEST}}$ $\underline{\text{WHO}}^{\text{wh}}$

'The teacher wonders who passed the test'

39a. $[_{CP_1}[_{IP_1}$ TEACHER WONDER $[_{CP_2}[_{IP_2}\ t_i$ PASS TEST$]_{IP_2}\ \underline{\text{WHO}_i}^{\text{wh}}]_{CP_2}]_{IP_1}]_{CP_1}$

39b. $[_{CP_1}[_{IP_1}$ TEACHER WONDER $[_{CP_2}[_{IP_2}\ t_i\ \overline{\text{PASS TEST}}]_{IP_2}\ \underline{\text{WHO}_i}^{\text{wh}}\ ]_{CP_2}]_{IP_1}]_{CP_1}$

Notice that the optional non-manual marking in 38b extends only over the embedded clause, i.e., the c-command domain of the Comp of CP_2. Thus, the non-manual marking shows that in 38b, WHO has not moved out of CP_2 and into the Spec position of the

higher CP. This also corresponds to the logical interpretation—the wh-word has logical scope only over IP_2. In summary, if a verb subcategorizes for a wh-complement, then a wh-word contained in the complement clause may move to the Specifier position of that +wh clause.

4.1.4.2 Wh-movement out of an Embedded Clause

However, it is also possible for the wh-word to move to the Spec of CP of the higher clause, as shown in example 40. The structure for example 40 is shown in 41a and 41b.

40. $\underline{\text{TEACHER WONDER PASS TEST}}\ \ \overline{\text{WHO}}^{\text{wh}}$

'Who does the teacher wonder (if) passed the test?'

41a. $[_{CP1}[_{IP_1}\ \underline{\text{TEACHER WONDER}}\ [_{CP_2}[_{IP_2}\ t_i\ \ \underline{\text{PASS TEST}}]_{IP_2}\ t_i\ ]_{CP_2}]_{IP_1}\ \ \overline{\text{WHO}_i}^{\text{wh}}]_{CP_1}$

41b. $[_{CP1}[_{IP_1}\ \text{TEACHER WONDER}\ [_{CP_2}[_{IP_2}\ t_i\ \ \text{PASS TEST}]_{IP_2}\ t_i\ ]_{CP_2}]_{IP_1}\ \ \overline{\text{WHO}_i}^{\text{wh}}]_{CP_1}$

In sentence 40, WHO moves from the subject position of the embedded CP through the Spec of the lower CP to the Spec of the higher CP. It can be seen that the optional non-manual marking in 40 extends over the whole clause, i.e., the c-command domain of the Spec of CP_1. Thus, the non-manual marking shows that in 40, WHO has moved out of the lower clause and into the Spec of the higher CP. This example shows clearly that wh-words can be extracted from an embedded clause and moved to Specifier position of

the matrix clause. This means that—contrary to claims by Lillo-Martin[15]—not only can wh-words move to the Specifier position within their clause of origin, but under appropriate conditions, they can move to the Specifier position of the main clause as well. Thus, ASL does permit extraction out of embedded clauses. Additional examples will be presented in the next two sections.

4.1.4.3 Extraction from Subject Position

Now consider sentence 42, which also contains an embedded clause. Unlike WONDER, EXPECT does not subcategorize for a +wh complement.

42. TEACHER EXPECT JOHN PASS TEST

'The teacher expects John to pass the test'

While a wh-word questioning the embedded subject may therefore not move to the Specifier position of the embedded clause, it may raise to the matrix Spec of CP, as shown in 43. The structure proposed for 43 is illustrated in 44.

43. TEACHER EXPECT PASS TEST $\overline{\text{WHO}}^{\text{wh}}$

'Who does the teacher expect to pass the test?'

---

[15]Lillo-Martin (1990) claims that extraction out of embedded clauses in ASL is not possible: "The proper generalization seems to be that in most cases, a wh-word can be moved only if it is in the matrix sentence. Wh-words are generally not fronted out of embedded clauses." (p. 214) This conclusion about extraction in ASL is reached because Lillo-Martin assumes that wh-movement is leftward, and since leftward extraction of wh-words is not found, she deduces that extraction of wh-words in ASL is impossible. She furthermore states (p. 220) that this result derives from a parameterization of the definition of barrier.

44. $[_{CP_1}[_{IP_1}$ TEACHER EXPECT $[_{CP_2}[_{IP_2} t_i$ PASS TEST$]_{IP_2} t_i\ ]_{CP_2}]_{IP_1}$ $\overline{\text{WHO}_i}^{\text{wh}}]_{CP_1}$

As would be expected, the wh-marking on WHO may optionally spread over its c-command domain, IP_1:

45. $\overline{\text{TEACHER EXPECT PASS TEST}}\ \overline{\text{WHO}}^{\text{wh}}$

'Who does the teacher expect to pass the test?'

Notice that the non-manual marking can spread over the entire IP_1, but may not appear only over IP_2.

46. * $\overline{\text{TEACHER EXPECT PASS TEST}}\ \overline{\text{WHO}}^{\text{wh}}$

'Who does the teacher expect to pass the test?'

The type of spreading shown in 46 would be expected only if WHO were occupying Spec position of CP_2, which would be possible only if EXPECT subcategorized for a +wh complement, which it does not.

47. * $[_{CP_1}$ TEACHER EXPECT $[_{CP_2}\ [_{IP_2}\ t_i\ \overline{\text{PASS TEST}}]_{IP_2}\ \overline{\text{WHO}_i}^{\text{wh}}\ ]_{CP_2}]_{CP_1}$

Further evidence that the sentence-final WHO in 46 has moved to the Specifier of the matrix CP rather than that of the embedded CP is provided by the possibilities for non-manual marking accompanying WHO if it remains *in situ.* As discussed in section 4.1.2, the spread of wh-marking over the entire clause is required when there is a +wh feature occupying Comp which is not expressed on lexical material in the Spec of CP.

Consider the obligatory spread of the +wh marking over the whole clause in the *in situ* version of 43, shown in sentences 48-50. Example 48 has non-manual marking only over the wh-word, and 49 has manual marking extending only over the embedded clause. Both are ungrammatical. In contrast, example 50, which has the non-manual marking extending over the whole sentence, is grammatical. This provides further evidence that the d-structure from which 43 is derived necessarily contains a +wh feature in Comp position of the matrix clause, consistent with the wh-word moving to the Specifier position of that clause in 45.

48. * TEACHER EXPECT $\overline{\text{WHO}}^{\text{wh}}$ PASS TEST

49. * TEACHER EXPECT $\overline{\text{WHO PASS TEST}}^{\text{wh}}$

50. $\overline{\text{TEACHER EXPECT WHO PASS TEST}}^{\text{wh}}$

'Who does the teacher expect to pass the test?'

Note that this is in contrast with what is found with the *in situ* version of sentence 38, shown in 53 below where the non-manual marking accompanying the wh-word *in situ* spreads obligatorily over the c-command domain of the Comp of the embedded clause (i.e., the embedded IP). The sentences in 51 and 52 are ungrammatical; only 53 is grammatical. In the d-structure proposed for sentence 38, shown in 39, the +wh feature occupies the lexically unfilled head C of the lower CP. Thus, the wh-marking in 53 spreads obligatorily over the embedded clause, and only over the embedded clause.

51. * TEACHER WONDER $\overline{\text{WHO}}^{\text{wh}}$ PASS TEST

52. * $\overline{\text{TEACHER WONDER WHO PASS TEST}}^{\text{wh}}$

53. TEACHER WONDER $\overline{\text{WHO PASS TEST}}^{wh}$

'The teacher wonders who passed the test.'

In conclusion, then, WHO in 54 and 55 must have moved to the Spec of the higher CP.

54. TEACHER EXPECT PASS TEST $\overline{\text{WHO}}^{wh}$ [43]

55. $\overline{\text{TEACHER EXPECT PASS TEST}}$ $\overline{\text{WHO}}^{wh}$ [45]

'Who does the teacher expect to pass the test?'

Thus, in the extraction of embedded wh-words from subject position, the spread of non-manual marking found with wh-words *in situ* and wh-words that appear sentence-finally provides further support for wh-movement rightward to Spec of CP in ASL.

4.1.4.4 Extraction from Object Position

Extraction of embedded subject wh-words has just been demonstrated. ASL also allows extraction of embedded object wh-words. Sentence 56 shows the rightward extraction of an object wh-word from within an embedded clause. The analysis proposed for 56 is shown in 57.

56a. BILL HEAR MARY CLASH-WITH YESTERDAY $\overline{\text{WHO}}^{wh}$

56b. $\overline{\text{BILL HEAR MARY CLASH-WITH YESTERDAY}}$ $\overline{\text{WHO}}^{wh}$

'Who did Bill hear Mary clash with yesterday?'

57a. $[_{CP_1}$ BILL HEAR $[_{CP_2}[_{IP_2}$ MARY CLASH-WITH t_i YESTERDAY$]_{IP_2} t_i]_{CP_2}$ WHO$_i]_{CP_1}$ (wh)

57b. $[_{CP_1}$ BILL HEAR $[_{CP_2}[_{IP_2}$ MARY CLASH-WITH t_i YESTERDAY$]_{IP_2} t_i]_{CP_2}$ WHO$_i]_{CP_1}$ (wh)

In Sentence 56, WHO has moved from its base-generated position to the left of YESTERDAY. It cannot have moved to the Spec of the embedded CP because HEAR does not take a +wh complement. Thus it has necessarily moved to the Spec of CP_1. That this is the correct analysis is shown by the scope of the non-manual marking in 56, as opposed to the unacceptability of the non-manual marking illustrated in 58, which is what would be expected if WHO c-commanded only the embedded IP.

58. * BILL HEAR MARY CLASH-WITH YESTERDAY (wh) WHO

'Who did Bill hear Mary clash with yesterday?'

Thus, despite claims made by Lillo-Martin (1990), extraction of embedded wh-words is indeed possible in ASL, both for subjects and objects.

4.2 Confusion Arising out of the Data: Multiple Occurrences of Wh-words

No detailed analyses of ASL wh-movement previous to ABKN (1992-a, b) propose that wh-words move to the right, although there is descriptive work indicating that wh-words occur sentence-finally (Baker and Cokely, 1980; Lucas and Valli, 1992). Perlmutter (1991) observed in a non-technical discussion of ASL syntax, but with a crucial illustrative example, that wh-words occur at the end of the sentence.[16]

[16] Although a number of accounts of ASL have assumed that question words occur sentence-finally, rightward wh-movement to the Spec of CP has not been argued for in previous literature.

In fact, several proposals have been made that wh-movement in ASL is leftward (Lillo-Martin, 1990; Petronio, 1992-a and b; Lillo-Martin and Fischer, 1992; Petronio, 1993). The complexity of the data is, perhaps, partly responsible for the difficulty in determining the direction of wh-movement. It is frequently the case in ASL that the wh-word occurs both sentence-initially and sentence-finally, as shown below (without indications of prosody).

59. ___wh _ _ _ _ _ _ _ _ _ __wh
WHO BUY BOOK WHO

60. _____wh _ _ _ _ _ _ _ _ _ _____wh
WHAT JOHN BUY WHAT

Sentence 59 shows two occurrences of a wh-word corresponding to subject, and sentence 60 shows the same for object. Evidence of the kind shown in 59 and 60 has led some researchers[17] to postulate that the sentence-initial wh-word is in the Spec of CP, which they thus believe is to the left of the IP in ASL. These researchers then account for the sentence-final wh-word as being either a copy of the first wh-word or some kind of focussed element. Such claims will be addressed in Section 4.4, but it is sufficient to note for the moment that, in fact, 59 and 60 by themselves provide no evidence as to the directionality of wh-movement in ASL.

The best evidence to resolve the question of the directionality of wh-movement comes from sentences containing a single occurrence of the wh-word. Such sentences were discussed in Section 4.1, where it was shown that the data are consistent only with an analysis involving rightward wh-movement. So, if wh-movement is rightward, how then can the grammaticality of sentences like 60 be explained? The sentence-initial wh-word can be understood in relation to topics in ASL.

---

[17] See especially Lillo-Martin (1991); Lillo-Martin and Fischer (1992); Petronio (1991, 1992-a, b, 1993). A detailed analysis of some alternative accounts of wh-movement is to be found in 4.4.

4.2.1 Wh-Topics

There are at most two topics that may appear in the ASL sentence. ABKN (1992-a) analyze topics as left-adjoined to the CP, and they claim that topics may be base-generated or they may move there. Typically, phrases occurring in these topic positions bear particular non-manual markings, consisting of a brow raise over the constituent, or a body shift from side to side.[18] In 3.5.2 it was argued that the relation of topics to the main clause is as shown in Figure 16.

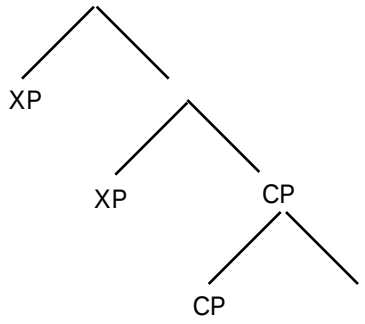

Figure 16 Relation of Topics to CP

Wh-words can, in fact, be base-generated in topic position in ASL. Sentence 61, with the wh-word sentence-initially and sentence-finally, is, under the analysis proposed here, similar to sentence 62, with a base-generated topic. Note, however, that unlike -wh NP's, wh-words cannot be moved from an IP-internal position to topic position as

[18] See Chapter 5 for a detailed description and analysis of topic marking in ASL.

in 63.[19]

61. WHO MARY LOVE WHO
wh/t _ _ _ _ _ _ _ _ wh

62. JOHN, MARY LOVE IX-3rd
t
'As for John, Mary loves him.'

63. * WHO MARY LOVE
t

Some evidence for the claim that wh-words occurring sentence-initially occupy topic position is the fact that wh-words sometimes actually bear topic marking. Although the wh-feature requires the eyebrows to be lowered, while topic marking requires the eyebrows to be raised, it is nonetheless possible for a wh-word to bear topic marking as

[19]Just as in English, movement of wh-words to topic position does not allow the wh-word to be properly identified with the +wh feature in C. Topic position is not marked as +wh and therefore movement to topic position does not meet the wh-criterion proposed by Rizzi (1990).

i. Bagels, he likes *t*

ii. * What, he likes *t*

In ASL, the situation is similar:

iii. JOHN MARY LOVE
t
'John, Mary loves.'

iv. * WHO MARY LOVE
t
'Who, Mary loves?'

v. MARY LOVE WHO
_ _ _ _ _ _ _ _ wh
'Who does Mary love?'

well as wh-marking. This is achieved by a raising of the brow, at the same time as a narrowing of the eyes and the tilt of the head that is normally associated with wh-marking. This non-manual marking appears to be a combination of wh-marking and topic marking, and sometimes occurs over wh-words in topic position. Thus, a wh-word that occurs sentence-initially would be analyzed as having been base-generated in topic position.[20]

Grammatical questions may be preceded by a pre-clausal wh-word (i.e., a wh-word in topic position). The structure that follows the pre-clausal wh-word must be grammatical independently of the preclausal wh-word. Thus, the following grammatical questions, shown in 64a-d, are grammatical[21] with the addition of a pre-clausal

---

[20] Wh-words appearing sentence-initially can be shown to be outside of the main CP. As discussed in Section 3.5.2, non wh-topics are outside the CP. As discussed at more length in Chapter 5, wh-words may occur in the leftmost topic position (i.e., even further outside the CP than the non wh-topic) when both topic positions are filled, as demonstrated in the following sentences. It should be noted that when the wh-word occurs in the leftmost topic position, the wh-marking can spread over both items in topic position, obscuring the topic marking on the non wh-topic, although it does not have to, as shown in (iii). However, it is clear that VEGETABLE in both these examples, can only be a base-generated topic.

