Aspects of Morphology and Syntax of Negation in Greek Sign Language

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The experience of working on negation was in fact not a negative one at all. On the contrary, it was a fascinating journey in its entirety. However, this journey would not have had been possible without the constant support and assistance of a great number of people. Here, I would like to take the opportunity to extend my genuine thanks to them all.

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[1] The use of 'Deaf' with capital case and the use of 'deaf' with lower case is explained in section 1.4 (see p. 24).

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ABSTRACT

This thesis investigates aspects of the morphophonology, syntax and scope of negation in the Greek Sign Language with emphasis on the means and mechanisms that this sign language employs in order to express negation. The data analysis presented is based on natural data provided by Deaf informants. The initial pilot study provided elicited data, which was subsequently used to confirm the findings of the study.

As with other sign languages, analysis shows that Greek Sign Language expresses negation by the use of both manual and non-manual features of negation. Manual negation includes three features: negative particles such as NO or NOT, negation signs which usually have meanings like *nobody, nothing, never,* and finally signs with negative incorporation (verbs that incorporate negation). Non-manual features comprise of negation head movements and facial expressions. As in many other signed and spoken languages, the most common way to construct a negative clause is by using a negative particle. The use of manual or non-manual features of negation is optional in Greek Sign Language in the sense that negation can be expressed by the use of negative head movements which can occur without any manual negation signs within a clause or by the use of a manual sign of negation without the use of any non-manual feature of negation.

Syntactic analysis shows that the negative particles and negation signs occur in post-predicate position. Pre-predicate position is also available for these signs under specific conditions. For signs with negative incorporation the position within a clause varies. The status of manual signs and non-manual features of negation within a clause is also examined.

The NEG-criterion, as defined within the framework of generative grammar, is used for the analysis of negation scope. Within this framework a syntactic analysis of the negative particle and the negation head movement is proposed. The NEG-criterion provides an empirically adequate theory of the scope of negation in clauses with manual negators as well as in negative clauses where no manual negation sign appears. In addition, the study provides insights into the varying use of negation in different settings and language change through grammaticalisation. Finally, data analysis of negation has also revealed some important areas for further research like basic word order, syntax of negative concord and various expressions of negation, the prosodic analysis of non-manual features of negation amongst others.

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1 INTRODUCTION

Sign language research is a fascinating discipline which has developed rapidly over the last four decades. Prior to this, sign languages had been ignored by language research for many years. This delay in sign language research is contributed to a variety of factors including: the social status of deaf people, the lack of proper education for the deaf, the status of sign language as a minority language and the fact that sign languages use different means of articulation other than the upper respiratory system. The foundation of sign language research was established in the 1960s with the early work of Stokoe (1960, 1966) on American Sign Language. Since then, research has expanded into various linguistic areas as well as many other sign languages. Furthermore many linguistic aspects of sign language such as morphophonology, syntax, sign language acquisition, have been studied in a number of sign languages.

Sign language linguistics is a new discipline, therefore as of yet it does not provide the corpus of research and evidence that spoken languages do. Nonetheless, research into sign languages has also furthered our understanding of human languages as it provides linguistic research and theory with evidence not usually available in spoken languages. For example, cognitive neuroscience research (Emmorey, 2002) has shown that the use of sign language activates the same brain areas (primarily left-sided) as spoken languages do.

The contribution of sign language research is not limited to our understanding of language and linguistic phenomena only. Sign language research has also changed the attitude of many people towards sign languages. In the past, sign language was not considered to have the same status as spoken languages. Lack of knowledge regarding its linguistic properties and the rules that regulate its grammar resulted in the exclusion of sign language as an educational means in most of the countries in the Western world (Moores, 2001). An important area, which has been crucially influenced by sign language research, is the education of deaf children. This influence facilitated the establishment of sign language use in education. It is not mere coincidence that only after research into sign language commenced were the educational oral methods in deaf education, revised for the first time in decades and furthermore the use of sign language in deaf education was finally considered an option.

The problems and complications for Deaf people and their language also apply in Greece. Greek Deaf people and their language have more or less identical social and educational characteristics as most of the known Deaf communities and sign languages. For many decades Greek Sign Language was not considered as a language with the same status as Modern Greek. It was not used as an educational means in deaf education and its use by deaf children was prohibited. Changes in Europe and the USA have influenced Greece and so this reality has changed over the last two decades. Research into Greek Sign Language has begun, and it has been recognised as an educational means for deaf children. It is a paradox that Greek Sign Language research is still in its infancy when the use of non-verbal communication by 'mute' people was reported by Plato (1994, reprinted) in one of his dialogues (Kratylos). Most of the work in Greek Sign Language to date is related to sign language dictionaries and research in phonology.

1.1 The need for the study: why negation?

Negation and negative utterances are essential elements of human language and human communication. Horn (1989) notes that negation is unique in the communication of human beings; by means of contrast, animal communication does not use any kind of negative utterance. Negation as a means of expressing opposition in terms of formal logic has been under examination since Plato and Aristotle. In modern linguistics, it is only within the last fifty years that negation has become a specific research area. Natural languages have a multitude of features, such as particles, affixes and negative words, in order to express negation. Similarly, sign languages, as natural languages, also employ a wide variety of means for negation marking. Distinct to sign language is the use of non-manual features like head movements and facial expressions for negation marking. In some cases the interaction between Deaf and hearing communities means that some of the negative gestures used by the hearing are adopted in sign language, with the use of the headshake as a non-manual feature of negation being a case in point. In both spoken and sign languages, analysis of negation should explore all aspects of language from morphophonology to pragmatics. Although most languages share common aspects regarding the use of particular negative markers for the formation of clausal negation; the variety that languages exhibit in the use of these negative markers is indeed extensive. This variety is expressed not only by the number of negative markers but also by the syntactic status and the position of these markers in clauses. Several researchers (i.e. Haegeman,

1995; Horn and Kato, 2000) underline why research on negation is a fascinating topic in linguistics:

- It exists in all human languages.
- Its linguistic expression exhibits wide variation across languages.
- Variation is also shown in different levels of grammar: vocabulary, syntax, semantics and pragmatics.
- It interacts with other linguistic phenomena (i.e. interrogatives) providing important insight to specific language mechanisms.

Taking into account the different mechanisms that negation employs, not only in articulation but also in syntax, it is easy to imagine how it is a field which becomes all the more interesting in the field of sign language. The issues of morphology and syntax can be explored in the visual-spatial medium where the use of non-manual features offers important grammatical information. As research on negation provides important insights into our understanding of specific linguistic mechanisms, research on sign language in turn provides other important insights into our general understanding of the mechanism of language itself.

1.2 Statement on the research topic and term definition

This study examines aspects of the marking of negation in Greek Sign Language. It is the first work on Greek Sign Language negation and therefore it takes a broad perspective, it is neither limited to a specific linguistic area nor focuses on a particular aspect of negation. The aim of the study is to provide an adequate picture of Greek Sign Language negation in the areas of morphophonology and syntax, and to contribute to our understanding of negation in sign and spoken languages. Furthermore, it is hoped that the findings of this research will provide new tools for Greek Sign Language teaching both as a first language for deaf pupils, and as a second language for hearing adults. The following major issues are examined in this study.

- The means and mechanisms employed by Greek Sign Language for expressing negation.

- The use of both manual signs and non-manual features of negation in Greek Sign Language and their interaction.

- The syntactic structure of negation in Greek Sign Language.

- The marking of scope of negation in Greek Sign Language.

- The relationship and interaction between Greek Sign Language and spoken Greek in the case of negation.

A descriptive analysis has been employed for the examination of the data in order to establish a clear picture of the morphology of negation, and in particular the syntactic realisation of negation and the interaction between Greek Sign Language and spoken Greek. The grammatical analysis of the syntactic forms of negation and the scope analysis of negation are based on a generative grammatical model. Definitions of the basic terms used in this dissertation are presented in this section.