_____t _ _ _ _ _ _ _ _ _ _ _ _ _ _ _wh
i. VEGETABLE, WHO PREFER SPINACH
'As for vegetables, who prefers spinach?'

_ _wh
ii. WHO VEGETABLE PREFER SPINACH WHO

___wh _____t _ _ _ _ _ _ _ _ _ _ _ _wh
iii. WHO, VEGETABLE, PREFER SPINACH WHO
'Who as for vegetables prefers spinach?'

[21] Two wh-words in a row are disfavored pragmatically, although 65a is not ungrammatical.

wh-word, as shown in 65a-d.[22]

64a. $[_{CP}\ [_{IP}\overset{\text{wh}}{\text{WHO BUY BOOK YESTERDAY}}]_{IP}\ ]_{CP}$

64b. i $[_{CP}\ [_{IP}\text{BUY BOOK YESTERDAY}_{IP}]\ \overset{\text{wh}}{\text{WHO}}]_{CP}$ [wh-movement]

64b. ii. $[_{CP}\ [_{IP}\text{BUY BOOK YESTERDAY}_{IP}]\ \overset{\text{wh}}{\text{WHO}}]_{CP}$ [wh-movement]

'Who bought a book yesterday?'

64c. $[_{CP}\ [_{IP}\overset{\text{wh}}{\text{MARY SEE WHO YESTERDAY}}]_{IP}\ ]_{CP}$

64d. i. $[_{CP}\ [_{IP}\text{MARY SEE YESTERDAY}]_{IP}\ \overset{\text{wh}}{\text{WHO}}]_{CP}$

64d. ii. $[_{CP}\ [_{IP}\text{MARY SEE YESTERDAY}]_{IP}\overset{\text{wh}}{\text{WHO}}]_{CP}$

'Who did Mary see yesterday?'

---

[22] However, the non-manual marking must occur over the whole utterance in utterances where there is a wh-word that has moved to the Spec of CP, as well as a pre-clausal base-generated wh-word. Thus (i) and (ii) are ungrammatical, in contrast with the grammatical examples in 65b and 65d. There does not seem to be any syntactic reason *per se* that the examples shown below should be ungrammatical, so this remains without explanation.

i. * $\overset{\text{wh}}{\text{WHO}}\ [_{CP}\ [_{IP}\text{BUY BOOK YESTERDAY}_{IP}]\ \overset{\text{wh}}{\text{WHO}}]_{CP}$

ii. * $\overset{\text{wh}}{\text{WHO}}\ [_{CP}\ [_{IP}\text{MARY SEE YESTERDAY}]_{IP}\ \overset{\text{wh}}{\text{WHO}}]_{CP}$

wh/t
65a. WHO, [$_{CP}$ WHO BUY BOOK YESTERDAY]$_{CP}$
wh

wh/t
65b. WHO, [$_{CP}$ BUY BOOK YESTERDAY WHO]$_{CP}$
wh

'*Who*, who bought a book yesterday?'

wh/t
65c. WHO, [$_{CP}$ MARY SEE WHO YESTERDAY]$_{CP}$
wh

wh/t
65d. WHO, [$_{CP}$ MARY SEE YESTERDAY WHO]$_{CP}$
wh

'*Who*, who did Mary see yesterday?'

Wh-questions that are not grammatical are not made grammatical by the addition of a pre-clausal wh-word as shown in the examples in 66 and 67.[23]

---

[23] Although sentence 67 is regarded here as ungrammatical, sentences like the following do occur:

wh
i. WHERE JOHN LIVE

Locative adjuncts tend to appear at the beginning of the sentence in ASL (often actually bearing topic marking) as observed by Anderson (1978) and Coulter (1979). Sentence (i) might be questioning the adjunct in (ii), with WHERE remaining *in situ*.

t
ii. BOSTON , JOHN LIVE

'John lives in Boston.'

It should be noted that although sentences like (i) involving wh-adjuncts in topic position are sometimes acceptable, without an overt wh-word in the Spec of CP, sentences like 67, involving wh-arguments in topic position without an overt argument in the Spec of CP are always ungrammatical.

66. * $[_{CP}$ JOHN LOVE $]_{CP}$

67. * WHAT $[_{CP}$JOHN LOVE $]_{CP}$

Thus, the clause initial wh-word does not function as an argument of the main clause. This is in contrast with wh-words occurring postclausally, which do. This is seen in the examples in 68a and b, and again supports the rightward analysis.

68a. * $[_{CP}\ [_{IP}$ LOVE JOHN $]_{IP}$ $]_{CP}$

68b. $[_{CP}\ [_{IP} t_i$ LOVE JOHN$]_{IP}$ WHO$_i]_{CP}$ (LOVE JOHN: _ _ _ _ _ _ _ _ _; WHO$_i$: wh)

In conclusion, wh-words may appear in topic position in ASL. So a sentence like

69. WHO SAW JOHN WHO (WHO: wh/t; SAW JOHN WHO: _ _ _ _ _ _ _ wh)

is analyzed as containing the first wh-word in topic position, while the second wh-word has moved rightward to the Spec of CP.[24] Proposing an analysis in which there is a topic position to the left of the CP, allows an account of the following examples:

[24] In such sentences, the wh-word may bear the marking described previously, but the topic marking is not obligatory, just as topic marking is not always obligatory in non wh-topics.

70. WHO (wh/t) MARY LOVE WHO (wh)

71. WHAT (wh/t) JOHN BUY WHAT (wh)

These are analyzed as questions in which the object wh-word either remains *in situ* or moves to the Spec of CP, and in which there is additionally a base-generated wh-word in topic position. However, accounting for questions such as shown in 72 below requires the postulation of one additional piece of structure: a tag construction, which is described in 4.2.2.

72. WHO BUY BOOK, (wh) WHO (wh)
'Who bought a book, who did?'

4.2.2 Wh-words in Tags

ASL has a productive tag construction, discussed briefly in 3.6.1. When a tag is present, it occurs adjoined to the right of CP. If the main clause is a wh-question, so is the tag. The following examples show wh-questions that include wh-tags. A comma is used to show the slight pause that serves as the demarcation between the CP and the tag. The structures proposed for 73 and 74 are shown in 75 and 76, respectively.

73. JOHN BUY WHAT YESTERDAY, (wh) WHAT (wh) (hn)
'What did John buy yesterday, what (did he) ?'

74. WHO LIKE COOKIE, WHO

wh wh hn

'Who likes cookies, who (does)?'

75. $[_{CP}[_{CP}[_{IP}$JOHN BUY WHAT YESTERDAY$]_{IP}$+wh$]_{CP}[_{CP}[_{IP}$WHAT$]_{IP}$+wh$]_{CP}]_{CP}]$

wh wh hn

76. $[_{CP}[_{CP}[_{IP}$WHO LIKE COOKIE$]_{IP}$ +wh$]_{CP}$ $[_{CP}[_{IP}$WHO$]_{IP}$+wh $]_{CP}]_{CP}$

wh wh hn

It should be noted in the matrix clauses above that the wh-word is *in situ*: in object position in 73, and in subject position in 74. Thus, as would be expected, in both cases the wh-marking spreads obligatorily over the IP. Since the main clause CP contains the wh-word *in situ*, the tag mirrors this structure, and the wh-word in the tag is consequently also *in situ.* Additionally, the wh-word in the tag, in both these cases, is accompanied by the usual wh-marking, and by a slight shaking of the head (a few short, sharp, tense side-to-side movements of the head in very rapid succession).[25] The shaking of the head, which characteristically accompanies the wh-word in this construction, can be understood, on the analysis proposed here, to be the realization of the affirmative headnod (hn) over the wh-word. As was seen in Chapter 3, the affirmative headnod, which may occur over stressed forms, is obligatory when there is no overt V. Therefore, while the stressed form of the wh-word may occur in simple sentences, it is obligatory when the wh-word is the only lexical element in the tag construction, since the VP in the tag is null.[26]

---

[25] This observation, that sentence-final wh-words are accompanied by a slight shaking of the head, was made by Petronio (1992-a), although her analysis of this construction is very different from the one proposed here.

In fact, there are some sentences which might be structurally ambiguous, as to whether they consist of a wh-word in topic position plus a wh-word in the spec of CP, or a wh-word *in situ*, plus a wh-tag. These two types can usually be differentiated by the prosody and the presence or absence of the slight headshake accompanying the final wh-word. This possible ambiguity for the sentence in 77 is shown by the two structures in 78 and 79.

77. $\overline{\text{WHO BUY BOOK}}^{\text{wh}}\ \overline{\text{WHO}}^{\text{wh}}$

78. $[_{CP}\,[_{CP}\,[_{IP}\,\overline{\text{WHO BUY BOOK}}^{\text{wh}}\,]_{IP}\ \text{+wh}\,]_{CP}\ \ [_{CP}\,[_{IP}\,\overline{\text{WHO}}^{\text{wh}}\,]_{IP}\ \text{+wh}]_{CP}]_{CP}$

‘Who bought a book, who did?’

79. $[_{CP}\,\overline{\text{WHO}}^{\text{wh/t}}\ \ [_{CP}\,[_{IP}\,t_i\ \ \text{BUY}\ \ \text{BOOK}\,]_{IP}\ \ \text{WHO}_i\,]_{CP}]_{CP}$

‘Who was it that bought a book?’

Thus, the puzzle involving examples with multiple occurrences of wh-words, presented at the beginning of this section, can be solved by an analysis in which: (1) wh-words move rightward to the Spec of CP; (2) there is an XP position adjoined to the left of CP in which wh-topics can be base-generated; and (3) there is a tag construction to the right of the CP, which for a wh-question consists minimally of the wh-word and tense. Moreover, it is possible to distinguish among these different multiple wh-constructions by using information provided by non-manual marking.

4.3 Rhetorical Questions

[26] The headnod is associated with the Tense node. If there is no manual material overt in Tense, then the hn is realized over other lexical material c-commanded by Tense. This may happen when a wh-word remains *in situ* in the IP of the tag.

Interestingly, wh-movement occurs in ASL not only in information-seeking wh-questions, but in rhetorical wh-questions as well. ASL uses a different non-manual marking to signal what are known as rhetorical questions. This marking consists of raised eyebrows and a slight tilting of the head (Baker-Shenk, 1983; Bienvenue and Colonomos, 1991). The function of wh-rhetorical questions in ASL is to ask a question to which the signer will immediately provide the answer, as a way of introducing new information.

The sentences in 80 and 81 are examples of rhetorical questions as used in ASL. They are taken from Petronio (1991) (her examples 4 and 5).[27] She divides each utterance into the question part and the answer part (or the topic and comment).[28] The focus in this section is on the question part.[29]

---

[27] 'rh' is the notation used by Petronio to distinguish rhetorical question non-manual marking from information-seeking non-manual question marking. Her notation will be followed for examples taken from her work. The original examples in this paper, however, will be marked with the +wh-non-manual marking, followed by rh, as this paper considers the +wh-feature crucial to the analysis. All the original examples used in this dissertation will use wh/rh to represent the non-manual marking on rhetorical wh-questions. It should be noted that rhetorical yes/no questions are also very common in ASL, and apparently bear a similar marking to that borne by the rhetorical wh-questions. However, rhetorical yes/no questions are not discussed in this dissertation, and thus all the non-manual rhetorical question marking is represented as wh/rh.

[28] The punctuation in these examples suggests that these constructions contain one sentence. The examples, complete with punctuation, are taken directly from Petronio (1991). The analysis proposed here is concerned with the question part of the utterance only, and no position is taken on whether the utterance consists of one or more sentences. It is not clear that such examples consist of one sentence, although this has been proposed by Wilbur (1992).

[29] Petronio's informants find 80d ungrammatical, with the subject wh-word *in situ*. Wilbur also claims that rhetorical questions cannot contain the subject wh-word *in situ*. However, the informants I consulted find this sentence perfectly acceptable, as well as a parallel case with the wh-word *in situ* in object position, namely,

wh/rh
i. JOHN BUY WHAT YESTERDAY, BOOK
'John bought what yesterday? A book.'

80a. TAKE-UP EXPLAIN ___rh WHO, ANN

80b. _____rh TAKE-UP EXPLAIN WHO, ANN

80c. _____rh TAKE-UP EXPLAIN, ANN

80d. _____rh WHO TAKE-UP EXPLAIN, ANN

'It is Ann who will do the explaining'

81a. JOHN BUY ____rh WHAT, BOOK

81b. _____rh JOHN BUY WHAT, BOOK

81c. _____rh JOHN BUY, BOOK

81d. * _____rh WHAT JOHN BUY, BOOK

'It was a book that John bought.'

The pattern of non-manual marking (rh) in the question part of the examples above (i.e., the CP preceding the ",") bears a striking resemblance to the pattern exhibited in the examples of wh-questions shown earlier. The non-obligatoriness of the spread of the rh marking from the clause-final WHO in 80 over the preceding IP (shown in 80a and b) indicates that the subject wh-word has moved to the Spec of CP, as shown in 82. This is equivalent to what was seen in sentence 5, repeated below as 83.

82. $[_{CP}\ [_{IP}\ t_i$ _ _ _ _ _ _ _ _ _ _ _ _ _ ___wh TAKE-UP EXPLAIN$]_{IP}$ WHO$_i$ $]_{CP}$

'Who will do the explaining?'

83a. BUY BOOK ___wh WHO [5]

83b. _ _ _ _ _ _ _ ___wh BUY BOOK WHO

83c. $[_{CP}\ [_{IP}\ t_i$ BUY BOOK $]_{IP}$ ___wh $WHO_i\ ]_{IP}$

83d. $[_{CP}\ [_{IP}\ t_i$ _ _ _ _ _ _ _ _ _ _ BUY BOOK $]_{IP}$ ___wh $WHO_i\ ]_{IP}$

'Who bought a book?'

As was seen in section 1.2.1, there are wh-questions that may involve a non-overt wh-word. That these are wh-questions, nonetheless, is clear, on the basis of the non-manual marking they exhibit. Similarly, rhetorical wh-questions may also occur without an overt wh-word, as can be seen in 84 and 85. Sentence 85 has a null wh-subject, whereas 84 has a null wh-object. The rhetorical question feature in Comp spreads over its c-command domain, as it, too, must be expressed over lexical material. The spreading of the non-manual feature in the Spec and head of CP is over an identical domain, regardless of actual kind of non-manual marking involved.