- The term *negator* is used in grammar and indicates the item that expresses negation in a negative clause.

- The term *negation sign* is used for negative particles and for all signs of negation which are quantifiers, adverbs, pronouns, etc.

- The term *negative particle is* used for the specific signs used with a verb/predicate in order to express negation.

- The terms *negative incorporation sign* or *sign with negative incorporation* are used for the verbs which incorporate negation within their morphological form.

- The term *negative item is* used for all signs of negation (negation signs as well as signs with incorporated negation).

Greek Deaf people refer to their language as SIGN-LANGUAGE or GREEK SIGN-LANGUAGE. The interpretation is as follows:

GREEK	SIGN	-LANGUAGE	(Greek Sign Language gloss)
ΕΛΛΗΝΙΚΗ	ΝΟΗΜΑΤΙΚΗ-ΓΛΩΣΣΑ		(Spoken Greek)
Elliniki	Noimatiki	Glossa	(Transliterated Spoken Greek)
Greek	Sign	Language	(English)

Based on anecdotal observation, Greek Deaf people use the Greek abbreviation 'ΕΝΓ' for Greek Sign Language in written Greek. Because there is no corresponding letter for the Greek letter 'Γ' = γάμα (gama), the letter 'G' of the Latin alphabet is chosen as the representative of the sound closest to that represented by 'Γ' (/γ/, /g/). Therefore, henceforth, Greek Sign Language will be referred to with the abbreviation 'ENG'. In this study various other sign languages will be referred to using their full names and in this way avoiding abbreviations that could create a source of confusion. Abbreviations are used only for American Sign Language (ASL) and British Sign Language (BSL) as they are referred to much more frequently.

1.3 Thesis outline

This introductory chapter has served to set the context of the thesis as well as acquaint the reader with the glossing signs and transcription conventions used throughout the study (see section 1.4 below). Hereby follows a structured outline of each of the remaining chapters of the thesis.

The second chapter reviews the literature related to negation and examines the issues of negation in spoken languages that are related to the areas of negation explored in the present study of ENG. Modern Greek and English are the two languages used for the review of negation in spoken languages. The basic means for the construction of negative clauses in each language is presented which is followed by an introduction to the scope of negation, the phenomena of negative concord and double negation and negative polarity items. Negation in sign languages is then explored with a focus on the following issues: Which negation topics have been investigated in sign languages? What are the means of negation marking in other sign languages? Is the use of both manual and non-manual features a common characteristic in sign languages? What are the categories of negation signs? Is the incorporation of negation in verbs a common characteristic in sign languages? Is the use of head movement and facial expression for negation a regular

element in sign languages? Is there any reference in other sign languages to the combination of manual signs with other non-manual features? The chapter concludes with a summary of the work on ENG research.

The third chapter presents the methodological issues related to sign language research and explains the methodology employed throughout the current study. Sign language data and data elicitation are matters of utmost importance as they can affect the validity of the outcome of the analysis. Therefore the process for the creation of the database is detailed along with the strategies employed by the researcher, in order to eliminate complications during data collection which could in turn affect the quality of the corpus. This is followed by two initial studies (a pre-pilot and a pilot study) which investigate the various mechanisms that ENG uses for negative expression. Due to specific problems related to the design of the pilot study, the pilot study has not been used as a source for the database, but only as a platform for background information. Also detailed are the various tools and specific computer programmes utilized for data categorisation and language analysis. Each level of description and analysis is based on different categorisation tools and computer programs. Examination of the lexical items of negation and the non-manual features of negation are based on tokens of negation. The programs employed for statistical analysis of negation tokens are Microsoft Excel and Microsoft Access. The syntactic analysis is based on examination of negation clauses. Specific criteria have been established in order to define clause boundaries and to determine the clauses not considered instances of ENG. SignStream, a computer programme for sign language analysis, was used for the description and examination of negation. SignStream and Microsoft Access were used for the analysis on negation clauses. More specifically, the process of creating a SignStream database and data transcription is detailed. This process includes data digitalisation, SignStream transcription and frame assignment as well as the use of specific program tools. Finally, the problems concerning methodological categorisation and data management are also addressed.

The fourth chapter examines issues related to the morphophonology of negation. The signs/manual features used by ENG in order to express negation, and the non-manual features used to accompany negation are presented through data analysis. Manual signs of negation are further categorised into two groups, the first being negation signs which consists of negative particles and negative words, the second being signs of incorporated negation which consists of verbs that incorporate negation. Features of non-manual

negation are also subcategorised into two groups which are negation head movements and facial expression of negation.

Video-recorded data containing tokens of negation is analysed and two main categories of negation tokens are established: those of manual negation signs and those of non-manual negation (where no manual negation signs occur). Furthermore, tables of co-occurrences for these subgroups of manual and non-manual elements confirm initial observations for the expression of negation. ENG makes use of manual signs and non-manual features similar to those used in other sign languages. The tables also provide initial information about the use of manual negation signs and their relation to non-manual features. The relation of manual negation signs to non-manual features of negation is also analysed and more specifically, the relation of negation head movements to particular signs. The existence of a phonetic pattern, which regulates the choice of negation head movement to particular negation signs, is finally proposed. According to this proposition, the movement of a manual negation sign affects the choice of a negation head movement. The relationship of specific non-manual features to gestures used by Greek hearing people is also presented.

The final part of the chapter discusses particular issues raised by the aforementioned categorisation and data analysis, and the adjustment of the initial categorisation in relation to EMPTY and NO-WAY is presented and justified. Because this change for both signs is related to grammaticalisation, it is proposed that EMPTY becomes a negative existential whereas NO-WAY becomes a negative particle. In addition, the case of NO formed with an As handshape (NO-As) (see section 1.4) is also examined and two possible explanations for this case are consequently proposed; the sign either derives from AGREE-NOT, which is almost identical and is under grammaticalisation but has not yet acquired full status as a negation sign, or is a loan from ASL. Signs with negative incorporation, not included in the initial categorisation, are presented at the end of this chapter. Some of these signs are considered as examples of productive morphology.

The fifth chapter examines issues related to negation at clausal level. The video-recorded data is reorganised into a new database containing clauses of negation and is subdivided into clauses of manual negation and clauses of non-manual negation. Analysis of manual negation clauses examines the position of manual negation signs within a negative clause. This positioning is then examined separately for negation signs and signs of incorporated negation. The initial observation regarding clause-final position for the manual negation

signs is confirmed by frequency of occurrences. Clause examination reveals however that this is not the final position in a clause and that specific categories of sign can follow a sign of negation in this position. Furthermore, data analysis of negation signs shows that this clause-final position is also a post-predicate position which does not change when the verb of clause is non-overt. Various exceptions to this structure are detailed and in some cases, variations derive from different grammatical structures like contrastive negation or emphatic negation.

Next the use of the negation head movement within a negative clause is analysed and the findings presented. Negation head movement characteristics are examined for each individual manual sign and are also examined in non-manual negation clauses where no manual sign of negation occurs. Negation head movement analysis shows that its use is optional for clauses negated by manual negators. However, the use of such movements exceeds 50% for clauses of all groups of manual signs: negative particles, negation signs and signs of incorporated negation. Findings concerning the negative particle and the negation head movement run counter to previous reports on American, German and Catalan Sign Languages where negation head movement over the particle is obligatory otherwise the clause becomes ungrammatical.

Data examination also reveals that negation head movements in ENG are bound to the manual sign of negation: a negation head movement spreads over the manual negator of the clause. The spreading of the negation head movement over a negation clause varies, although in most of the clauses it only co-occurs with the manual negator. Negation head movement can spread either over the whole clause or over a certain part of it. This partial spread occurs especially when the same clause makes use of other non-manual markers like topic, etc. A negation head movement can also spread over two adjacent negative clauses. Spreading of the negation head movement does not always coincide with the scope of the head movement as negator. Furthermore, spreading of the negation head movement is not strictly related in terms of onset/offset assignment to the sign with which is associated. This is also contrary to the evidence reported from ASL. Non-manual negation clauses are further subdivided. The first group includes clauses where the negation head movement negates the manual part of the clause with which it co-occurs. In these clauses the negation head movement spreads over the verb of the clause in order to take scope. A second option is also available if the negation head movement occurs at the end of the clause as its final part. The second group includes clauses where the

negation head movement does not negate the manual part of the clause with which it co-occurs. In these clauses the negation head movement does not take scope over the co-occurring manual part of the clause. The head movement negates something which is contextually given.

The final part of the chapter five examines the use of negation facial expression features within negative clauses. Negation facial expressions are optional features for a negative clause. In the vast majority of clauses, negation facial expressions co-occur with the manual negator of the clause and their presence is independent of the presence of the negation head movement. Facial expressions of negation do not negate a clause in the absence of a manual negator. The only exception occurs in cases where mouth actions and raised brows are used as sole negators for expressing negation.

In chapter six, aspects of the status of manual signs and aspects of the scope of negation are presented in relation to sentential/clausal and constituent/local negation. The status of manual negation signs within a negative clause and their use in clausal and/or constituent negation are examined. More specifically, the different groups of signs under examination are: negative particles, negation signs and signs of incorporated negation. Starting with the function of the negative particle, the specific clausal structures are presented here: clausal negation, constituent negation, rejection/disagreement clauses, negative interrogatives and negative imperatives. For each of these clauses the function of the negative particle is exemplified and differing position of the particle within the negative clause of these groups is shown. Semantic analysis of meaning continues with negation signs which do not perform the variety of functions found in the negative particles. A discussion about signs with negative incorporation ensues. This category is subdivided into three groups of signs: negative modals, negative existentials and finally plain signs with negative incorporation.

The following section of this chapter analyses the scope of negation in ENG. As the use of negation head movements is optional, the first part of the analysis is concerned with the scope of negation in manual negation clauses and does not include signs of incorporated negation due to the fact that these always have clausal scope as negative verbs. The analysis of the scope and syntax in ENG is based on the NEG-criterion proposal which has been couched within generative grammar. A negative word has to fulfil this criterion in order to take clausal scope. The statistic analysis of the database demonstrates that, in 85% of the negation sign clauses, the negator occupies

post-predicate clause-final position. Based on this observation it is assumed that this position of the negator forms a clausal negation structure which fulfils the NEG-criterion. Based on data analysis it is also assumed that negation is head-final structure in ENG. Scope analysis examines the conditions and structures that allow a negative particle or negation sign to have clausal scope, or prevent it from doing so. Negative particles and the negative quantifier NOTHING are found in both scope configurations, in other words both clausal and local. Under the theory of generative grammar, a syntactic analysis is proposed of the negative particle and the head movement of negation. Data analysis indicates that the negation head movement occupies the same position as the negator in the negative phrase (NegP) which is Head[2] position (Neg°). Therefore, the negation head movement has to follow the same obligations and restrictions that apply to the manual negator. One complication which arises is that of constituent negation where the negator is not realised manually. In addition, the scope of negation for other signs of negation except the negative particle is examined and discussed. It is clear from the data that ENG is a negative concord language and does not make use of double negation structures. Data analysis does not identify any negative polity items in ENG. This is a matter which needs further investigation.

The seventh chapter concludes the analysis and suggests areas for further research.

1.4 Glossing signs and transcription conventions

ENG signs or examples are presented as English glosses. The meaning of each sign in turn can be presented by using one or more English words. For example the gloss of an utterance in ENG is a series of English words that correspond to the signs of the particular utterance. Some basic conventions concerning glossing are used as follows:

- Upper case words. All manual signs are presented in upper case words (for signs of negation see sections 4.2.2.1 and 4.2.2.2).

- Directional verbs. Directional verbs agree with the subject and object of the verb. Numbers before and after the verb are used in order to show the person of the source and goal (or agent and patient), respectively. For example 1TELL2 means 'I tell you', and 2GIVE3 means 'you give to someone'.

[2] It should be noted here that the use of the word 'head' with an upper-case 'H' means the grammatical head of a phrase; and 'head' with a lower-case 'h' is used to indicate a human head (head movement).

- INDEX sign as a pronoun. The INDEX sign stands for the personal pronoun. The number next to it indicates the person of the pronoun. For example INDEX1 stands for a first person pronoun.

- Hyphen (-). A hyphen is used between capitals for single signs which require more than one English word to be glossed (e.g. ONE-YEAR).

- Circumflex accent (^). A circumflex is used for compound signs. It indicates the two morphemes of the sign (e.g. INDEX3^INDEX1 means 'me and him/her' or 'we - both').

- Bold face type. All manual signs of negation and all non-manual features of negation are in bold case.

- Low line (_). A low line above the glossed signs indicates the spread of a non-manual feature. Where the line is not continuous (- - - - -), optional spreading is indicated. In relation to ENG examples from the database used for this study, the line is as representative as possible of the actual spreading of the feature. Abbreviations for non-manual features of negation used in ENG are presented in sections 4.2.2.3 and 4.2.2.4.

  _____negation head movement
  EAT **NOTB**

- Vertical line (|). This is used to indicate clause boundaries (see section 3.6.1.1.1).

  PEOPLE PULL | SAVE 5 SAVE |

- Right/left hand. The terms ipsilateral (right for right-handers, left for left-handers) and contralateral (right for left-handers, left for right-handers) are used.

- Deaf and deaf. Based on Parasnis' (1996) proposal, the capital case form of 'Deaf' is used to refer to Greek (or other nationality) deaf people who share a common language (ENG in our case) and common cultural values and identify themselves as members of the Deaf community. The lower case form of 'deaf' refers to those people who are only characterised by the audiological condition of deafness.

- Examples from other sign languages are presented following the original conventions made by researchers. In most cases the conventions are similar. However, explanations are given whenever necessary.

In some cases it is necessary to describe the form of some signs for analysis purposes. In these cases the basic handshape of the sign is given. Handshapes are represented by letters of the English alphabet following conventions made by Brennan, Colville and Lawson (1984) that use Stokoe's (1960) notation in their work.

Data from the database is often used for examples. For each example, specific enumeration has been followed in order to uniquely identify it. This is highlighted in the example below.

1.4-a (349) PEOPLE PULL | SAVE 5 SAVE | DIE **NOTHING NOTHING**
(He) pulled out all the people. (All) five of them were saved. Nobody had died.[3]

The first number refers to the chapter and section number where the example occurs. Accordingly, 1.4 in the example above refers to chapter one, section four.

This is followed by a letter (such as the letter (a) in our example) which indicates the classification number of the example within the section of the thesis. The first example of a section is labelled (a), the second example (b) and so forth. For a group of related examples this may appear in the form of (a.1), (a.2) etc.

The number in parenthesis (e.g. 349) indicates the database code (see section 3.6), should the example have been sourced from here. Where only a part of the clause is used with hypothetical grammatical or syntactic changes for purposes of demonstration, then an 'x' symbol is added next to this database code (see example (b) below).

_____negation head movement
1.4-b. (349x) DIE **NOTHING NOTHING**
Nobody had died.

Clauses which are not sourced from the database have no number indication other than the section and the alphabetical index. These examples consist of clauses given by the researcher.

[3] All translations during the present study have been made by the author with the exception of referenced examples.

Conventions in relation to particular issues of negation in ENG are presented in the subsequent chapters.