84a. _ _ _ _ _ _ _ _ _ _ _ _ wh/rh TAKE-UP EXPLAIN , ANN [79c]

84b. $[_{CP}\ [_{IP}$ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ wh/rh ____ TAKE-UP EXPLAIN$]_{IP}$ +wh /rh$]_{CP}$

85a. JOHN BUY , BOOK [80c]
wh/rh

85b. $[_{CP}\ [_{IP}$ JOHN BUY _____ $]_{IP}$ +wh/rh$]_{CP}$
wh/rh

The structure of 84 is the same as that of 86, illustrated in 87, and the same pattern of manual marking is shown.

86. WHO BUY BOOK [4a]
wh

'Who bought a book?'

87. $[_{CP}\ [_{IP}$ WHO BUY BOOK$]_{IP}$ +wh $]_{CP}$
wh

Similarly, the structure of 85 is the same as that of 88, shown in 89.

88. JOHN BUY WHAT YESTERDAY [14]
wh

'John bought what yesterday?/What did John buy yesterday?'

89. $[_{CP}\ [_{IP}$ JOHN BUY WHAT YESTERDAY $]_{IP}$ +wh $]_{CP}$
wh

With respect to the wh-objects as shown in the examples in 81, the same patterns can be seen for rhetorical questions. Sentences 81a and b (shown here as 90a and b) indicate that the position to which a wh-word moves is the Spec of CP for rhetorical questions the same as for non-rhetorical wh-questions. Examples 90a and b are thus parallel to 91a and b.

90a. JOHN BUY WHAT$_{wh/rh}$, BOOK [81a]

90b. JOHN BUY WHAT$_{wh/rh}$, BOOK [81b]

91a. JOHN BUY WHAT$_{wh}$ [9]

91b. JOHN BUY WHAT$_{wh}$

'What did John buy?'

The claim that rhetorical wh-questions are structurally identical to information-seeking wh-questions is supported by data such as the following[30] (not taken from Petronio):

92a. JOHN BUY YESTERDAY WHAT$_{wh /rh}$, BOOK

92b. JOHN BUY YESTERDAY WHAT$_{wh/rh}$, BOOK

'What did John buy yesterday? A book.'

As argued in Section 4.1.1, the position of WHAT with respect to an IP-final adverb demonstrates that it is external to the IP, i.e., that it has moved to the Spec of CP. This is

[30] I have chosen to translate the sentences in 92 in a way that is closest to their syntactic structure. Although pragmatically, such sentences are used for purposes different from the English rhetorical question, no position is taken in this chapter on what the closest pragmatic translation of this kind of utterance is.

confirmed by the optionality of the spread of non-manual marking over the c-command domain of the moved wh-word. The sentences in 92 are structurally identical to those in 93, showing that in rhetorical wh-questions, just as in information seeking wh-questions, the wh-word moves to the Spec of CP.

93a. JOHN BUY YESTERDAY ____wh WHAT [15a]

93b. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ JOHN BUY YESTERDAY ____wh WHAT [15b]

'What did John buy yesterday?'

Rhetorical questions do not involve leftward movement of the wh-word to clause-initial position. Example 94 is ungrammatical, like its information-seeking wh-counterpart shown in 95.

94. * [$_{CP}$ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _wh/rh WHAT$_i$ [$_{IP}$JOHN BUY t_i]$_{IP}$]$_{CP}$ BOOK

95. * _ _ _ _ _ _ _ _ _ _ wh WHAT JOHN BUY

'What did John buy?'

Rhetorical questions show the same distribution of wh-words and the non-manual marking associated with them as do information-seeking wh-questions. The distribution of wh-words in rhetorical questions, as well as the scope of non-manual marking associated with those words, is precisely the same as that occurring for non-rhetorical wh-questions.[31] Thus, this construction provides additional evidence for the claim that

[31] Wilbur (1992) claims that in the rhetorical question structure (which she says can form part of a

wh-movement is rightward to the Spec of CP in ASL.

4.4 Alternative Accounts of Wh-movement

This chapter has presented an analysis of wh-words in ASL in which wh-words move to the right. This is in contrast to previous proposals based on the assumption that the position of the Spec of CP is to the left of the IP in ASL. Some previous proposals about wh-movement in ASL are considered below.

4.4.1 Lillo-Martin's Account of Wh-movement

Lillo-Martin (1990) proposes that wh-movement in ASL is to the Spec of CP, which she claims is to the left of IP in ASL. However, an analysis in which wh-movement is leftward cannot account for commonly found examples where the wh-word appears clause-finally, such as 96.

96. JOHN BUY YESTERDAY WHAT [15b]
(WHAT: wh)

'What did John buy yesterday?'

Lillo-Martin's discussion concentrates, however, on the cases where wh-words appear *in situ* in subject or object position. She analyzes sentence-initial wh-subjects as being *in situ* or resulting from leftward movement to the Spec of CP, although the data she

---

pseudocleft), the wh-word may never appear first. This unmotivated stipulation is clearly contradicted by the data in 82d. There is no reason *per se* that wh-subjects should not appear *in situ* in rhetorical questions in ASL. In fact, she provides an acceptable example of an object wh-word in situ in a rhetorical structure in what she calls a pseudocleft.

i. MARY BUY WHAT FOR CHILDREN? NEW TOYS
(Example taken from Wilbur, with her gloss.)

She further claims that in rhetorical questions the wh-word cannot appear first and last, i.e., in the configuration described in this paper in examples such as 79, with the wh-word in the sentence-initial Topic position. However, data such as Petronio's example 37 are considered grammatical by Petronio's informants, as well as by those I consulted.

ii. WHAT JOHN BUY WHAT, BOOK
(WHAT: rh)

uses to support her conclusions are equally consistent with the opposite conclusion, namely, that the wh-words are simply *in situ.*[32] Such examples by themselves reveal nothing. She does, however, offer sentences such as 97 as support for her analysis.

97. _____wh
WHO STEPHANIE LOVE
'Who does Stephanie love?'

The informants I consulted report such sentences as ungrammatical.

On the other hand, she considers all sentence-final wh-words to be wh-objects *in situ* and does not consider data involving non-clause-final objects, as illustrated earlier in examples 14 and 15, which make it possible to distinguish between moved and non-moved objects. The crucial data for determining the directionality of wh-movement have been presented in Section 4.1 of this chapter. In Section 4.3, rhetorical wh-questions were shown to have the same distribution of wh-words and non-manual marking as information-seeking wh-questions, providing additional support for rightward wh-movement in ASL.

With respect to extraction, Lillo-Martin concludes that wh-words in ASL cannot be extracted out of embedded clauses. This conclusion is based on the correct observation

---

[32]In general, Lillo-Martin avoids presenting cases with wh-subjects. However, when she uses them, she frequently considers them to be cases of *leftward* movement. Lillo-Martin and Fischer (1992) provide the following example using a wh-subject. They claim that sentence (i) below is necessarily a case of movement, and they cannot account for subject wh-words that remain *in situ*.

i. _____wh
WHO$_i$ t_i LOVE STEPHANIE
'Who loves Stephanie?'

Their analysis should predict that (ii), with the wh-word remaining *in situ*, would be grammatical, which it is not:

ii. ____t
*WHO$_i$ t_i LOVE STEPHANIE

that wh-words cannot be extracted *leftward* to the beginning of the matrix clause. However, postulating that the Spec of CP is to the right of the IP correctly predicts that the site to which wh-words can move is CP-final, and such extraction of a wh-word from an embedded clause is in fact possible, under appropriate circumstances. Consequently, as was shown in 4.1.4, extraction of wh-words out of embedded clauses is possible, under an analysis in which the Spec of CP is to the right of the IP. Moreover, the scope of the non-manual wh-marking in such constructions provides further evidence of the rightward movement of wh-words. Lillo-Martin's account is unable to explain the differing pattern of non-manual marking in sentences that involve movement at s-structure and in sentences that do not. The patterns of non-manual marking show that only for sentences containing the wh-word *in situ* does the non-manual marking spread obligatorily over the IP.

4.4.2 Petronio's Account of Wh-Movement

Petronio (1992-a, b) attempts to account for the occurrence of multiple wh-words in the ASL sentence. She assumes, following Lillo-Martin, that the Spec of CP is on the left and that wh-movement is leftward to that position. In order to account for instances of wh-words occurring sentence-finally, she creates a new piece of structure, which she calls the Focus Phrase, right-adjoined to the CP. Emphasized elements, which she claims may include wh-words, modals, verbs and adjectives, can occur in the Spec or head of the Focus Phrase on her analysis. She further stipulates that elements appearing in the Focus Phrase are emphasized repetitions of items appearing in the matrix clause, usually with a more stressed articulation. Thus, her (1992-a and b) account of the ASL sentence is as follows: the Spec of CP is to the left of the IP, and the FP is right-adjoined to the CP. Petronio accounts for any sentence-final occurrence of wh-words as involving

either a wh-object *in situ*, or as containing a wh-word repeated in the Focus position. This is shown in Figure 17.

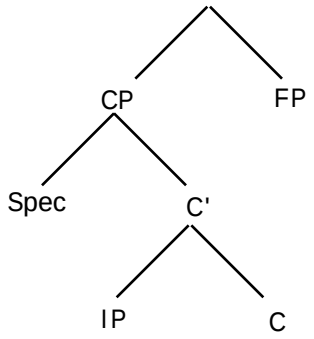

Figure 17. Petronio's 1992 tree

Another way in which Petronio's (1992) analysis differs from the analysis presented in this chapter (and indeed from Lillo-Martin's analysis) is that she assumes that the occurrence of a sentence-final modal results from I to C raising. There is clear evidence against I to C raising in ASL, presented by ABKN (1992-a), who first consider the kind of analysis Petronio (1992-b) subsequently employs, but then reject it on the basis of counterevidence. Their argument against such an analysis is not addressed by Petronio.[33] The uncontestable ungrammaticality of 97 shows the impossibility of the modal WILL raising from I (T in the tree shown in Figure 18) to C.

[33] However, Petronio (1993) no longer claims that I to C raising can be used to account for modals appearing sentence-finally, as by 1993 she had revised her analysis to propose that sentence-final items such as modals and wh-words are base-generated in C. Her argument is discussed later in this section.

97. *JOHN NOT GO WILL

‘John will not go.’

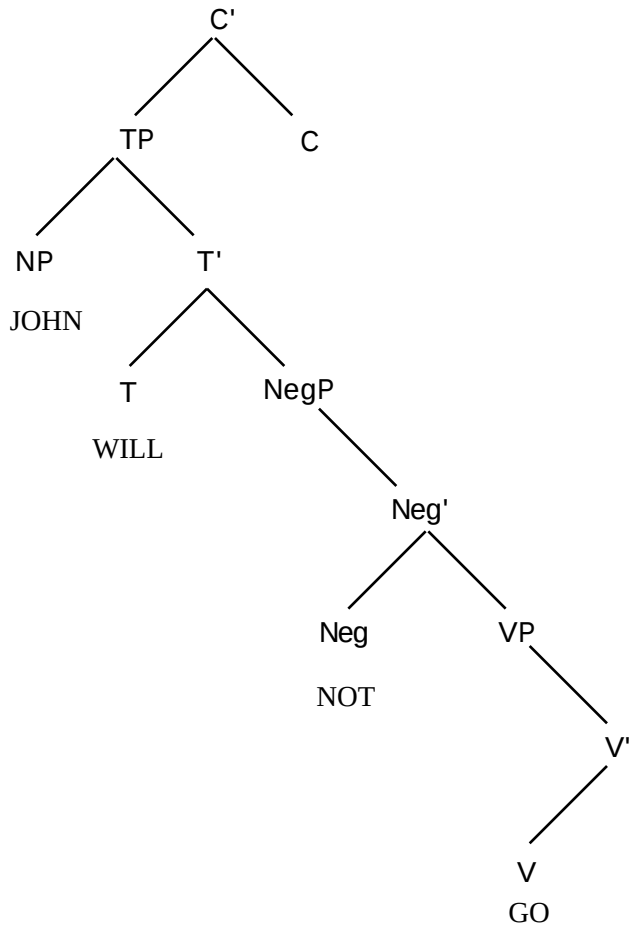

Figure 18 Impossibility of I to C Raising in ASL

If I to C raising were involved, then WILL should be able to move from T to C. This would predict that 98 would be correct, which it is not. On the other hand, 99 is grammatical. In order to derive such a result, from the underlying structure shown above, the VP (actually in a fuller description, the Aspect Phrase)—rather than the

modal—must move.

98. * JOHN NOT GO WILL

99. JOHN GO WILL NOT

ABKN (1992-a) analyze constructions containing sentence-final modals which are not tags, such as 98, as involving the modal in its d-structure position with preposing of the VP (actually, the Aspect Phrase). In any event, since Petronio (1992-a, b) proposes that the Spec of CP is to the left, in order to account for examples such as 100, involving the occurrence of a modal plus wh-word sentence-finally, she proposes I to C raising for the modal and an additional node to the right of the CP since no Spec of CP position is available to the right of C given her assumptions.

100a. wh/t
WHO _ _ _ _ _ _ _ _ READ CAN'T wh WHO

100b. _ _ _ _ _ _ __ _ _ _ _ _ _ wh WHO READ CAN'T wh WHO

'Who can't read?'

Her claim is thus that the sentence-final wh-word is repeated in the Focus Phrase. Furthermore, Petronio (1992-a, b) contrasts ASL with Hungarian, which has a position for focussed elements to which interrogative wh-words move (Brody, 1990), as she argues that ASL has a Focus Phrase in which elements are base-generated, not into which they move. Thus, like Lillo-Martin, she is unable to account for sentences like 101

101. JOHN BUY YESTERDAY WHAT (wh)

'What did John buy yesterday?'

Petronio (1992-a, b), by claiming that modals, wh-words, verbs and adjectives occur sentence-finally in this Focus position, conflates a number of different constructions, failing to note the distinctions among them. These constructions include, in some instances (see ABKN, 1992-a, c) wh-words involving the Tag construction (see 4.2.2.2), wh-movement rightward to Spec of CP (see 4.1.1), other types of movement, and right dislocation.[34] Thus, she tries to account for all of the constructions below in terms of the focus position she proposes.

102. WHO JOHN LOVE WHO (wh) [tag]

'Who does John love, who?'

---

[34] Right dislocation of NP is found frequently in ASL. The NP adjoins to the right of CP. It can adjoin to the main clause or the larger CP that contains the tag. The IX in each of the following sentences illustrates the various structures in which right dislocations may occur.

i. JOHN$_i$ LOOK-AT MARY, IX-3rd$_i$
'John looked at Mary, he

ii. JOHN$_i$ WILL GO, IX-3rd$_i$, WILL (hn)
'John will go, him, (he)will

iii. JOHN$_i$ WILL GO, WILL (hn), IX-3rd$_i$
'John will go, (he) will, he

iv. JOHN$_i$ WILL BUY TOMORROW WHAT (wh), IX-3rd$_i$
'What will John buy tomorrow, he?

Examples (ii) and (iii) illustrate that the right-dislocated constituent may occur either to the left or the right of tag.

Right dislocation involves an unstressed NP (pronoun or full NP) that adjoins to the CP and occurs without the affirmative headnod that often accompanies the tag. Right dislocation is not restricted to subject NP's—and thus is not equivalent to what Padden called "subject pronoun copy"—although many of her examples are, by this analysis, instances of right dislocation.

103. _ _ _ _ _ _ _ _ _ _ _ _ _ _ wh
JOHN BUY YESTERDAY WHAT [wh-movement]

'What did John buy yesterday?'