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2 LITERATURE REVIEW

2.1 Introduction

Natural language negation is considered to be the element that converts the truth value of a proposition into its opposite truth value (Bussman, 1996). This can be achieved by adding a grammatical element of negation to a sentence/clause (Bussman, 1996; Trask, 1993). According to Bussman (1996, p. 322-323) 'the linguistic description of negation has proven to be a difficult problem in all grammatical models owing to the complex interrelationship of syntactic, prosodic, semantic, and pragmatic aspects'. In most languages, a negative marker is used in order to express sentential/clausal negation but this does not mean that the structure of negative sentences/clauses is similar in these languages. On the contrary, languages display a considerable variation in the way they express negation at all levels.

Klima's (1964) analysis of negation attracted the attention of many scholars and therefore negation became a core subject in linguistic research. Since the work of Klima, many researchers have tried to unify the different manifestations of negation in different languages within the framework of generative grammar. Pollock's (1989) proposal of the Split Inflection Hypothesis influenced many researchers and it eventually became a standard reference for the analysis of negation. This proposal states that clausal negation is realised in a designated functional projection, namely the negative phrase (NegP) (Haegeman, 1995). The properties of negative elements vary in different languages. For instance, one central question in discussing negative markers in particular languages is about their syntactic status as Heads or maximal projections. The assumption is that the negative elements occupy a Head or a specifier position in the negative phrase (NegP). Other ongoing issues in research analysis concern negative concord (NC) and double negation (DN), scope of negation, polarity items, etc.

2.2 Negation in the spoken English and Greek languages

Negation in Modern Greek and English is presented here, demonstrating some general characteristics of negation in spoken languages. In the case where specific functions and

phenomena related to sign language are not available in Modern Greek or English, then examples from other languages will be used.

2.2.1 Negation in Modern Greek and English

Two kinds of negation are distinguished by linguists in both English and Modern Greek grammars (Holton et al., 1997; Huddleston, 1984; Quirk et al., 1985): a) sentential or clausal negation and b) constituent or local or partial negation. In sentential or clausal negation, negation is semantically attributed to the whole proposition. The whole sentence/clause[4] is also treated syntactically as negative (a.1, a.2).

2.2.1- a.1 **Δε** διάβασα αυτό το βιβλίο.
not read this the book[5]
I have not read this book (I haven't read this book).[6]

a.2 **Μην** του δώσεις λεφτά.
not him give money
Do not give him any money (Don't give him any money).

The most common way to form sentential negation is by using a negative particle with the verb of the sentence. The negative particles in English are *no* and *not.* In Modern Greek two particles are used for the formation of sentential negation *δεν* (den) and *μη(ν)* (mi(n)). Both of these particles have the meaning of *not.* Veloudis (1982) notes that the distribution of these particles is complementary. The *δεν* particle always occurs with indicative mood and the *μη(ν)* particle with subjunctive mood. Both are used to express sentential/clausal negation (a.1, a.2).

Veloudis also reports the use of two more particles; *όχι* (ochi) and *μη* (mi). Both have the meaning of 'no'. These particles are used in two different groups of sentences: elliptical sentences of sentential negation (b.1 and b.2) and constituent negation.

2.2.1-b.1 **Όχι** κατά πάνω τους.
not against on them
Not against them.

---

[4] In this chapter the application of the terms 'sentence' and 'clause' is according to that used in the literature.

[5] This constitutes a direct word for word translation of the initial example, from Greek into the English language.

[6] This constitutes a comprehensive translation of the initial example, from Greek into the English language.

b.2 Μη κατά πάνω τους.
not against on them
Not against them.

(Veloudis, 1982, p. 27).

The above examples become ungrammatical in Modern Greek if the particles *δεν* or *μην* are used (b.3).

2.2.1-b.3 * Δεν κατά πάνω τους.
* Μην κατά πάνω τους.
Not against them.

(Veloudis, 1982, p 27).

In addition, the *όχι/μη* particles are also used for constituent negation having the meaning of *non*. The particle *non* is also used in English to form constituent negation (b.4 and b.5). However, constituent negation can also be formed with words other than the particles. In these sentences negation affects a constituent of the sentence and not the whole sentence (b.6).

2.2.1- b.4. Οι όχι έξυπνοι είναι στην ομάδα ένα.
the not intelligent are in the group one
The non intelligent are in group one.

b.5 Υπάρχουν εστιατόρια για μη καπνιστές.
exist restaurants for non smokers
There are restaurants for non smokers.

b.6 Το παιδί περπατά χωρίς βοήθεια.
The child walks without help.

The above sentences exemplify some major manifestations of sentential and constituent negation in Modern Greek and English. Also, both languages make use of a variety of negative words (N-words) to mark negation, see Table 2-1 below.

	Modern Greek	English
Particles	δεν, μην, όχι, μη	not, no, non
Indefinite pronouns	κανείς-κανένας	nobody, none, no one
Quantifier	τίποτα, καθόλου	Nothing
Adverbs	ποτέ, πουθενά	never, nowhere
Prepositions	Χωρίς	without
Conjunctions	ούτε...ούτε	neither...nor

Table 2-1. N-words in Modern Greek and English

A major difference between Modern Greek and English involves cases that permit the appearance of negative adverbs or pronouns within a clause. English negative words like *nobody* and *never* do not require the negative marker *not* in the clauses (c.2 and c.4), if they are used then the clause becomes ungrammatical (c.1 and c.3). On the contrary, in Modern Greek the corresponding words, *κανείς* (kanis) and *ποτέ* (pote), require the *δεν* (den)/*μην* (min) negative markers (c.1 and c.3) otherwise the clause becomes ungrammatical (c.2, c.4).

2.2.1-c.1 Δεν ήρθε κανείς.
not came nobody
* It didn't come nobody

c.2 * Ήρθε κανείς.
came nobody
Nobody came.

c.3 Δεν τρώω ποτέ κρέας.
not eat never meat
* I don't never eat meat.

c.4 * Τρώω ποτέ κρέας.
eat never meat
I never eat meat.

In Modern Greek negative forms are also created using the prefixes *a(ν)-(αη-)* (For example: *ανύπαντρος* (unmarried), *αμόρφωτος* (uneducated), *αγέλαστος* (unsmiling). English also makes use of prefixes for negative forms such as un-, in-, dis-, non- and mis- (for example: unimportant, disagree, non-sense, misfortune). However it also uses suffixes like –less to make negative forms (for example, hopeless).

Finally, both Modern Greek and English use the particle *όχι* (no) in response to yes/no questions (d.1) or in sentences that express rejection of, or disagreement with, a previous statement (d.2).

2.2.1-d.1 A: Θέλεις λίγο νερό;
want some water?
B: **Όχι,** ευχαριστώ.
no thanks
A: Do you want some water?
B: No, thanks.

d.2 A: Να φορέσεις το καινούργιο πουκάμισο.
to wear the new shirt
B: **Όχι** δεν θα το φορέσω.
no not will it wear
A: You should wear your new shirt.
B: No, I won't wear it.

2.2.2 Spoken language negation and generative grammar

Following the theory of generative grammar during the 1960s negation has become an area of interest for many researchers. According to Horn and Kato (2000), research has sought to describe the structures used to express the meaning of negation and the relation among the elements in this structure. Researchers should analyse and account for the great variety that negation shows in different languages (a.1, a.2, a.3, a.4, a.5).

2.2.2-a.1	John does **not** eat chocolate.	English
a.2	Ο Γιάννης δεν τρώει σοκολάτα.	Greek
	the John not eat chocolate	
a.3	Jean **ne** mange **pas** de chocolat.	French
	Jean eats not the chocolate	
a.4	Giani **non** mangia chioccollato.	Italian
	Giane not eat chocolate	
a5	Hans isst **nicht** die schokolade.	German
	Hans eats not the chocolate	
	John doesn't eat chocolate.	

Klima (1964) was the first to use the Neg symbol as part of the analysis of negation. In his early work, negation analysis is treated in a similar way to wh-question analysis and as a

result Neg has an initial pre-sentential position similar to the wh-marker. In negation sentences this pre-sentential position is marked by a [+Affective] feature reflecting the polarity of the sentence. Pollock (1989), seeking to account for the variation in the position of the verb in English and French, proposes to decompose inflection (IP) into functional elements such as agreement, tense and negation. Each of these elements has its own unique Head that project to a separate phrasal category (XP). Thus negation is represented as Head of the negation phrase (NegP). Horn and Kato (2000) note that Pollock's proposal has influenced the work of many other linguists including Ouhalla, Zannutini and Haegeman. Researchers have been trying to account for variety in the syntax of negation in different languages.

2.2.2.1 Sentential/clausal and constituent/local negation

Klima (1964) developed three different tests to distinguish between sentential and constituent negation. Negation is usually categorised as sentential/clausal and constituent/local (Holton et al., 1997; Huddleston, 1984; Quirk et al., 1985). This distinction is very important for the study of negation. In clausal negation the negative marker takes scope over the whole clause whereas in constituent negation the scope of negation is confined to a specific constituent of the clause. Following Klima's work, linguists use particular tests in order to define sentential negation. These tests consist of 'diagnostic' sentences specific to each language. Regarding English diagnostic testing is based on the following: a negative sentence in English allows a positive tag question (a.1), it also allows a tag with 'neither' (a.2), furthermore sentential negation also licences a negative polarity item (a.3).

2.2.2.1-a.1 She wasn't happy, was she?

* She wasn't happy, wasn't she?

a.2 She wasn't happy, neither was I.

* She was happy, neither am I.

a.3 She wasn't happy with anyone.

* She was happy with anyone.

Veloudis (1982) points out that in Modern Greek, negative sentences do not allow the occurrence of tag questions without the use of *δεν* or *μην* (b.1). The occurrence of *ούτε και* (neither) in a conjoined phrase (b.2) and of quantifiers (b.3) is also not allowed without the use of '*δεν*' or '*μην*'.

2.2.2.1-b.1 Η Μαρία δεν έρχεται σπίτι, έρχεται;
the Maria not comes home, comes?
Maria doesn't come home, does she?
* Η Μαρία έρχεται σπίτι, έρχεται;
the Maria comes home, comes?
* Maria comes home, does she?

b.2 Η Μαρία δεν έρχεται σπίτι ούτε και η Άννα.
the Maria not comes home neither and the Anna
Maria doesn't come home and neither does Anna.
* Η Μαρία έρχεται σπίτι ούτε και η Άννα.
* Maria comes home neither does Anna.

b.3 Δεν έρχεται κανείς.
not comes nobody
There isn't anybody coming.
* Έρχεται κανείς.
comes nobody
Nobody comes.

'Diagnostic' sentences are efficient only when used for the study of sentential negation. Any attempt to use them as 'diagnostic' tools for constituent negation results in ungrammatical sentences in English (c.1) as well as in Modern Greek (c.2, c.3, c.4).

2.2.2.1-c.1 * Not long ago Maria came home, did she?
* Not long ago Maria came home and neither did Anna.
* Not long ago Maria came home with anyone.

c.2 * Όχι πολύ καιρό πριν η Μαρία ήρθε σπίτι, ήρθε;
no much time ago the Maria came home, came?
* Not long ago Maria came home did she?

c.3 * Όχι πολύ καιρό πριν η Μαρία ήρθε σπίτι, ούτε και η Άννα.
no much time ago the Maria came home, either and the Anna
* Not long ago Maria came home and neither did Anna.

c.4 * Όχι πολύ καιρό πριν ήρθε σπίτι κανείς.
not much time ago came home nobody
* Not long ago came home nobody.

2.2.2.2 The scope of negation

The notion of scope in negation is found in formal logic and denotes the range that is governed by an operator. Scope of negation is a grammatical term indicating the range of

semantic reference of negation. In other words, the scope of negation indicates the parts of a sentence which are affected by negation. As previously mentioned, the scope of negation has two manifestations: it can be clausal, where the verb of the clause and consequently the whole clause is negated; or it can be constituent, where a part of the clause other than the verb is negated. There are researchers (Haegeman, Zannutini and others) who follow the theory of generative grammar and argue that scope must be computed at surface structure. According to Haegeman (1995), the distinction between sentential and constituent scope of negation is related to the NEG-criterion, which is fulfilled by sentential negation and not by constituent negation. According to NEG-criterion, a Spec-Head (specifier – Head) relation is responsible for sentential negation.

NEG-criterion

a) A NEG-operator must be in a Spec-head configuration with an X [NEG].

b) An X [NG] must be in a Spec-head configuration with a NEG-operator.

Based on the following definitions:

- NEG-operator: a NEG-phrase in a scope position.
- Scope position: a left-peripheral A'-position (i.e. XP-adjoined or Spec).

(Haegeman, 1995, p. 106-107).

2.2.2.3 Negative concord and double negation

Negative concord (NC) and Double Negation (DN) are phenomena related to the meaning of a negative sentence which includes two negations.

Example (a.1) illustrates what is usually referred to as negative concord and example (a.2) illustrates what is usually mentioned as double negation. Sentence (a.2) includes two negative constituents; (no one) and (nothing). Each one of these negative constituents has its own negative force and as a result they cancel each other. Thus, (a.2) has the same meaning with the sentence 'everyone wants something'. On the other hand, in (a.1) the negative constituents do not cancel each other despite the fact that the sentence contains two negative constituents; *δεν θέλω* (don't want) and *τίποτε* (nothing). In this sentence the negative constituents are joined to express a single negation.

2.2.2.3 a.1 **Δεν** θέλω τίποτε.

not want nothing

I don't want anything.

a.2 No-one wants nothing.

Languages vary as to whether they express negative concord or double negation. Modern Greek is a negative concord language, and Standard English is a double negation language. However, Labov (1972) notes that in non-standard varieties the English language becomes a negative concord language. Any attempt to reverse the polarity of the verb in clauses (b.1) and (b.2) will result in ungrammatical clauses for both languages.

2.2.2.3 b.1 * **Κανείς** θέλει τίποτε.

nobody wants nothing

Nobody wants nothing.

b.2 * I don't want nothing[7].

2.2.2.4 Negative polarity items

Negative polarity items (NPIs) are words or expressions whose distribution is restricted to a specific syntactic environment. This environment always includes a negative element. If the sentence does not contain a negation then the result is ungrammatical (a.1).

2.2.2.4-a.1 I don't need **anyone.**

* I need **anyone.**

Hoeksema (2000) indicates that the above pair of sentences resembles a minimal pair. Examples in (a.1) are like a minimal pair of negative and affirmative sentences where the negative one is grammatical. Negative polarity items are also attested in Modern Greek (a.2, a.3).

2.2.2.4-a.2 **Δεν** χρειάζομαι **κανένα.**

not need anyone

I don't need anyone.

a.3 * Χρειάζομαι **κανένα.**

need anyone

* I need anyone.

In this case absence of negation also results in an ungrammatical sentence.

---

[7] This sentence (a.2) is acceptable in non-standard varieties of English (Labov, 1972).

2.3 Negation in sign languages

Since sign languages are natural human languages, they express negation. A basic difference between signed and spoken languages involves the way languages are articulated. Spoken languages use the upper respiratory system, vocal cords, and mouth. Hearing is the main way to perceive and understand a spoken language. Sign languages on the other hand are visual-spatial languages. Signers move their hands in space and use their hands for articulation. In addition, various non-manual features like head movements, facial expressions and body movements are used as part of the morphology and syntax of a sign language. The main way to perceive and understand a sign language is vision. Differences in articulation are important not only in the way that sign language is articulated in general, but also for the study of it. In the case of negation, linguistic research has shown that negation is expressed by the use of both manual negation signs and features of non-manual negation (Baker and Cokely, 1980; Deuchar, 1984; Sutton-Spence and Woll, 1999; Woodward, 1974, etc.).