104. JOHN GO WILL [adjunction, VP-preposing]

'John will go.'

105. JOHN WILL GO WILL [tag]

'John will go, he will.'

106. JOHN$_i$ WILL GO, IX-3rd$_i$ [right dislocation]

'John will go, (him).'

Petronio's claim that words appearing in the Focus Phrase she postulates are "more emphasized" is interesting. In section 4.2.3, it was claimed that elements in the tag are articulated with the headnod because of the presence of the null V, and that this is, in some sense, a correlate of stress. It is likely that the same phenomenon is being observed by Petronio (1992-a, b). However, the analysis proposed in this chapter distinguishes among the different constructions in which a wh-word may appear sentence-finally. The distinction between the obligatory stressed articulation of the wh-word in the tag construction, and the non-obligatory stress of a wh-word in Spec of CP provides further evidence for the distinction made here between those two constructions. Crucially, stress is not obligatory on a sentence-final wh-word. Petronio (1992-a, b) is forced, because of her conflation of different constructions, to claim that a sentence-final wh-word, necessarily in focus position, is also necessarily stressed.

Petronio (1993) revises her analysis. She continues to maintain that the Spec of CP is to the left of IP in ASL, but she now proposes that the sentence-final position is C^o

(i.e., that it occurs within the CP) and that this position may only be occupied by heads, not phrases. She claims that the C^{o} position is available for base-generated heads that are marked with a +focus feature (+f). Her account of wh-movement in direct questions is that the wh-constituent can either move at s-structure to the Spec of CP (leftward, on her analysis) or it can undergo focus movement at LF, also to the Spec of CP. Either or both of these options are possible. Wh-words may occur concurrently in the sentence-final C^{o} position as long as they are base-generated there. Words appearing in this position are (+f) marked through Spec-head agreement, if there has been focus movement of the wh-word to the Spec of CP. Petronio (1993) makes a distinction between direct and indirect wh-questions in ASL, claiming that indirect wh-questions in ASL do not have a wh-marking, that they cannot appear with a sentence-final double, and that they must undergo wh-movement at s-structure.

It should be noted that the examples Petronio uses to argue for indirect questions are all examples in which the matrix verb is KNOW.[35] The judgments Petronio uses to make the claim that wh-movement is to the left, not the right, are controversial (a point acknowledged by Petronio). The informants I consulted believe sentences such as 107, involving the verb WONDER, to be correct and to have wh-marking.

107. JOHN WONDER BILL LIKE WHO
(wh)

'John wonders who Bill likes.'

Thus, Petronio (1993) maintains her claim that Spec of CP is left of IP in ASL, but invokes a focus-marked C^{o} position to account for examples of wh-words occurring sentence finally. Moreover, she is necessarily driven to claim that the sentence-final

[35] Further research into the type of complement taken by the matrix verb KNOW needs to be undertaken. In the examples used by Petronio, there is no non-manual wh-marking, but the +wh-complement of KNOW is accompanied obligatorily by a series of headnods. As yet, I have no account of this construction.

position can be occupied only by heads, not phrases, and would thus fail to account for examples such as 108, clearly the case of a moved wh-phrase.

108. $\overline{\text{JOHN BUY YESTERDAY}}$ $\overline{\text{WHICH CAR}}^{wh}$

‘Which car did John buy yesterday?’

4.5 Conclusion

This chapter has presented an analysis of wh-movement in ASL and shown that it is quite similar to wh-movement in other languages:

1. Wh-words may move or remain *in situ*.
2. When they move, wh-words move to the Spec of CP, which in ASL is to the right of the IP. Previous proposals, based on the assumption that the Spec of CP is to the left of the clause in ASL, are shown to be incorrect.
3. Rhetorical wh-questions have the same structure as interrogative wh-questions.
4. Extraction of both embedded wh-subjects and wh-objects is possible.

In addition, constructions in which there are multiple occurrences of wh-words, which had not been adequately explained before in the literature, were accounted for by independently motivated extraclausal structures, including two slots for left-adjoined phrases, and a right-adjoined tag construction.

CHAPTER FIVE

Topics and Topicalization in ASL

5.0 Overview

This chapter presents an analysis of Topics in ASL. Topics occur in a structural position to the left of CP. Researchers have previously identified topics by a particular non-manual marking, thought to accompany all topics. In this chapter, a distinction is drawn between base-generated and moved topics, and, moreover, there is shown to be a difference among the non-manual markings accompanying at least three different sorts of topics. In addition, topic position is shown to be structurally present in embedded as well as main clauses. Extraction is argued to be possible from within an embedded clause to the topic position of the main clause, in the case of non-finite embedded clauses. A maximum of two topics can be adjoined to CP in ASL. If the sentence has two topics, only some combinations of the different sorts of topics are allowed.

5.1 The Structural Position in which Topics Occur

Items with topic marking appear at the beginning of the sentence in ASL. Below are some examples of sentences that have items bearing topic marking.[1]

1. $\underline{\text{VEGETABLE}}^{\text{t}}$, JOHN LIKE CORN

   'As for vegetables, John likes corn.'

[1]Since English has no real equivalent of these constructions, the glosses used in these examples are at best an approximation of their meaning. A fuller discussion of the different meanings that items in topic position may have is to be found in Section 5.3.4. In addition, items in topic position are simply marked here with a 't', although later a distinction will be made among items with different kinds of topic markings.

2. $\overline{\text{MARY}}^{t}$, JOHN LIKE

'Mary, John likes.'

3. $\overline{\text{MARY}_i}^{t}$, JOHN LIKE IX-3rd$_i$

'As for Mary, John likes her.'

4. $\overline{\text{JOHN}}^{t}$, LIKE MARY

'*John* likes Mary.'

5. $\overline{\text{JOHN}_i}^{t}$, IX-3rd$_i$ LIKE MARY

'As for John, he likes Mary.'

It has been suggested by Lillo-Martin (1990) that the position in which topics occur in ASL is the Spec of CP. However, this cannot be correct if, as argued in Chapter 4, the Spec of CP position—the position to which wh-words move—is to the right of the IP, since items bearing topic marking occur sentence-initially. Items bearing topic marking occupy a position to the left of CP, which will be called the Topic Position. Furthermore, as can be seen in 6, topics can co-occur with a wh-word that has moved rightward to the Spec of CP.

6. $\overline{\text{JOHN}}^{t}$, BUY YESTERDAY $\overline{\text{WHAT}}^{wh}$

' John, what did he buy yesterday?'

In such constructions, the non-manual wh-marking cannot extend over the NP in topic position.

7. * JOHN, BUY YESTERDAY WHAT

t: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
wh: _____

The spread of wh-marking in 6 and 7 suggests that items appearing in topic position are not c-commanded by the head Complementizer, and therefore are not within CP, as mentioned in section 3.5.2. This is because the wh-marking that optionally extends over the c-command domain of the +wh Comp cannot extend over the word in topic position (despite the fact that the non-manual wh-marking and topic marking are not incompatible, as discussed in Chapter 4). The topic position, therefore, is postulated to be left-adjoined to the CP.

5.2 Non-manual Marking

Non-manual topic marking typically consists of raised eyebrows and chin (Coulter, 1979; Liddell, 1978, 1980; Baker-Shenk, 1983). Frequently the head is lowered concurrently with the latter part of the sign. The non-manual topic marking always accompanies some manual item, and begins slightly before the onset of the signing. There is usually a slight pause between the signing of the topic-marked item and the rest of the sentence, sometimes accompanied by an eyeblink. There are also other ways of signalling topics non-manually. One of these is body-shifting from side to side. The signer shifts and uses the space to the one side of his body to sign the topic part of the utterance, then shifts to the other side to sign the rest of the utterance. The break between the two parts of the utterance is visibly discernible. Non-manual topic marking may also involve widening of the eyes, and may be followed by a few rapid headnods.

Traditionally, descriptions of topic marking have made no distinction among the different kinds of topics that may occur. There are, in fact, different non-manual

markings appearing over items in topic position and these are correlated with different kinds of topics.

Non-manual topic marking may co-occur with other non-manual markings. It has already been shown in Chapter 4 that when wh-words appear in topic position, they retain their inherent wh-marking (slightly lowered brows), and can, additionally, be topic-marked, usually by raised chin and a slight tensing of the muscles of the upper cheekbones,[2] as in Sentence 8. This is shown in Figure 19.

Figure 19 Wh-word in topic position

8. wh/t
WHAT JOHN BUY wh
WHAT

'What, what did John buy?'

[2]This was first pointed out to me by Petronio (p.c.) although her analysis of wh-words sentence-initially differs entirely from the one presented here.

It is occasionally possible to find items in topic position without the typical non-manual marking described above, but such topics are usually established in a specific spatial location by indexation or represented in the location by a classifier, and set off from the rest of the sentence by a pause, as in 9.[3]

9. JOHN G-CL, MARY cl#HIT
'John (there) Mary (him) hit.'

All constituents in topic position do, however, exhibit some form of topic marking, be it facial expression, shifting to the side, or establishment in a specific spatial location by indexation or the use of a classifier.

In a sentence consisting of a single clause, topic marking occurs only over constituents occurring to the left of CP.[4] Moreover, topic marking does not spread over any other elements in the sentence, as shown by the ungrammaticality of 10 - 12.

10. * $\overline{\text{JOHN}}^{\text{t}}$, MARY LOVE

11. * $\overline{\text{JOHN}_i}^{\text{t}}$, MARY LOVE IX-3rd$_i$

12. * $\overline{\text{VEGETABLE}}^{\text{t}}$, JOHN LIKE CORN

Despite the fact that the topic position is hypothesized to be left-adjoined to CP, and therefore to c-command the CP, the non-manual topic marking may not extend beyond the constituents in topic position. As argued in Chapter 3, the Topic Phrase does not

[3]G-CL is the gloss for the upright person classifier, which functions here to establish the NP, John, in a particular location. The same handshape (represented here by cl) is cliticized onto the verb HIT, so that the sign should actually be glossed as him-HIT. See Kegl (1986) for a discussion of classifier clitics.

[4]Utterances containing parentheticals or role-shifts into direct speech may exhibit topic marking that occurs at the beginning of the parenthetical or the roleshift. Embedded sentences with topics will be discussed in Sections 5.4 and 5.5.

head a functional projection.

5.3 The Relation of Topic Phrases to Other Items in the Sentence

There are two different ways in which constituents in topic position may be related to the CP to which they are adjoined. Some are base-generated in topic position, while others have moved to topic position from within the CP.

5.3.1 Base-generated Topics

Constituents may be base-generated in topic position. Clearly the topic in 13 must be base-generated in that position, since it does not constitute an argument of the main verb (although, as is not unusual in this kind of construction, the topic does bear a semantic relation to an argument of the main clause—that of class: element of the class).[5]

13. $\overline{\text{VEGETABLE}}^{\text{t}}$, JOHN LIKE CORN

'As for vegetables, John likes corn.'

Sentence 14 also has a base-generated topic (although in this case, note that the topic is coreferential with one of the arguments in the sentence, namely the IX in object position).

14. $\overline{\text{MARY}}^{\text{t}}_{i}$, JOHN LIKE IX-3rd$_{i}$

'As for Mary, John likes her.'

In both 13 and 14, the NP in topic position is not an argument of the main verb, and cannot have moved to topic position from an argument position within the CP.

[5]There is some implicit kind of connection between the topic, VEGETABLE, in 13 and one of the arguments: CORN. CORN is a member of the class that is referred to by the topic.

5.3.2 Topics That Have Moved

It is, however, possible for constituents to move from their d-structure position to the topic position left-adjoined to CP. In this section, plain verbs will be used for sample sentences in order to eliminate the possibility of alternative analyses of the sentences under discussion.[6] These verbs require a lexically overt object as can be seen in 15 and 16.

15. JOHN LOVE MARY
    'John loves Mary.'

16. * JOHN LOVE
    'John loves.'

Sentence 16 is ungrammatical because it is missing the argument required by the verb. Notice, however, that 17 is grammatical:

17. $\overline{\text{MARY}}^{\text{t}}$, JOHN LOVE
    'Mary John loves.'

Sentence 17 is hypothesized to be grammatical because of a trace in object position, as illustrated in 18.

---

[6]Using verbs that are morphologically plain (i.e., verbs that do not exhibit overt subject and object agreement) eliminates alternative analyses that are based on claims that *pro* may occur in the object position of an agreeing verb (Lillo-Martin, 1986, 1991). Such proposals have been made to account for the contrast between (i) and (ii). HATE in ASL is of the morphological class of agreeing verbs, whereas LOVE is morphologically plain.

i. BILL_i $_i$ HATE_j e_j
   'Bill hates (him).'

ii. * JOHN LOVE
   'John loves.'

The indices marking morphological agreement in (i) have been omitted from glosses generally in this dissertation, since, except where noted, morphological agreement is not relevant to the syntactic issues under discussion.

18. $\overline{\text{MARY}}^{t}_{i}$, JOHN LOVE t_i

'Mary John loves.'

It is clear, therefore, that there are sentences in which the object argument moves to topic position.[7]

5.3.3 Adjuncts in Topic Position

It is also possible for an adjunct, such as TOMORROW, to appear in topic position.[8]

19. $\overline{\text{TOMORROW}}^{t}$, JOHN PLANE ARRIVE TIME 6

'Tomorrow, John's plane arrives at 6.'

In ASL, locatives are usually signed first in an utterance. These occur in topic position, and are generally topic-marked, as shown in 20.

20. $\overline{\text{BOSTON}}^{t}$ MARY GO-TO SCHOOL

'In Boston, Mary goes to school.'

---

[7]NP's in subject position of a simple sentence may also move to the topic position. Example (i) shows the neutral sentence, meaning 'John loves Mary'; (ii) illustrates a subject NP moved to topic position.

i. JOHN LOVE MARY

ii. $\overline{\text{JOHN}}^{t}_{i}$, t_i LOVE MARY

'*John* loves Mary.'

Thus, just as object arguments may be topicalized in ASL, subject arguments, too, may be topicalized. As ASL always allows *pro* in subject position, a case needs to be made that the empty category in subject position may be *t* rather than *pro*. Arguments for this are found in 5.3.4, on the basis of a correlation between moved topics and a particular non-manual marking that accompanies them, as well as on semantic grounds.

[8]Both Coulter (1979) and Anderson (1978) observe that there is a tendency for locative and temporal adverbs to appear sentence-initially in ASL, and moreover, observe that they frequently bear topic marking.

5.3.4 Semantic Differences Correlated with Non-manual Markings for Base-generated and Moved Topics

In the gloss system employed in the ASL literature, there is no distinction made among the subtly different non-manual expressions used to mark the various functions of items that occupy topic position. A close examination reveals that there are at least three distinct topic markings that occur over items in topic position, and that each of these is associated with a particular function. Moreover, each topic marking is correlated with a distinct grammatical structure. For ease of exposition, I have labelled the three distinct non-manual markings that I have identified as: tm1, tm2 and tm3. Their non-manual realizations will be discussed in the following sections. Tm1 is used strictly with moved topics, while tm2 and tm3 are associated only with base-generated topics. The distinction between tm2 and tm3 will be discussed later.

Table 1 summarizes the different non-manual markings that accompany different kinds of topics, the grammatical relationship between the topic and the clause, and the semantic relationship between the topic and one of the arguments of the clause.

Table 1 Topics and Their Relation to CP

	non-manual realization	moved vs. base-gen.	relation to argument	function
tm1	raised brows; head tilted slightly back & to the side; eyes widened; head moves down and forward	moved	part of argument chain	can be contrastive focus; new info. in a limited set
tm2	large movement of head back & to the side; eyes very wide; head moves down and forward	base-generated	sometimes associated with argument by a class:member relationship; sometimes coreferential with an argument	changes discourse topic; introduces new information
tm3	head forward, jerked slightly up & down; mouth open; upper lip raised; eyebrows raised; eyes wide open, fixed gaze, slight rapid headnods	base-generated	coreferential with an argument	can only be used with known referents; introduces a major new discourse topic

5.3.4.1 Moved Topics

Topic Marking 1. In the case of the structure shown in 21 below, in which an NP has moved to topic position, the non-manual marking over the item in topic position consists of raised brows, head tilted back, sometimes slightly to the side as well, and eyes opened wide. At the final point of the signing of the item in topic position, the head moves down in a nod. There is a pause (and sometimes a brief closing and opening of the eyes[9])

[9]These sorts of eyeblinks have been identified by Baker and Padden (1978) as occurring optionally at certain constituent boundaries in ASL. Work by Bahan and Supalla (to appear) on eye behavior in ASL narratives confirms these findings.

before the head returns to neutral position and the next constituent is signed. This non-manual marking will be labelled tm1 (Topic Marking 1) and is shown in Figure 20.

Figure 20. Topic Marking 1

21. $\underline{\text{tm1}}$
MARY$_i$, JOHN LOVE t_i
'Mary, John loves.'

In the case of moved topics, such as shown in 21, only tm1 is acceptable. With either tm2 or tm3, sentences containing moved topics are ungrammatical as shown

in 22 and 23.[10]

22. * ___tm2
MARY$_i$, JOHN LOVE t_i
'As for Mary, John loves.'

23. * ___tm3
MARY$_i$, JOHN LOVE t_i
'You know Mary, John loves.'

Furthermore, tm1 cannot occur with an item in topic position, if the topic is base-generated there, rather than moved, as shown in 24.

24. * ___tm1
MARY$_i$, JOHN LOVE IX-3rd$_i$
'Mary, John loves her.'

A sentence like 21, with tm1, occurs most naturally in the following different contexts:

1) In a rather limited universe of discourse (in which there is a closed set, which is known) **the topic is one member of the set** (Kuno, 1987). Thus, the set might be all the women living in a particular house, and the topic of the sentence would be limited to being a member of that set. Thus it is Mary, from among Mary, Sue, Jane and Ann, whom John loves. This is shown in 25.

25. FOUR WOMEN LIVE IN HOUSE IX. ___tm1
MARY$_i$, JOHN LOVE t_i
'Four women live in that house over there. *Mary,* John loves.'

[10] It is true of all the sentences with moved topics in this subsection that they are ungrammatical if marked with tm2 or tm3.

2) There is emphasis or contrastive focus on the topic. An ASL context in which it may naturally occur is shown in 26,where the speaker needs to make clear that it is Mary, rather than Jane, that John loves.

26. ___tm1
JOHN NOT-LIKE JANE. MARY, IX-3rd LOVE.
'John doesn't like Jane. *Mary,* he loves.'

Thus, the particular non-manual marking described above (tm1), has the function of highlighting the topic with respect to other known items in its class (as in 25) or of contrasting the item in topic position with some previous item in the discourse (as in 26).

Since in ASL *pro* subjects are always allowed, a sentence like 27 is potentially ambiguous between a reading on which JOHN is base-generated in topic position with *pro* in subject position, and one in which the subject NP has moved to topic position.

27. ____t
JOHN, e LOVE MARY

Given the correlation between specific non-manual markings and moved vs. base-generated topics, we can confirm this ambiguity. Both tm1 and tm2 are possible—although, as predicted, the two sentences, shown in 28, would be used under somewhat different circumstances.

28a. __tm1
JOHN$_i$, t_i LOVE MARY
'*John* loves Mary.'

__tm2
28b. JOHN$_i$, *pro* LOVE MARY

'As for John, he loves Mary.'

Sentence 28b is more likely to be used in the context where JOHN is being introduced as the new topic of the discourse, and is about to be characterized in terms of some particular information, whereas 28a is more appropriate where JOHN in topic position is either used as one of a limited set of people who could love Mary, or else used contrastively with some others who might not love Mary.

5.3.4.2 Base-generated Topics

In the case of base-generated topics, there are at least two different non-manual markings (tm2 and tm3) that can accompany the constituent in topic position. The different non-manual markings are associated with different functions and meanings of the items in topic position.

Topic Marking 2. Consider 29, with a base-generated topic.

_____tm2
29. VEGETABLE, JOHN LIKE CORN

'As for vegetables, John likes corn.'

The non-manual marking accompanying VEGETABLE in 29 consists of a large movement of the head backwards and to the side, raised eyebrows and eyes wide open. Towards the final part of the signing of VEGETABLE, the head moves down and forward to a point very distinctly to the opposite side. There is often a slight eye-blink, and a pause before the head returns to neutral position for the signing of the next constituent. This non-manual marking will be labelled tm2 and is shown in Figure 21.

Beginning of Marking

End of Marking

Figure 21 Topic Marking 2

Sentence 30 shows another base-generated topic (in this case, one that is coreferential with the object argument of the verb).[11] The non-manual marking (tm2) on the item in topic position is identical with that in 29.

---

[11] It should be noted that tm2 may be used if the topic is related to an argument of the sentence in a class: member of the class relationship (as in 29) or if the topic has a specific referent (as in 30). However, if the topic is coreferent with an argument of the verb, it must be definite or specific, not merely generic. Sentence (i) is ungrammatical, because the topic is not definite, whereas (ii), because the topic has been made definite by the addition of IX, is acceptable.

_____tm2
i. * VEGETABLE, JOHN LIKE IX-3rd

'As for vegetables, John likes them.'

_____tm2
ii. VEGETABLE IX_i, JOHN LIKE IX-$3rd_i$

'As for those vegetables, John likes them.'

tm2
30. FRESH VEGETABLE$_i$, JOHN LIKE IX-3rd$_i$

'As for fresh vegetables, John likes them.'

Only base-generated topics may bear the non-manual marking (tm2) described here.[12] Base-generated topics bearing tm2 may similarly be coreferent with the subject of the sentence, as shown in 31.

tm2
31. JOHN$_i$, IX-3rd$_i$ LOVE MARY

'As for John, he loves Mary.'

As expected (since *pro* can occur in subject position in ASL), 32 is also grammatical in a similar context. It bears the identical non-manual marking (tm2) to that of 31 and is judged by informants to have the same meaning as 31.[13]

---

[12] It should be noted that in examples such as (i), used by Kegl (1985, 1986), the item in topic position is marked by tm2. This provides evidence that the clitic is the object argument of the verb, as an NP marked by tm2 must be base-generated in topic position. This is contrary to the claim made by Lillo-Martin (1991:121) that what Kegl calls object clitics are "formational components of the sign, not separate morphemes." Lillo-Martin's claim would predict that the topic marking in (i) would have to be tm1 for the sentence to be grammatical, as she would consider JOHN to be a moved argument. The non-manual marking on the topic shows that Lillo-Martin's analysis is incorrect.

tm2
i. JOHN$_i$, MARY cl#HIT$_i$

'As for John, Mary hit him[clitic].'

[13] Since it has already been shown that tm2 is limited to base-generated topics and does not cooccur with moved topics, the empty category in 32 cannot be a trace resulting from movement of the subject argument. The structure proposed for 32 is shown in (i).

tm2
i. JOHN, *pro* LOVE MARY

Since ASL allows *pro* in the subject position of a sentence containing any type of verb, *pro* may occur in the subject position of a sentence with a topic marked as tm2.

32. $\underline{\text{tm2}}$
JOHN, e LOVE MARY
'As for John, he loves Mary.'

The function of tm2 is to introduce new information in a general universe of discourse. This information changes the topic of the discourse. The item in topic position must already be known in some way to the audience, but introducing it as a new topic signals that the speaker is now about to provide a robust characterization of that item.[14]

Topic Marking 3. Some base-generated topics may be accompanied by a different sort of non-manual marking. The head is down at a slightly forward angle, and jerked up and down, the mouth is open with the upper lip somewhat raised, the eyebrows are raised, as in other topic marking, but the eyes are opened very wide and maintain a fixed gaze, and there is a series of very slight rapid headnods, followed by a pause in which the expression is held, before the signing of the rest of the sentence. This non-manual marking will be labelled Topic Marking 3 (tm3)[15] and is shown in Figure 22.

---

[14]Thus, the item in topic position must be familiar to the audience. If an entirely new concept is being introduced, and the audience is not assumed to know what the lexical item means, this is not an acceptable discourse strategy.

[15]This non-manual marking (tm3) has often been described in the literature as the one accompanying restrictive relative clauses (see, *inter alia*, Liddell, 1978). As Coulter argues—convincingly, I believe—clauses providing definite description (previously interpreted in the ASL literature as relative clauses) are, in fact, in topic position. Structurally, they are adjoined to the main clause. They serve the function of providing definite information about, or a definite description of, the NP argument with which they are coreferential.

Beginning of Marking End of Marking

Figure 22 Topic Marking 3

Sentence 33 shows a base-generated topic coreferential with the object argument.

tm3
33. MARY$_i$, JOHN LOVE IX-3rd$_i$

'(You know) Mary, John loves her.'

Sentence 34, with the same non-manual marking (tm3) over the topic as in 33, is disfavored, and 33 is strongly preferred, again showing that tm3 does not mark moved topics.

tm3
34. * MARY, JOHN LOVE

With this same non-manual marking (tm3), base-generated topics may also be coreferential with the subject of the verb. This is shown in 35.

__tm3
35. JOHN$_i$, IX-3rd$_i$ LOVE MARY
'(You know) John, he loves Mary.'

However, while 34 is ungrammatical, 36 with *pro* in subject position is acceptable, and nearly identical in meaning to 35.

__tm3
36. JOHN, *pro* LOVE MARY
'(You know) John, he loves Mary.'

When (tm3) appears over the item in topic position, it has the function of introducing as a new discourse topic information that the speaker believes is already shared or known by the addressee. Kuno (p.c.) maintains that for this kind of topic in various languages, including English, there is a minimum requirement that the item in topic position be specific enough that the audience can visualize or assume something about it.[16] This expresses what Coulter (1979), talking about ASL, refers to as a "definite description" of one of the arguments.

[16]Kuno (p.c) also suggests that this sort of topic really functions as a 'hypertopic' and that the audience is about to receive a large amount of information about the item in topic position. It is necessary, however, that the audience have some idea of who the person in topic position is. Kuno (1972) argues, as well, that it is quite reasonable to claim that using topics in this way is an alternative form of relativizing an argument, lending some support to Coulter's (1979) claim that what have, in ASL, been called relative clauses, are, in fact, clauses in topic position.

Thus, it can be seen that there are at least three different non-manual markings that accompany topics in ASL. The distinct non-manual markings provide important evidence about the structure of the sentences containing those topics. Topics that are moved may only bear one kind of non-manual marking, tm1, and this non-manual marking may not be borne by base-generated topics. Topics that are base-generated may bear different kinds of non-manual markings, tm2 or tm3, depending on their function in the discourse, but neither of these non-manual markings may be borne by moved topics. Examination of these different non-manual markings in sentences with plain verbs, i.e., those that require overt lexical objects, allows us to differentiate moved topics (tm1) and base-generated topics (tm2 and tm3) associated with an argument in object position. The distribution of these markers in sentences containing topics associated with subjects of the sentence are consistent with those observed for objects.

5.4 Topic Position of Embedded Clauses

In the case of sentences containing embedded clauses, there is a topic position immediately to the left of the embedded clause in which topic-marked constituents may occur. Sentence 37 shows a sentence with a finite embedded clause containing a plain verb.

37. TEACHER REQUIRE JOHN MUST LIPREAD MOTHER
'The teacher requires that John must lipread Mother.'

In sentence 38, the subject of the embedded clause has moved to the embedded topic position. In sentence 39, the object of the embedded clause has moved to the embedded topic position.

38. TEACHER REQUIRE $\overline{\text{JOHN}}^{\text{tm1}}$, MUST LIPREAD MOTHER

'The teacher requires that *John* must lipread Mother'

(in the context where it is John, not Bill, that must lipread Mother).

39. TEACHER REQUIRE $\overline{\text{MOTHER}}^{\text{tm1}}$, JOHN MUST LIPREAD

'The teacher requires that *Mother,* John must lipread.'

(in the context where John must lipread his mother, not his father).

It is thus possible, under a contrastive focus reading, for either the subject or object argument of the embedded clause to move to the embedded topic position. It is also possible for topics to be base-generated in the embedded topic position. Example 40 shows a sentence with an embedded clause, and 41 illustrates a case where a base-generated topic within the embedded clause is coreferential with the argument in object position.[17]

40. TEACHER EXPECT JOHN WILL LIPREAD MOTHER

'The teacher expects that John will lipread Mother.'

41. TEACHER EXPECT$\overline{\text{MOTHER}_i}^{\text{tm2}}$, JOHN WILL LIPREAD IX-3rd$_i$

'The teacher expects that, as for Mother, John will lipread her.'

Thus, constituents occurring in the topic position of the embedded clause may have been

[17] Notice, however, that (i), with tm2, is ungrammatical, in contrast to 39 which has tm1 over the object in topic position. This is as would be expected, as already seen in the simple sentence in 21. The object MOTHER may not bear tm2 if it is moved. Moved arguments may only bear tm1.

i. * TEACHER EXPECT $\overline{\text{MOTHER}}^{\text{tm2}}$, JOHN WILL LIPREAD

'The teacher expects that, as for Mother, John will lipread.'

moved there or base-generated there.

5.5 Restrictions on Movement

It has been shown that in a simple clause, both subjects and objects may be moved to a position left-adjoined to CP. It has also been shown in Section 5.4 above that arguments may move to the topic position of the embedded clause. As is demonstrated in the sentences below, arguments of an embedded clause may also move to the topic position of the main clause, but only if the embedded clause is non-finite. Sentence 42 shows a sentence with an embedded clause; 43 shows the sentence with the embedded subject moved to the topic position of the main clause; and 44 shows the embedded object moved to the topic position of the main clause.

42. TEACHER REQUIRE JOHN LIPREAD MOTHER
'The teacher requires John to lipread Mother.'

___tm1
43. JOHN, TEACHER REQUIRE LIPREAD MOTHER
'*John,* the teacher requires to lipread Mother.'

_____tm1
44. MOTHER, TEACHER REQUIRE JOHN LIPREAD
'*Mother,* the teacher requires John to lipread.'

Sentences 43 and 44 show that it is indeed possible for the subjects and objects of embedded clauses to move to the topic position of the main clause. However, this is not always the case. Consider 45, 46, and 47.[18]

45. TEACHER REQUIRE JOHN MUST LIPREAD MOTHER
'The teacher requires that John must lipread Mother.'

[18] All these sentences are based on the reading in which 'TEACHER REQUIRE' is not a parenthetical.