2.3.1 Manual negation signs

Much like spoken languages, sign languages use specific signs with negative meaning in order to express negation. Signs of negation can be divided into two subgroups: negation signs and signs of incorporated negation. Negation signs include negative particles such as *no*, *not* and signs with negative meaning such as *nothing*, *never*, etc., which operate as quantifiers, adverbs and so on. Signs of incorporated negation are verbs which have incorporated negation such as *know-not*, *want-not*, etc. Signs of incorporated negation always express sentential/clausal negation.

2.3.1.1 Negation signs and negative particles

ASL and BSL are among the most researched sign languages. In both of these languages there are reports regarding the use of various negation signs, which can be translated as *no*, *not*, *not yet*, *nothing*, *nobody* and *never* (ASL: Baker and Cokely; 1980; Bellugi and Fischer, 1972; Isenhath, 1990; Liddell, 1980, 2003; Neidle et al., 2000; Stokoe, 1960; BSL: Deuchar, 1984; Lawson, 1983; Sutton-Spence and Woll, 1999). Negation signs correspond to negative particles, pronouns, quantifiers, adverbs, etc. Signs with similar meaning have also been reported in ENG (Antzakas and Woll, 2001), Swedish Sign Language (Bergman, 1995), German Sign Language (Pfau, 2002; Pfau and Quer, 2003a, 2003b), Catalan Sign

Language (Pfau and Quer 2003a, 2003b; Quer, 2002), Argentinean Sign Language (Veinberg, 1993), Brazilian Sign Language (Ferreira-Brito, 1990; Quadros, 2003), Jordanian Sign Language (Hendriks, 2004), Turkish Sign Language (Zeshan, 2003a), Chinese Sign Language (Yang and Fischer, 2002), Indo-Pakistani Sign Language (Zeshan, 2003b) and Russian Sign Language (Grenoble, 1992). The use of a negative particle (no) has been reported for all of the above sign languages.

Bergman (1995) reports the use of two mono-morphemic forms glossed as FUT-NEG and PERF-NEG[8] in addition to the standard negative particle NOT. Antzakas and Woll (2001) mention the use of three negative particles in ENG. Hendriks (2004), in her work on Jordanian Sign Language (LIU), reports the use of NO as a negative particle, and the use of signs with inherent negative meaning like IMPOSSIBLE, EMPTY as well as ZERO which has the meaning of *nobody*. Furthermore, Zeshan (2003b) reports the use of the negative sign in Indo-Pakistani Sign Language which is used in different expressions of negation.

Zeshan (2004) conducted a typological study of sign language negation which included data from 38 sign languages from all over the world (all the aforementioned languages were included in the study except for Jordanian Sign Language). This work illustrates how the vast majority of sign languages make use of negative particles. In the same study, the most common types of negation signs are reported: the negative completive *not yet*; emphatic negatives like *not at all*, *really not*, *absolutely not*; negative interjections containing signs which occur as one-word utterances and include a variety of meanings such as *no*, *not me*, *not at all*, etc. and contrastive negative signs where a particle is used to express a negative meaning in contrast to what has been declared.

2.3.1.2 Signs of negative incorporation

The second group of signs of negation is known as signs with negative incorporation or signs of incorporated negation. Negative incorporation is described for ASL by Woodward (1974, p. 22) as 'several verbs that may be negated by a bound outward twisting movement of the moving hand(s) from the place where the sign is made'. According to Sutton-Spence and Woll (1999), these are often verbs of experience or sensation. Signs of negative incorporation can have the meaning of *have-not*, *like-not*,

[8] FUT-NEG is used for future tense negation and PERF-NEG is for perfect negation.

want-not, *know-not*, *agree-not*, *believe-not*, *should-not*, etc. (Baker and Cokely, 1980; Deuchar, 1984 and 1987; Sutton-Spence and Woll, 1999; Woodward, 1974). Signs of incorporated negation have been reported by many researchers for both ASL and BSL (ASL: Baker and Cokely; 1980; Isenhath, 1990; Liddell, 1980; BSL: Deuchar, 1984; Sutton-Spence and Woll, 1999). As with negation signs, signs of incorporated negation have also been reported in ENG (Antzakas and Woll, 2001; Sapountzaki, 2005), Argentinean Sign Language (Veinberg, 1993), Brazilian Sign Language (Ferreira-Brito, 1990), Chinese Sign Language (Yang and Fischer, 2002) and Russian Sign Language (Grenoble, 1992). Zeshan (2004) reports that the two most common groups of signs with negative incorporation are: firstly negative existentials, such as *not exists*, *there is/are no*, where in most cases the negative existential and negative possessive are expressed with the same sign; and secondly negative modals, such *cannot* (which exists in most sign languages), *need not*, *will not*, or *should not*.

2.3.1.3 Negation signs and signs with negative incorporation

Zeshan (2004) notes for both sign categories that, although the vast majority of sign languages use negative particles, the variety of negatives across sign languages is important. Nevertheless, there are two common characteristics for the sign languages in her study. The first is that negative particles are always uninflected. The second is that none of the sign languages use morphological marking as a primary device. In sign languages the use of morphological means for negation is a phenomenon applied to a limited number of signs. Relevant literature indicates that the boundary between these two groups of signs (negation signs and signs of incorporated negation) is not always clear. Baker and Cokely (1980) indicate that ASL creates negation signs by binding two signs (e.g. *never~hear*, *not~here*, *why~not*). Furthermore, Zeshan (2004) reports that in Ugandan Sign Language NOTHING has a dual function; as a negative existential as well as a negative quantifier.

Zeshan (2004) also mentions that according to Meir (2002), Israeli Sign Language uses many negators in addition to a basic negator: three negative imperatives, two existentials, a negative completive, a negative past and an emphatic negator. These negators are related to specific lexical categories so that the use of an inappropriate negator results in ungrammatical clauses (a.1, a.2).

2.3.1.3-a.1 INDEX1 COMPUTER **NEG-EXIST / * NEG-PAST / * NOT**[9]

I don't have a computer.

a.2 CHAIR INDEX3 SLEEP COMFORTABLE **NOT / * NEG-PAST / * NEG-EXIST**

The chair is/was not comfortable.

(Zeshan, 2004, p. 35).

The use of more than one negative particle has also been reported in Swedish Sign Language. Bergman (1995) points out the use of a future negator (FUT-NEG) and perfect negator (PERF-NEG) in addition to regular NOT negator. FUT-NEG and PERF-NEG mark negation in sentences with future and perfect aspect respectively (b.1, b.2, b.3)[10].

_____HeadNeg

2.3.1.3 b.1 INDEX-f1 **NOT** MEMBER

He is not a member.

_____HeadNeg

b.2 TOMORROW | **FUT-NEG** WORK INDEX-c

I won't work tomorrow.

_____t _____HeadNeg

b.3 POSS-c BROTHER | **PERF-NEG** MEET PERSON

My brother hasn't met him.

(Bergman, 1995, p. 87-88).

Indo-Pakistani Sign Language also makes use of various negators for different expressions of negation (Zeshan, 2003b). Thus, NAHI:N' is used as negator for a proposition (c.1), NA:_NA: is used for contrastive negation (c.2) and NAKRO is used for negative imperative (c.3).

2.3.1.3 c.1 $AHAR ACHA: **NAHI:N'**

city good NEG

Cities aren't nice.

c.2 GA:ON' ACHA:. $AHAR **NA:_NA:**

village good city NEG_CONTR

Villages are nice. By contrast, cities are not.

---

[9] The asterisk (*) in front position of a lexical item mean that the use of the specific lexical item constructs an ungrammatical sentence and therefore not possible.