46. * $\underline{\text{tm1}}$
JOHN, TEACHER REQUIRE MUST LIPREAD MOTHER

47. * $\underline{\text{tm1}}$
MOTHER, TEACHER REQUIRE JOHN MUST LIPREAD

The contrast in grammaticality of 43 and 46, and 44 and 47, correlates with the difference in finiteness of the embedded clause. In 45, the embedded clause is clearly finite, since a modal occupies the Tense node heading the lower clause, while 42 is ambiguous between a reading on which the embedded clause is tensed or tenseless.[19]

So, 47 shows that the object of a finite embedded clause cannot move to the topic position of the higher clause. The structure for 47 is shown in 48.

48. *[MOTHER$_i$ TOP] [$_{CP1}$[$_{IP1}$ TEACHER REQUIRE [$_{CP2}$[$_{IP2}$ JOHN MUST LIPREAD t_i]$_{IP2}$]$_{CP2}$]$_{IP1}$]$_{CP1}$

Movement of the embedded object to the matrix topic position is blocked. Sentence 42, however, on the reading where the embedded clause is non-finite is shown below.

49. [$_{CP1}$ [$_{IP1}$ TEACHER REQUIRE [$_{IP2}$ JOHN LIPREAD MOTHER]$_{IP2}$]$_{IP1}$]$_{CP1}$

Topicalization from subject position of the non-finite embedded clause is allowed, as in 50,[20] and from object position as shown in 51.

---

[19] The claim is that the acceptable instances of movement in 43 and 44 involve only the tenseless reading. Note that under that reading, REQUIRE is functioning as an exceptional case marking verb.

[20] However, 46 (shown in (i)) is ungrammatical, showing that the subject of a finite embedded clause cannot be topicalized. This can be explained in terms of the ECP, as shown in (ii). JOHN in topic position, cannot properly govern its trace.

i.* $\underline{\text{tm1}}$
JOHN, TEACHER REQUIRE MUST LIPREAD MOTHER

ii.* [JOHN$_i$ TOP] [$_{CP1}$[$_{IP1}$ TEACHER REQUIRE[$_{CP2}$[$_{IP2}$ t_i MUST LIPREAD MOTHER]$_{IP2}$]$_{CP2}$]$_{IP1}$]$_{CP1}$

50. $[\text{JOHN}_i{}_{\text{TOP}}]\ [_{\text{CP1}}[_{\text{IP1}}\ \text{TEACHER REQUIRE}\ [_{\text{IP2}}\ t_i\ \ \text{LIPREAD MOTHER}\ ]_{\text{IP2}}]_{\text{IP1}}]_{\text{CP1}}$

51. $[\text{MOTHER}_i]_{\text{TOP}}\ [_{\text{CP1}}\ [_{\text{IP1}}\ \text{TEACHER REQUIRE}\ [_{\text{IP2}}\ \text{JOHN LIPREAD}\ t_i\ ]_{\text{IP2}}]_{\text{IP1}}]_{\text{CP1}}$

Confirmation of this claim that arguments may not be extracted from finite embedded clauses comes from sentences with verbs that require tensed complements. The verb SAY in ASL takes only tensed complements. A sentence with an embedded tensed complement is shown in 52.

52. TEACHER SAY JOHN LIPREAD MOTHER

'The teacher said John lipread Mother.'

Extraction from both subject and object position of the embedded clause to the embedded topic position is possible.

53. TEACHER SAY $\underline{\quad\text{tm1}}$ $\text{JOHN}_i,\ \ t_i$ LIPREAD MOTHER

'The teacher said *John* lipread Mother.'

54. TEACHER SAY $\underline{\qquad\text{tm1}}$ $\text{MOTHER}_i,$ JOHN LIPREAD t_i

'The teacher said *Mother* John lipread.'

However, extraction from subject and object position of the embedded clause to the matrix topic position is ungrammatical.

55. * $\overline{\text{JOHN}_i}^{\text{tm1}}$, TEACHER SAY t_i LIPREAD MOTHER

'*John*, the teacher said lipread Mother.'

56. * $\overline{\text{MOTHER}_i}^{\text{tm1}}$, TEACHER SAY JOHN LIPREAD t_i

'*Mother*, the teacher said John lipread.'

Thus, in ASL, there is a difference in the extraction possibilities of arguments from finite and non-finite embedded clauses. Arguments may not be moved to the topic position of the main clause out of a finite embedded clause.

5.6 Constituents That Can Appear in Topic Position

Only phrasal constituents may occur in topic position (Liddell 1977, 1980). Thus, a V may not occur in topic position, as shown in 57.

57. * $\overline{\text{LOVE}}^{\text{t}}$ JOHN MARY

VP's, however, may occur in topic position, as shown in 58.

58. $\overline{\text{LOVE MARY,}}^{\text{tm2}}$ $\overline{\text{JOHN}}^{\text{hn}}$

'As for loving Mary, John does.'

It was first pointed out by Liddell (1977) that when VP's occur in topic position, a headnod obligatorily occurs over the subject in the main clause (containing no lexical realization of VP). Compare 58 with 59.

59. * _____tm2
LOVE MARY, JOHN

'As for loving Mary, John.'

As Liddell showed, this headnod cooccurs with a null V in a variety of constructions, including gapping and Verb Phrase Deletion. (See ABKN, 1992-a, c; and Chapter 3 of this dissertation for further discussion.)

An entire CP may also appear in topic position, as shown in 60 and 61.[21]

60. _____tm2_ _____neg
JOHN MUST LIPREAD MOTHER, TEACHER NOT REQUIRE

'About John having to lipread Mother, the teacher does not require (it).'

61. _____tm2
JOHN MUST LIPREAD MOTHER, TEACHER REQUIRE

'About John having to lipread Mother, the teacher requires (it).'

The entire propositional argument expressed by a CP in 61 may alternatively be conveyed by THAT. This is shown in 62.

62. ___tm2
THAT, TEACHER REQUIRE

'.... that, the teacher requires.'

Moreover, it has also been claimed by Coulter (1979) that sentences that have the functions of conditionals and *when* clauses (like 63 and 64) are also CP's occurring in topic position.

---

[21] Sentence 60, with negation in the main clause, establishes that the CP is in topic position and rules out the possibility of the parenthetical reading for TEACHER REQUIRE available for (i) which might otherwise be entertained:

i. JOHN LIPREAD MOTHER, TEACHER REQUIRE

63. _____tm2
TOMORROW RAIN, GAME CANCEL

'If it rains tomorrow, the game is cancelled.'

64. _____tm2
IX-3rd GRADUATE, MANY PEOPLE CELEBRATE

'When she graduates, many people will celebrate.'

The non-manual marking accompanying these is shown in Figure 23. The non-manual topic markings accompanying *when* clauses or clauses that express conditional functions are believed to be very similar. The non-manual marking seems to consist of tm2 with the addition of a feature involving eyegaze that is upward and to the side.[22]

5.7 Maximum of Two Topics

In ASL, there is a maximum of two topics that can be adjoined to CP. Sentences with three or more topic-marked items are judged to be ungrammatical; the only apparent exception to this is a listing construction.[23] Sentences with more than two topics are rejected by informants. Sentence 65, with three topics, is ungrammatical.

---

[22] I will not discuss conditional or *when* clauses in this work. I merely note in passing that the non-manual marking accompanying these clauses appears to be that of topic marking with the addition of a particular eyegaze, and that this feature is borne by items occurring base-generated in topic position.

[23] This excludes sentences like (i) below, where there is a list of topics that are embedded inside one main topic:

i. [[[JOHN, [MOTHER]], FRIEND], DAUGHTER]$_{TOP}$, BILL WANT MEET IX-3p
___tm3 _____tm3 ___tm3 _____tm3

'Know John? Know his mother? Know her friend? Know her friend's daughter? Bill wants to meet her.'

In this case however, note that the unique topic of the sentence is "John's mother's friend's daughter."

Figure 23. Marking for Conditionals and *when* clauses

(beginning and end of marking)

65. * tm2: JOHN$_i$, tm2: GIRL-group, tm1: MARY, IX-3rd$_i$ LIKE

'As for John, as for girls, Mary, he likes.'

Sentence 66, however, with two topics, is grammatical.

66. tm2: JOHN$_i$, tm2: GIRL-group, IX-3rd$_i$ LIKE MARY

'As for John, as for girls, he likes Mary.'

Thus, there are at most two topics in an ASL sentence (Kegl, 1985; ABKN, 1992). Attempts to introduce three topics at the beginning of a discourse are regularly achieved by distributing the introduction of topics over two or more sentences (Judy Kegl, p.c.).

5.7.1 Allowable Combinations of Topics

Both topics may be base-generated. Sentence 67 has two base-generated topics, neither of which is coreferential with an argument of the verb (but each of which is, instead, in a class: member of class relation).

67. tm2: CHINA IX, tm2: VEGETABLE, PEOPLE PREFER BROCCOLI

'In China , as far as vegetables are concerned, people prefer broccoli.'

In this case, the ordering of the topics with reference to each other, has no effect on the grammaticality of the sentence. Thus, 68, although the discourse focus is somewhat different from that of 67, is also grammatical, with the two topics in the opposite order.

68. _____tm2 _____tm2
VEGETABLE, CHINA IX, PEOPLE PREFER BROCCOLI

'As for vegetables, in China, people prefer broccoli.'

Sentence 69 shows two base-generated topics, one of which is coreferential with one of the arguments of the verb. JOHN in topic position is coreferential with IX-3rd in subject position.

69. __tm2 _____tm2
JOHN$_i$, VEGETABLE, IX-3rd$_i$ PREFER ARTICHOKE

'As for John, as far as vegetables are concerned, he prefers artichokes.'

However, 70, in which the order of topics is reversed, and the topic coreferential with one of the arguments immediately precedes the clause, is found by informants to be ungrammatical.

70. * _____tm2 __tm2
VEGETABLE, JOHN$_i$, IX-3rd$_i$ PREFER ARTICHOKE

'As far as vegetables are concerned, as for John, he prefers artichokes.'

Sentence 71 shows two base-generated topics, each of which is coreferential with an argument of the verb.

71. _____tm2 _____tm2
JOHN IX$_i$, MARY IX$_j$, IX-3rd$_i$ LOVE IX-3rd$_j$

'John (there), Mary (there), he loves her.'

If the order of the topics is reversed, as in 72, this makes no difference to the meaning of the sentence.

72. $\overline{\text{MARY IX}_j}^{\text{tm2}}$, $\overline{\text{JOHN IX}_i}^{\text{tm2}}$ IX-3rd$_i$ LOVE IX-3rd$_j$

'Mary (located there), John (located there), he loves her.'

If the order of the arguments is reversed, however, so that MARY is the subject and JOHN is the object, as in 73, the meaning of the sentence changes. The ordering of the two items in topic position does not affect the grammaticality or the meaning of the sentence.

73. $\overline{\text{JOHN IX}_i}^{\text{tm2}}$, $\overline{\text{MARY IX}_j}^{\text{tm2}}$ IX-3rd$_j$ LOVE IX-3rd$_i$

'John (there), Mary (there), she loves him.'

Thus, the ASL sentence may contain two base-generated topics both marked with tm2. They may occur in either order, except in the case where one of the topics is in a class: member of the class relationship to one of the arguments of the verb. Such a topic must be nearest to the CP.

Informants do not willingly accept 74, in which one base-generated topic and one moved topic appear in the two topic positions. However, in order for this sentence to be deemed even marginally acceptable, tm2 must precede tm1.

74. ?? $\overline{\text{JOHN}_i}^{\text{tm2}}$, $\overline{\text{MARY}_j}^{\text{tm1}}$ IX-3rd$_i$ LOVE t_j

'As for John, Mary he loves.'

Sentence 75, which shows the topics in the opposite order, with tm1 preceding tm2, is regarded as completely ungrammatical, and much worse than 74.

75.** $\underline{\text{MARY}_j}^{\text{tm1}}$, $\underline{\text{JOHN}_i}^{\text{tm2}}$ IX-3rd$_i$ LOVE t_j

'Mary, as for John, he loves.'

If the order of the arguments is reversed, as shown in 76 and 77, sentence 76 with the moved topic closest to the CP is marginally acceptable, but 77 is completely ungrammatical.

76. ?? $\underline{\text{JOHN}_i}^{\text{tm2}}$, $\underline{\text{MARY}_j}^{\text{tm1}}$, t_j LOVE IX-3rd$_i$

'As for John, *Mary* loves him.'

77.** $\underline{\text{MARY}_j}^{\text{tm1}}$, $\underline{\text{JOHN}_i}^{\text{tm2}}$ t_j LOVE IX-3rd$_i$

'*Mary,* as for John, (she) loves him.'

Thus, tm1 may not precede tm2. In the marginally acceptable case in which both tm1 and tm2 do occur, tm2 *must* precede tm1. Some explanations for these restrictions will be provided in 5.7.2.

Furthermore, if both topics have tm1, i.e., if they are both moved topics, as shown in 78 and 79, then the sentence is ungrammatical.

78. * $\underline{\text{MARY}_j}^{\text{tm1}}$, $\underline{\text{JOHN}_i}^{\text{tm1}}$, t_i LOVE t_j

'Mary, John, he loves her.'

__tm1 ___tm1

79. * JOHN$_i$, MARY$_j$, t_i LOVE t_j

'John, Mary, he loves her.'

Thus, a sentence containing two topics both marked with tm1 is never grammatical, irrespective of the order of the topics.

Sentences 80 and 81 show one base-generated topic with tm3, and one moved topic (tm1). If tm3 precedes tm1, the sentence is grammatical, as in 80. However, if the moved topic (tm1) is first, then the sentence is ungrammatical, as in 81.

__tm3 ___tm1

80. JOHN$_j$, MARY$_i$, IX-3rd$_j$ LOVE t_i

'You know John, Mary, he loves.'

__tm1 ___tm3

81. * MARY$_i$, JOHN$_j$, IX-3rd$_j$ LOVE t_i

'Mary, you know John, he loves.'

If the arguments are reversed this does not affect the grammaticality of the equivalents of 80 and 81, shown in 82 and 83.

__tm3 ___tm1

82. JOHN$_j$, MARY$_i$, t_i LOVE IX-3rd$_j$

'You know John, *Mary*, loves him.'

__tm1 ___tm3

83. * MARY$_i$, JOHN$_j$, t_i LOVE IX-3rd$_j$

'Mary, you know John, (she) loves him.'

Thus sentences containing two topics, one marked with tm3 and one with tm1, are only grammatical when the item marked with tm3 precedes the item marked with tm1. The order of the arguments of the verb, relative to the order of the topics, is irrelevant.

Sentences with two base-generated topics, one of which is tm3 and one of which is tm2, are only grammatical when tm3 precedes tm2. This is shown in 84 and 85.

84. tm3 tm2
JOHN$_i$, MARY$_j$, IX-3rd$_i$ LOVE IX-3rd$_j$
'You know John, as for Mary, he loves her.'

85. * tm2 tm3
MARY$_i$, JOHN$_j$, IX-3rd$_j$ LOVE IX-3rd$_i$
'As for Mary, you know John, he loves her.'

When the order of the arguments is reversed, the grammaticality of the sentences with tm3 and tm2 is not affected. The equivalent of 84 is grammatical, whereas the equivalent of 85 is not.

86. tm3 tm2
JOHN$_i$, MARY$_j$, IX-3rd$_j$ LOVE IX-3rd$_i$
'You know John, as for Mary, she loves him.'

87. * tm2 tm3
MARY$_i$, JOHN$_j$, IX-3rd$_i$ LOVE IX-3rd$_j$
'As for Mary, you know John, she loves him.'

Thus, when there are two base-generated topics, one marked with tm3 and one with tm2, the sentence is only grammatical when tm3 precedes tm2. This ordering is irrespective of

the order of the arguments of the verb.

A sentence with two base-generated topics both marked with tm3, as shown in 88, is grammatical. As shown in 89, the order of the arguments does not affect the grammaticality of the sentence.

88. $\overline{\text{JOHN}_i}^{\text{tm3}}$, $\overline{\text{MARY}_j}^{\text{tm3}}$, IX-3rd$_i$ LOVE IX-3rd$_j$
'You know John, you know Mary, he loves her.'

89. $\overline{\text{JOHN}_i}^{\text{tm3}}$, $\overline{\text{MARY}_j}^{\text{tm3}}$, IX-3rd$_j$ LOVE IX-3rd$_i$
'You know John, you know Mary, she loves him.'

In sum, ASL sentences may contain a maximum of two topics. Topics marked by tm3 must precede those marked by tm2. When there is a moved topic (marked by tm1), it must immediately precede the clause. It may in turn be preceded by tm3, but not by tm2. These results are summarized in the table below.

Table 2 Grammaticality of sequences of two topics

Topic marking	followed by	tm1	tm2	tm3
tm1		*	*	*
tm2		??	√	*
tm3		√	√	√

5.7.2 Some Explanations for the Allowable Combinations of Topics

As demonstrated above, there seems to be a maximum of two topics that may occur in the ASL sentence. As already discussed, when tm1 occurs, it occurs either on its own, as in 90, or following tm3, as in 91.

90. tm1
JOHN$_i$, MARY LOVE t_i
'John, Mary loves.'

91. tm3 tm1
JOHN$_j$, MARY$_i$, t_i LOVE IX-3rd$_j$
'You know John, *Mary* loves him.'

It must thus occur in the topic position nearest to the CP. As tm1 marks only moved topics, it is reasonable to suppose that a moved argument occupies the topic position nearest to the CP in order to properly govern its trace. Movement to the further topic position is not grammatical, as can be seen by the fact that there may not be two moved topics, and the fact that it is never grammatical for a moved topic to occur before any other element in topic position.

Two base-generated topics can occur in the ASL sentence. Base-generated topics marked with tm2, if neither is coreferent with an argument of the verb, may be freely ordered with respect to each other. However, when there are two base-generated topics marked with tm2, as shown in 92 and 93, and 94 and 95, when one topic is related to an argument of the sentence by a class: member of the class relationship, then that topic must be nearest to the CP.

tm2 tm2

92. JOHN$_i$, VEGETABLE, IX-3rd$_i$ PREFER ARTICHOKE

'As for John, as far as vegetables are concerned, he prefers artichokes.'

tm2 tm2

93. * VEGETABLE, JOHN$_i$, IX-3rd$_i$ PREFER ARTICHOKE

'As far as vegetables are concerned, as for John, he prefers artichokes.'

When tm2 marks a class, the proposition that follows it must be a comment about a specific element of the generic class expressed by the topic. Topics marked with tm2 that are coreferent with an argument of the verb can occur in either or both of the topic positions, although in the case where one topic refers to a class, then the topic coreferent with an argument of the verb must precede the class topic.

Two base-generated topics both marked with tm3 can occur in the ASL sentence. However, when a topic marked with tm3 cooccurs with a topic marked with either tm1 or tm2, the one bearing tm3 must occupy the leftmost topic position. Semantically, items marked with tm3 function to bring to the forefront of the discourse information that is specific enough for the audience to conceptualize. Once this information is established, other topics, such as those introducing new information (marked with tm2), or highlighting something particular (marked with tm1) may be introduced.

5.8 Conclusion

In this chapter, topics in ASL were shown to occur in a structural position postulated to be adjoined to the left of CP. Both base-generated and moved topics may occupy topic positions in ASL. Different non-manual markings accompanying different sorts of topics were identified and described. Each non-manual topic marking was

shown to have a unique function, and the item with which each topic marking co-occurs was found to have a distinct relation to an argument of the verb in the main CP. Topic position was argued to be structurally present in embedded as well as in main clauses. In the case of non-finite embedded clauses, extraction was shown to be possible to the topic position of the main clause. A maximum of two topics can be adjoined to CP in ASL. If two topics are present in the ASL sentence, only certain combinations of the different sorts of topics are allowable. Other constructions in ASL, previously described as embedded clauses, are claimed to be CP's in topic position.

CHAPTER SIX

Conclusion

The study of signed languages offers a fruitful opportunity to investigate Universal Grammar. Most of the research on American Sign Language reaches two basic and not obviously compatible conclusions: 1) ASL, because it is a signed language, is different from spoken languages; and 2) ASL, despite being a signed language, is quite like other natural languages. This dissertation focusses on those aspects of ASL which reveal the fundamental grammatical organization that has been shown to be operative in other natural languages. The conclusions reached in this dissertation were based not on the presumption that ASL would conform to structures attested for spoken languages, but rather on language-internal evidence.

This dissertation presents an examination of ASL sentence structure, built on the foundation laid by Aarons, Bahan, Kegl, and Neidle (1992-a, b, and c). In addition to arguing for the basic relative hierarchical positions of constituents, this dissertation investigates in detail two major constructions that have been the subject of some debate in the literature: wh-questions and topic constructions.

Wh-questions.

Wh-words in ASL may move or remain *in situ.* It has been shown that when wh-words move in ASL, they move to the right, and therefore that the position of the Spec of CP must be to the right of IP in ASL. The evidence for this is presented at length in Chapter 4. This conclusion is of significance not only for the field of ASL linguistics (since existing theoretical accounts are almost all based on the opposite conclusion), but also for

theoretical syntax (since current claims by Kayne about the position of specifiers crosslinguistically are contradicted by the ASL data).

Topic constructions

In Chapter 5, a distinction never before recognized in the literature among several distinct types of topics, differing in their meaning, usage, syntactic distribution, and non-manual correlates, is presented. In particular, distinguishing moved topics from base-generated topics, on the basis of differing non-manual markings, enables reconsideration of a variety of syntactic constructions involving elements in topic position.

The syntactic claims offered in this dissertation are based both on traditional linguistic argumentation related to the distribution of specific elements and on evidence specific to the visual-gestural modality. In particular, the distribution of grammatical non-manual marking provides a unique kind of evidence, not available for spoken languages, of structural relations such as c-command. The spread of non-manual grammatical marking provides confirmation of the reality of such structural scope relations.

The evidence presented in this dissertation leads to the conclusion that—despite the difference in modality—American Sign Language is structurally quite similar to other natural languages. This both provides independent support for the kinds of elaborately articulated syntactic representations that have been proposed in recent literature for spoken languages, and also suggests that much of human language is a modality-independent brain function.

BIBLIOGRAPHY

Aarons, D., Bahan, B., Kegl, J. and Neidle, C. 1992-a. Clausal Structure and a Tier for Grammatical Marking in American Sign Language. *Nordic Journal of Linguistics 15:* 2, 103-142.

Aarons, D., Bahan, B., Kegl, J. and Neidle, C. 1992-b. Subjects and Agreement in American Sign Language. Paper presented at the Fifth International Symposium on Sign Language Research, Salamanca, Spain, May 29, 1992. To appear in Ahlgren, I., Bergman, B. and Brennan, M. (eds.), *Selected Proceedings of the 5th International Conference on Sign Language Research.*

Aarons, D., Bahan, B., Kegl, J. and Neidle, C. 1992-c. Lexical Tense Markers in American Sign Language. Paper presented at the Fourth International Conference on Theoretical Issues in Sign Language Research, San Diego, CA, August 5, 1992. To appear in Emmorey, K. and Reilly, J. (eds.) (to appear).

Anderson, L. 1978. Historical Change and Stability of American Sign Language. Unpublished ms, Gallaudet College, Washington, DC.

Bahan, B. and Pettito, L. 1980. Aspects of Rules for Character Establishment and Reference in ASL Storytelling. Unpublished ms. Salk Institute for Biological Studies, La Jolla, CA.

Bahan, B. and Supalla, S. (in press). Line Segmentation and Narrative Structure: A Study of Eye-gaze in American Sign Language. To appear in Emmorey, K. and Reilly, J. (eds.) (to appear).

Baker, C. and Cokely, D. 1980. *American Sign Language—A Teacher's Resource Text on Grammar and Culture.* Maryland: T.J. Publishers.

Baker-Shenk, C.L. 1983. *A Micro-analysis of the Nonmanual Components of Questions in American Sign Language.* Ph.D. dissertation, University of California, Berkeley.

Baker, C. and Padden, C. 1978. Focusing on the Non-manual Components of American Sign Language. In Siple, P. (ed.), *Understanding Language Through Sign Language Research.* New York: Academic Press. 27-58.

Bell, R. 1976. *Sociolinguistics: Goals, Approaches and Problems.* London: Batsford.

Bellugi, U. and Fischer, S. 1972. A Comparison of Signed and Spoken Language. *Cognition 1*: 173-200.

Bellugi, U. and Klima, E. 1982. The Acquisition of the Three Morphological Systems in American Sign Language. *Papers and Reports on Child Language Development. Stanford University 21*: 1-35.

Bellugi, U. 1988. The Acquisition of a Spatial Language. In Kessel, F. (ed.), *The Development of Language and Language Researchers, Essays in Honor of Roger Brown*. Hillsdale: Lawrence Erlbaum and Associates. 153-185.

Bellugi, U., Poizner, H., & Klima, S. 1989. Language, Modality and the Brain. In *Trends in Neurosciences 10*: 380-388.

Bellugi, U., Corina, D., Norman, F., Klima, E., and Reilly, J. 1989. Differential Specialization for Linguistic Facial Expression in Left and Right Lesioned Deaf Signers. Academy of Aphasia, Santa Fe, NM.

Bienvenue, M.J. and Colonomos, B. 1991. *The Face of ASL*. Videotape. MD: Sign

Media.

Borer, H. (ed.) 1986. *Syntax and Semantics: The Syntax of Pronominal Clitics, 19* . New York: Academic Press.

Boyes Braem, P. and Kolb, A. 1990. An Introduction to Sign Language Research. In Prillwitz, S. and Vollhaber, T. (eds.) (1990). 97-113.

Brennan, M. 1983. Marking Time in British Sign Language. In Kyle, J.G. & Woll, B. (eds.) *Language in Sign: An International Perspective on Sign Language.* London: Croom Helm.

Bresnan, J. 1973. Syntax of the Comparative Clause Construction in English. *Linguistic Inquiry 4:* 275-343.

Brody, M. 1990. Remarks on the Order of Elements in the Hungarian Focus Field. In Kenesei, I. (ed.), *Approaches to Hungarian: Structures and Arguments.* Hungary: U. Szeged.

Cheng, L. 1991. *On the Typology of Wh-Questions.* Unpublished Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Chomsky, N. 1970. Remarks on Nominalization. In R. Jacobs and Rosenbaum, P.S. (eds.), *Readings in English Transformational Grammar.* Waltham, MA: Ginn and Company.

Chomsky, N. 1986-a. *Barriers.* Cambridge, MA: MIT Press.

Chomsky, N. 1986-b. *Knowledge of Language: Its Nature, Origin and Use.* New York: Praeger.

Chomsky, N. 1991. Some Notes on the Economy of Derivation and Representation. In Freidin, R. (ed.), *Principles and Parameters in Comparative Grammar.* Cambridge, MA: MIT Press. 417-454.

Chomsky, N. 1992. A Minimalist Framework for Linguistic Theory. *MIT Occasional Papers in Linguistics.* Cambridge, MA.

Cogen, C. 1977. On Three Aspects of Time Expression in ASL. In Friedman, L. (ed.) (1977). 174-214.

Contreras, H. 1987. Small Clauses in Spanish and English. *Natural Language and Linguistic Theory 5*: 225-244.

Corina , D. 1989. Recognition of Affective and Non-canonical Linguistic Facial Expressions in Deaf and Hearing Subjects. *Brain and Cognition 9*: 227-237.

Coulter, G. 1979. *American Sign Language Typology*. Unpublished Ph.D. dissertation, University of California, San Diego.

Edmondson, W. and Karlsson, F. (eds.). 1990. *SLR '87: Papers from the Fourth International Symposium on Sign Language Research.* Hamburg: Signum.

Ellenberger (Loew), R. 1977. Sequential Aspects of American Sign Language Phonology. Linguistic Society of America, Annual Meeting, Chicago.

Emmorey, K., and Reilly, J. (eds.) (to appear). *Sign, Gesture and Space.* Hillsdale: Lawrence Erlbaum.

Fant, L. 1977. *Sign Language*. Northridge, CA: Joyce Media, Inc..

Fischer, S. and Gough, B. 1978. Verbs in American Sign Language. *Sign Language Studies 18*: 17-48.

Fischer, S. 1974. Sign Language and Linguistic Universals. In Rohrer, C. and Ruwet, N. (eds.), *Actes du Colloque France-Allemand de Grammaire Transformationnelle, Bande II: Etudes de Sémantique et Autres.* Athaenium: Berlin. 187-204.

Fischer, S. 1975. Influences on Word Order Change in American Sign Language. In Li, C. (ed.), *Word Order and Word Order Change.* Austin: University of Texas Press. 1-25.

Fischer, S. 1990. The Head Parameter in ASL. In Edmondson, W. and Karlsson, F. (eds.) (1990). 75-85.

Fischer, S. and Siple, P. (eds.) 1990. *Theoretical Issues in Sign Language Research Vol. 1*. Chicago: University of Chicago Press.

Fishman, J. (ed.) 1971. *Advances in the Sociology of Language I.* The Hague: Mouton.

Friedman, L. 1975. Space, Time and Person Reference in ASL. *Language 51:* 940-61.

Friedman, L. 1976. The Manifestation of Subject, Object and Topic in American Sign Language. In Li, C. (ed.), *Word Order and Word Order Change.* Austin: University of Texas Press. 125-148.

Friedman, L. (ed.) 1977. *On the Other Hand.* New York: Academic Press.

Frishberg, N. 1975. Arbitrariness and Iconicity: Historical Change in American Sign Language. *Language 51:* 676-710.

Gee, J. and Kegl, J. 1983. *Narrative and Discourse Structure in ASL.* Videotape. Gallaudet College Lecture Series, Gallaudet University Library, Washington, DC.

Georgopoulos, C. 1991. Canonical Government and the Specifier Parameter: An ECP Account of Weak Crossover. *Natural Language and Linguistic Theory 9:* 1-46.

Giorgi, A. and Longobardi, G. 1991. *The Syntax of Noun Phrases: Configuration, Parameters and Empty Categories.* London: Cambridge University Press.

Groce, N. 1985. *Everyone Here Spoke Sign Language.* Cambridge, MA: Harvard

University Press.