[10] No particular explanation about glossing convention is given in the particular paper. Based on the author's translation, we assume that 'f1' suffix stands for second/third person and 'c' suffix for first person. It also seems that the vertical line '|' indicates phrase boundaries. 'HeadNeg' is used for the negation head movement which corresponds to the headshake.

c.3 MA:RNA: **NAKARO**

beat-I NEG_IMP

Please don't beat me!

(Zeshan, 2003a, p. 192-195).

The use of three negative particles has also been noted in ENG (Antzakas and Woll, 2001). Hendriks (2004), reports that Jordanian Sign Language (LIU) makes use of a suffix which is attached to verbs and adjectives and negates them. This suffix does not apply to nouns. The author describes it as an abbreviated form of the one handed negative existential used in Jordanian Sign Language. Furthermore, suffixes are also reported in Chinese Sign Language (Yang and Fischer, 2002) where the suffixation system is rich. Firstly, Chinese Sign Language makes use of a basic negative handshape (coded as NG, which is handshape 'I' according to the authors). By adding movement to the negative handshape some basic negative signs are produced, like *BUHAO* (wrong), *BUNENG* (impossible), etc. These signs and the negative handshape (NG) can be used as affixes in order to construct negative forms (d.1, d.2).

2.3.1.3-d.1 XINGI- **NG**

fortunate neg

Unfortunate.

d.2 JISHU – **BUHAO**

skill bad

Not skilful.

(Yang and Fischer, 2002, p. 184).

In addition to this, a handwave is also used as manual marker of negation. The waving handshape has the meaning of *not* - BU and it can be used as a suffix (d.3).

2.3.1.3-d.3 **BU** – SHI

not be

(Yang and Fischer, 2002, p. 185).

The affixation strategy has also been reported by Zeshan (2004) for Finnish Sign Language. An outward movement affixed on a verb changes the polarity of the sign creating its negative form. Zeshan (2004, 2003a) also mentions the use of negative clitics in Turkish Sign Language. The negative particle NOT (DEGIL) can be used as a free morpheme or as a clitic attached to a predicate. The clitic form of the sign itself differs

from its full form in various phonological features. Clitics come at the end of the sign (enclisis). According to the author, the use of the morphemic and clitic NOT in Turkish Sign Language resembles the use of *not* and its reduced form *'nt* in English. In addition, Zeshan describes the use of bound negative morphemes in ASL and Israeli Sign Language by referring to the work of Aronoff, Meir and Sandler (2000) and Meir (2002) respectively. In ASL, a negative morpheme glossed as ZERO has been considered as a suffix. In Israeli Sign Language, the use of derivational affix +LESS has also been described.

Information on the formation of imperative in sign languages is limited. According to Fischer and Gough (1978), changes of speed, intensity and size of execution of the sign, signal the imperative in ASL. This view has also been supported by Frishberg and Gough (2000) and Newkirk (1998) (in these two cases the original work of the researchers goes back to 1980 and 1973, respectively). Russian Sign Language follows a different path and makes use of a specific marker (sign PROSHU meaning 'I request', 'I command') in order to form the imperative (Grenoble, 1992). Turkish sign language has a movement reduction of the sign (Zeshan, 2003a) that becomes single and 'accentuated'.

2.3.2 Non-manual features of negation

The categorisation of non-manual signals including: head movements, facial expression and movements of the body, can range from pantomime to grammatical signals which are obligatory to specific syntactic structures (Liddell, 1980). As grammatical signals, non-manual features are used in sign languages to mark negation, interrogatives, conditionals and topics. In addition, non-manual features are used as adverbs of manner and degree and for affective expression such as surprise, ambiguity or sadness. (Baker-Shenk, 1983, 1985; Baker and Cokely, 1980; Liddell, 1980; Sutton-Spence and Woll, 1999). Although non-manual components were always reported as playing a crucial role in the structure of sign language, researchers initially used to pay more attention to manual activities than to non-manual features of sign language (Deuchar, 1984). However, in the last three decades more and more data about negation and especially about non-manual features has been collected through various studies. Sign language researchers have identified two basic categories of features of negation: negation head movements and facial expression of negation.

2.3.2.1 *Negation head movements*

Sign language researchers refer to the use of three negation head movements: the headshake, the headturn and the headtilt. The headshake is probably the most common negation head movement across sign languages. It is a repeated side-to-side movement of the head where the head rotates around the neck as an axis. It is often accompanied by a negation facial expression. Stokoe (1960) first refers to the relation of the headshake to negation in ASL. Stokoe's work was furthered by a number of researchers like Baker and Cokely (1980), Bellugi and Fischer (1972), Isenhath (1990), Liddell (1980), Valli and Lukas (2000) and others. The headshake is also found in numerous other sign languages: BSL (Lawson, 1983, Sutton-Spence and Woll, 1999), ENG (Antzakas and Woll, 2001), Swedish Sign Language (Bergman, 1995 and 1984), Sign Language of the Netherlands (Coerts, 1992; van Gijn, 2004), German Sign Language (Pfau, 2002; Pfau and Quer 2003a, 2003b), Catalan Sign Language (Pfau and Quer 2003a, 2003b; Quer, 2002), Argentinean Sign Language (Veinberg, 1993), Brazilian Sign Language (Ferreira-Brito, 1990; Quadros, 2003), Chilean Sign Language (Pilleux, 1991), Jordanian Sign Language (Hendriks, 2004), Chinese Sign Language (Yang and Fischer, 2002), Turkish Sign Language (Zeshan, 2003a), Indo-Pakistani Sign Language (Zeshan, 2003b) and International Sign (Webb and Supalla, 1994). Zeshan (2004) notes that the headshake is used as negation head movement by all thirty-eight sign languages examined in her typological study.

A second negation head movement was initially reported by Sutton-Spence and Woll (1999). The authors note that in BSL, a 'negation turn' of the head is used by the signers. In this movement the head makes a half turn and is held there[11]. The headturn is also reported in other sign languages, namely: ENG (Antzakas and Woll, 2001), Jordanian (Hendriks, 2004) and Chinese sign languages (Yang and Fischer, 2002). In addition, Zeshan (2004) notes that the headturn is used in Irish, Belgian, Russian and Quebec sign languages. Based on the observation that the relation of the headturn to the headshake is not clear, Zeshan (2004) and Hendriks (2004) consider the headturn as a reduced form of the headshake.

The third negation head movement regards the headtilt where the head moves backwards and the chin moves upwards. The headtilt is reported by Coerts (1992) in the Sign Language of the Netherlands. This particular head movement is rare in this sign language, representing one percent of all the examples and was used by only a single signer.

[11] We will refer to this head movement as 'headturn' from now on.

Therefore, the headtilt was not considered as part of negation head movements in Sign Language of the Netherlands. According to Antzakas and Woll (2001), Hendriks (2004) and Zeshan (2003a), the headtilt is used for negation in ENG, Jordanian and Turkish sign Languages respectively. The headtilt has also been reported by Sapountzaki (2005, p. 158) in ENG and has been described as an *upwards* movement of the head. Zeshan (2004) also refers to the use of this head movement in the sign language used in Lebanon. All three researchers indicate that the headtilt is also used as negation gesture by the hearing people in the corresponding countries. Furthermore, Zeshan (2003a, 2004) points out that a headtilt is often accompanied by raised eyebrows.

Negation head movements can spread over a single sign, a part of a clause or over a whole clause (a.1, a.2, a.3). For the majority of sign languages, a negation head movement is also used to negate a clause in the absence of manual negation (a.4). In this respect Chinese Sign Language is an exception (Yang and Fischer, 2002). The authors note that such a structure of negation is impossible and a clause like (a.4) is ungrammatical in Chinese Sign Language. The clauses sited below present the possible options for the position of the negation head movements (neg-head) based on examples from various sign languages. When related to negation head movement spread, sign languages express greater variation than in the following examples.