Hoffmeister, R. 1978. *The Development of Demonstrative Pronouns, Locatives and Personal Pronouns in the Acquisition of American Sign Language by Deaf Children of Deaf Parents.* Unpublished Ph.D. Dissertation, University of Minnesota.

Huang, C.T. 1982. *Logical Relations in Chinese and the Theory of Grammar.* Unpublished Ph.D. Dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Huang, C.T. 1984. On the Distribution and Reference of Empty Pronouns. *Linguistic Inquiry 15 :* 531-574.

Hyman L. and C. Li. (eds.) 1988. *Language, Speech and Mind* . London: Routledge.

Jacobowitz, E.L. and Stokoe, W.C. 1988. Signs of Tense in ASL Verbs. *Sign Language Studies 60* : 331-340.

Jackendoff, R. 1977. *X-bar Syntax: A Study of Phrase Structures.* Cambridge, MA: MIT Press.

Johnson, R.E. and Liddell, S.K. 1987. A Morphological Analysis of Subject-Object Agreement in American Sign Language. Presented at the Fourth International Symposium on Sign Language Research, July 15-19, Lapeenranta, Finland.

Jung, Y-J. 1992. *A Restrictive Theory of Functional Categories and Their Parametric Variation.* Unpublished Ph.D. dissertation, University of Washington, Seattle.

Kayne, R. 1983. *Connectedness and Binary Branching.* Dordrecht: Foris.

Kayne, R. 1993. The Antisymmetry of Syntax. Unpublished ms. Graduate Center, City University of New York.

Keep, J. 1871. The Sign Language. *American Annals of the Deaf 16 :* 221-234.

Kegl, J. 1976-a. Pronominalization in American Sign Language. Unpublished ms., Massachusetts Institute of Technology, Cambridge, MA.

Kegl, J. 1976-b. Relational Grammar and American Sign Language. Unpublished ms., Massachusetts Institute of Technology, Cambridge, MA.

Kegl, J. 1977. Research in Progress and Proposed Research. Unpublished ms., Massachusetts Institute of Technology, Cambridge, MA.

Kegl, J. 1981. Discontinuous Morphemes in American Sign Language. Unpublished ms., Massachusetts Institute of Technology, Cambridge, MA.

Kegl, J. 1985. *Locative Relations in American Sign Language Word Formation, Syntax, and Discourse.* Unpublished Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Kegl, J. 1986. Clitics in American Sign Language. In Borer, H. (ed.), *Syntax and Semantics: The Syntax of Pronominal Clitics 19.* New York: Academic Press. 285-309.

Kegl, J. 1987. Coreference Relations in American Sign Language. In Lust, B. (ed.), *Studies in the Acquisition of AnaphoraVol II*. Dordrecht: D. Reidel. 135-170.

Kegl, J. 1990. Predicate Argument Structure in ASL. In Lucas, C. (ed.), *Sign Language Research: Theoretical Issues.* Washington, DC: Gallaudet University Press. 149-175.

Kegl, J., Lentz, E. and Philip, M. 1976. ASL Pronouns and Conditions on Their Use. Paper presented at the summer meeting of the Linguistic Society of America, Oswego, New York.

Kegl, J. and Poizner, H. 1991. The Interplay between Linguistic and Spatial Processing in a Right Lesioned Signer. *Journal of Clinical and Experimental Neuropsychology 13:* 38-39.

Kegl, J. and Wilbur, R. 1976. Where Does Structure Stop and Style Begin? Syntax and Morphology vs. Stylistic Variation in American Sign Language. In

Proceedings of theTwelth Annual Meeting of the Chicago Linguistic Society. Chicago, Illinois.

Kessel, F. (ed.) 1988. *The Development of Language and Language Researchers, Essays in Honor of Roger Brown.* Hillsdale: Lawrence Erlbaum.

Kitagawa, Y. 1986. *Subjects in Japanese and English.* Unpublished Ph.D. dissertation, University of Massachusetts, Amherst.

Klima, E. and Bellugi, U. 1979. *The Signs of Language.* Cambridge, MA: Harvard University Press.

Klima, E., Bellugi, U., and Poizner, H. 1988. The Neurolinguistic Substrate for Sign Language. In Hyman, L. and Li, C. (eds.), *Language Speech and Mind.* 138-152.

Koopman, H. 1984. *The Syntax of Verbs: From Movement Rules in the Kru Languages to Universal Grammar.* Dordrecht, Holland: Foris Publications.

Koopman, H. and Sportiche, D. 1988. The Position of Subjects. *Lingua 85*: 211-258.

Kuno, S. 1987. *Functional Syntax.* Chicago: University of Chicago Press.

Kuroda, Y. 1988. Whether We Agree or Not: A Comparative Syntax of English and Japanese. *Linguisticae Investigationes 12*: 1-47.

Lacy, R. 1974. Putting Some of the Syntax back into Semantics. Paper presented at the winter meeting of the Linguistic Society of America, New York, NY.

Lane, H. 1985. *When the Mind Hears.* New York: Random House.

Lane, H. 1992. *The Mask of Benevolence: Disabling of the Deaf Community.* New York: Alfred Knopf.

Li, C. (ed.) 1975. *Word Order and Word Order Change.* Austin: University of Texas Press.

Li, C. and Thompson, S. 1976. *Subject and Topic.* New York: Academic Press.

Liddell, S. and Johnson, R. 1989. American Sign Language: The Phonological Base. *Sign Language Studies 64*: 195-277.

Liddell, S. 1977. *An Investigation into the Syntax of American Sign Language.* Ph.D. dissertation, University of California, San Diego (published as Liddell, 1980).

Liddell, S. 1978. An Introduction to Relative Clauses in ASL. In Siple, P. (ed.), *Understanding Language Through Sign Language Research.* New York: Academic Press. 59-90.

Liddell, S. 1980. *American Sign Language Syntax.* The Hague: Mouton.

Lillo-Martin, D. and Klima, E. 1990. Pointing out Differences: ASL Pronouns in Syntactic Theory. In Fischer, S. and Siple, P. (eds.), *Theoretical Issues in Sign Language Research Vol. 1*. 191-210.

Lillo-Martin, D. and Fischer, S. 1992. Overt and Covert Wh- Questions in American Sign Language. Paper presented at the Fifth International Symposium on Sign Language Research, Salamanca, Spain, May 29, 1992.

Lillo-Martin, D. 1986. Two Kinds of Null Arguments in American Sign Language. *Natural Language and Linguistic Theory 4:* 415-444.

Lillo-Martin, D. 1990. Parameters for Questions: Evidence from Wh-Movement in ASL. In Lucas, C. (ed.), *Sign Language Research: Theoretical Issues.* Washington, DC: Gallaudet University Press. 211-222.

Lillo-Martin, D. 1991. *Universal Grammar and American Sign Language.* Dordrecht: Kluwer.

Loew, R. 1984. *Roles and Reference in American Sign Language: A Developmental Perspective.* Unpublished Ph.D. dissertation, University of Minnesota.

Lucas, C. (ed.) 1990. *Sign Language Research: Theoretical Issues.* Washington,

DC: Gallaudet University Press.

Lucas, C. and Valli, C. 1992. *Language Contact in the American Deaf Community*. San Diego: Academic Press.

Lust, B. (ed.) 1987. *Studies in the Acquisition of Anaphora Vol II*. Dordrecht: D. Reidel.

McIntire, M. 1980. *Locatives in American Sign Languag*e. Unpublished Ph.D. dissertation, University of California, Los Angeles.

McIntire, M., Reilly, J. and Anderson, D. 1994. Two Forms of Negation -- or not. Paper presented at the Linguistic Society of America meetings, Boston, MA, January 8, 1994.

Maestas y Moores, J. 1980. Early Linguistic Environment: Interactions of Deaf Parents with Their Infants. *Sign Language Studies 23:* 99-136.

Massone, M. I. 1992. Some Distinctions of Tense and Modality in Argentine Sign Language. Paper presented at the Fifth International Symposium on Sign Language Research, Salamanca, Spain, May 29, 1992.

Meier, R. 1990. Person Deixis in American Sign Language. In Fischer, S. and Siple, P. (eds.), *Theoretical Issues in Sign Language Research Volume 1*. 175-190.

Newkirk, D. 1976. Outline for a Proposed Orthography for American Sign Language. Unpublished ms., The Salk Institue for Biological Studies, La Jolla, CA.

Newkirk, D. 1981. On the Temporal Segmentation of Movement in American Sign Language. Unpublished ms., The Salk Institute for Biological Studies, La Jolla, CA.

Newkirk, D. *et al.* 1987. *SignFont Handbook.* San Diego: Emerson & Stern Associates, Inc..

Newport, E. and Meier, R. 1986. The Acquisition of American Sign Language. In Slobin, D. (ed.), *The Cross-linguistic Study of Language Acquisition*. Hillsdale:

Lawrence Erlbaum.

Ochs, E. 1979. Transcription as Theory. In Ochs, E and Schieffelin B. (eds.), *Developmental Pragmatics.* New York: Academic Press.

Ochs, E and Schieffelin, B. (eds.) 1979. *Developmental Pragmatics.* New York: Academic Press.

Ouhalla, J. 1991. *Functional Categories and Parametric Variation.*London: Routledge.

Padden, C. 1983. *Interaction of Morphology and Syntax in American Sign Language.* Unpublished Ph.D. dissertation, University of California, San Diego (published as Padden, 1988).

Padden, C. 1988. *Interaction of Morphology and Syntax in American Sign Language.* New York: Garland, Outstanding Dissertations in Linguistics.

Perlmutter, D. 1991. The Language of the Deaf. In *New York Review of Books*, March 28, 1991: 65-72.

Petronio, K. 1991. A Focus Position in ASL. *Proceedings from SCIL, MIT Working Papers Vol 14*, Massachusetts Institute of Technology, Cambridge, MA.

Petronio, K. 1992-a. WHY CAN MUST Appear Sentence-Finally. Paper presented at the 5th International Symposium on Sign Language Research, Salamanca, Spain, May 29, 1992.

Petronio, K. 1992-b. Wh-Questions in ASL. Paper presented at the 4th International Conference on Theoretical Issues in Sign Language Research, San Diego, CA, August 5, 1992.

Petronio, K. 1993. *Clause Structure in American Sign Language.* Unpublished Ph.D. dissertation, University of Washington, Seattle.

Pettito, L. and Marentette, M. 1991. Babbling in the Manual Mode: Evidence for the Ontogeny of Language. *Science 251*: 1453-1496.

Pettito, L. 1983. From Gesture to Symbol: The Relationship between Form and Meaning in the Acquisition of ASL. *Papers and Reports on Child Language Development.* Stanford University *22*: 100-107.

Poizner, H. and Kegl, J. 1992. The Neural Basis of Language and Motor Behavior: Perspectives from American Sign Language. *Aphasiology 6:* 219-256.

Poizner, H. and Kegl, J. 1993. Neural Disorders of the Linguistic Use of Space and Movement. In Tallal, P., Galaburda, A.M., Llinas, R., and von Euler, C. (eds.), *Temporal Information Processing in the Nervous System: Special Reference to Dyslexia and Dysphasia. Series: Annals of the New York Academy of Sciences vol. 682:* 192-213. New York: The New York Academy of Sciences.

Poizner, H., Klima, E. and Bellugi, U. 1987. *What the Hands Reveal about the Brain.* Cambridge, MA: Harvard University Press.

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

Popper, K. 1959. *The Logic of Scientific Discovery.* New York: Basic Books.

Prillwitz, S. and Vollhaber, T. (eds.) 1990. *Sign Language Research and Application.* Hamburg: Signum Press.

Radford, A. 1988. *Transformational Grammar*. Cambridge University Press.

Reilly, J. and McIntire, M. 1980. ASL and PSE: What's the Difference? *Sign Language Studies 27:* 151-192.

Reilly, J., McIntire, M., and Bellugi, U. 1990. Faces: The Relationship between Language and Affect. In Volterra, V. and Erting, C. (eds.), *From Gesture to Language in Hearing and Deaf Children.* New York: Springer-Verlag.

Rizzi, L. 1991. Residual Verb Second and the Wh-Criterion. *Technical Reports in Formal and Computational Linguistics 2.* University of Geneva, Switzerland.

Romano, C. 1991. Mixed Headedness in American Sign Language: Evidence from Functional Categories. *Proceedings from SCIL, MIT Working Papers Vol. 14,* Massachusetts Institute of Technology, Cambridge, MA.

Siple, P. (ed.) 1978. *Understanding Language Through Sign Language Research.* New York: Academic Press

Slobin, D. (ed.) 1986. *The Cross-linguistic Study of Language Acquisition.* Hillsdale: Lawrence Erlbaum.

Speas, M. 1986. *Adjunctions and Projections in Syntax*. Unpublished Ph.D. dissertation, Massachusetts Institute of Technology, Cambridge, MA.

Stokoe, W. 1960. Sign Language Structure: An Outline of the Visual Communication Systems of the American Deaf. In *Studies in Linguistics: Occasional Papers 8.* New York: University of Buffalo.

Stokoe, W., Casterline, D., and Croneberg, C. 1965. *A Dictionary of American Sign Language.* Washington, DC: Gallaudet College Press.

Supalla, T. 1982. *Acquisition of Verbs of Motion and Location in American Sign Language.* Unpublished Ph.D. dissertation, University of California, San Diego.

Sutton, V. 1981. *Signwriting for Everyday Use.* Boston/Newport Beach: The Sutton Movement Writing Press.

Thompson, H. 1977. The Lack of Subordination in American Sign Language. In Friedman, L. (ed.) (1977).

Travis, L. 1984. *Parameters and the Effects of Word Order Variation.* Unpublished Ph.D. dissertation, Massachusets Institute of Technology, Cambridge, MA.

Trudgill, P. 1983. *Sociolinguistics: An Introduction to Language and Society.* Middlesex: Penguin.

Valli, C. and Lucas, C. 1992. *Linguistics of American Sign Language: A Resource Text for ASL Users* . Washington, DC: Gallaudet University Press.

Van Hoek, K. 1991. Signed Language Issues: Facial Expressions, Part Two. In *The Sign Writer,* Fall Issue. La Jolla: Center for Sutton Movement Writing.

Van Riemsdijk, H. and Williams, E. 1986. *Introduction to the Theory of Grammar*. Cambridge, MA: MIT Press.

Wilbur, R. 1992. Arguments for Sentential Subjects in ASL. Paper presented at the Fifth International Symposium on Sign Language Research, Salamanca, Spain, May 29, 1992.

Wilbur, R. 1987. *American Sign Language: Linguistic and Applied Dimensions.* Boston: Little, Brown.

Woodward, J. 1978. Historical Bases of American Sign Language. In Siple, P. (ed.), *Understanding Language Through Sign Language Research.* New York: Academic Press. 333-348.

Yip, V. 1985. Is there a Category Adjective in Chinese? Unpublished ms. Brandeis University, Waltham, MA.

Zagona, K. 1982. *Government and Proper Government of Verbal Projections.* Unpublished Ph.D. dissertation, University of Washington, Seattle.

Zagona, K. 1988. *Verbal Phrase Syntax: A Parametric Study of English and Spanish.* Boston: Kluwer Academic Publishers.