2.3.2.1-a.1 INDEX1 MEAT EAT **NOT**
___neg-head

a.2 INDEX1 MEAT EAT **NOT**
_____neg-head

a.3 INDEX1 MEAT EAT **NOT**
_____neg-head

a.4 INDEX1 MEAT EAT
_____neg-head

I don't eat meat.

Researchers also indicate that in some sign languages the negation head movement may occur after the sentence. In these cases, the sentence does not include any manual negation. This post-sentence negation head movement has been reported in BSL (Sutton-Spence and Woll, 1999), ENG (Antzakas, 2006) and Chinese Sign Language (Yang and Fischer, 2002). In addition, Turkish Sign Language and Irish Sign Language also form negation clauses by post-clausal negation head movement (Zeshan, 2004) (a.5).

_____neg-head

2.3.2.1-a.5 INDEX1 MEAT EAT

The above examples (a.1-a.5) form a general picture of the use of negation head movements. However, there are exceptions as well as restrictions concerning the use and spread of a negation head movement in various sign languages. For example, in BSL, a negative single headturn is found to accompany negation signs but it is not used as a negator of a whole sentence (Sutton-Spence and Woll, 1999). Thus, a sentence like (b.1) would be unacceptable in BSL.

_____headturn

2.3.2.1 b.1 ?[12] INDEX1 MEAT EAT **NO**

Antzakas (2006) reports that a negative headturn in ENG is not restricted to specific negation signs or particular sentence constructions. In contrast to BSL, the headturn in ENG has the same status as the headshake. In the same study it is also noted that the headturn is not used to negate a sentence which does not include a manual negation sign. In addition, Zeshan (2004) mentions that a clause which lacks manual negation cannot be negated by a negative headshake in Japanese Sign Language or Sign Language of Bali.

Hendriks (2004) and Yang and Fischer (2002) note that in Jordanian and Chinese sign languages respectively, negation head movements co-occur with negative sentences when these include a manual negator. In the case where a manual negator is absent, a negation head movement alone is not sufficient to negate the sentence. In Chinese Sign Language (Yang and Fischer, 2002) the co-occurrence of a headshake with a sign, without any other manual negation, results in ungrammatical structures (b.2).

_____headshake

2.3.2.1-b.2 * DONG

understand

(Yang and Fischer, 2002, p. 175).

In contrast to this Yang and Fischer (2002) mention that this is not the case for Hong Kong Sign Language although it is related to Chinese Sign Language. Nevertheless, (b.2) it can become grammatical if the headshake is performed after the manual part (b.3).

[12] The question mark (?) in front position means that the sentence may be partial ungrammatical or unacceptable.

_____headshake

2.3.2.1-b.3 DONG

I don't understand

(Yang and Fischer, 2002, p. 176).

The above structure is not sufficient to negate a positive sentence. In this case the signer has to apply a positive facial expression (pfe) that will co-occur with the sign and after the end of the manual part of the sign a headshake should follow (b.4). In the case where the positive facial expression (pfe) and the headshake would co-occur, then the structure would become ungrammatical (b.5).

_____pfe _____headshake

2.3.2.1-b.4 ZHI (INDEX) XIHUAN

pointing like

I do not like it.

_____headshake

_____pfe

b.5 * ZHI (INDEX) XIHUAN

pointing like

(Yang and Fischer, 2002, p. 177).

Finally, in some sign languages the negation head movement comprises an obligatory part of negation. In theses sign languages the negation head movement has to occur not only in sentences where the manual negator is absent but also in sentences with a manual negator. There are cases where absence of the negation head movement will result in ungrammatical sentences. Such languages are ASL, German Sign Language, Catalan Sign Language and Swedish Sign Language. The application of negation head movement in these languages is presented in section 2.3.3.2.

2.3.2.2 Negation facial expressions

Negation facial expression is the second set of non-manual features related to sign language negation. Sign languages employ a wide variety of facial expression of negation. A major problem with research into negation facial expression is that scholars do not use a standard terminology in their analyses. As a result, they often describe identical or similar features in different terms. A brief review of features of negation facial expression in various sign languages is presented below.

Baker and Cokely (1980) note that, in ASL, facial expression for negation consists of a frown with brows lowered, a wrinkling of the nose and/or raising of the upper lip. Narrowing of the eyes, a down-turned mouth, and raised upper and lower lip are also reported (Liddell, 1980). Baker and Padden (1978) and Bellugi and Fischer (1972) point out that although slightly furrowed and lowered eyebrows are sufficient for signalling negation on the face, a headshake is required for ASL negation.

Sutton-Spence and Woll (1999) report the existence of different levels of 'negative' facial expressions in BSL. These levels range from weak to strong expressions of negation. A mild level is indicated by pushing the lips out a little and narrowing the eyes slightly. A strong level of 'negative' facial expression occurs when the eyes are almost closed, the nose is wrinkled and the mouth is turned down or the lip is very curled. BSL also uses specific mouth gestures to accompany negation signs. These mouth gestures are part of the phonology of the signs and therefore are included in the description.

Bergman (1984) reports four main elements of facial expression for negation in Swedish Sign Language:

a) wrinkling of the nose

b) a raising of the upper lip

c) a depression the corners of the mouth

d) a raising of the chin.

More characteristics are also attributed to the first element, nose wrinkling: the brows of the signer are lowered, the eyes are narrowed, the cheeks are raised upwards, the nasolabial furrow may be deepened and the centre of the upper lip is pulled upwards.

Coerts (1992) indicates that for negation in Sign Language of the Netherlands the eyebrows are down, the eyes narrowed, the mouth closed or almost closed and the corners down or the lower lip pushed forward. Veinberg (1993) reports that facial expression for negation in Argentinean Sign Language includes: wrinkling of the nose, narrowing of the eyes, furrowing of the brows, lowering of the corners of the mouth and protrusion of the lips. She also notes that Pilleux, Guevas and Avalos (1991) report the use of brow furrowing and mouth movement in Chilean Sign Language. Yang and Fischer (2002, p. 173) show that Chinese Sign Language uses a main facial negator where 'the

brows are drawn together and lowered, the nose is wrinkled, and the upper lip raised'. Negative questions can be accompanied by negation facial expressions such as a frown, a wrinkled nose, and almost closed eyes superimposed on a questioning facial expression. Although Hendriks (2004) does not discuss negation facial expression in Jordanian Sign Language at length, she notes the use of a specific facial expression of negation during the analysis of one sentence: the corners of the mouth are down and the lips are pursed. To summarize, the most common characteristics found across various sign languages are as follows:

- The brows are lowered and furrowed, the eyes are narrowed and/or the nose is wrinkled.
- The eyes are almost closed or closed.
- Corners of the mouth (lip corners) are turned down (frown).
- The lower lip is pushed outwards and/or the upper lip is pulled upwards.

Zeshan (2004) mentions that sign languages use a large number of negation facial expressions and she provides a list of the most regularly occurring negation facial expression across sign languages indicating that these features occur in various combinations among sign languages. In addition to the features included in the above list, Zeshan (2004) also reports the use of nose wrinkling.

An additional facial feature reported in sign languages of the East Mediterranean regards brow raising. This feature is found in Jordanian Sign Language (Hendriks, 2004), Turkish Sign Language (Zeshan, 2003a) and the sign language used in Lebanon (Zeshan, 2004). According to Zeshan (2004), raised eyebrows usually accompany the movement of a headtilt.

Negation facial expressions can accompany a negative sentence with or without the co-occurrence of a negation head movement. Researchers of various sign languages such ASL, BSL, Swedish Sign Language, etc., claim that in these sign languages negation facial expression is not sufficient on its own to negate a sentence in the absence of manual negation. Zeshan (2004) also notes that negation facial expressions do not have the same status as negation head movements. Furthermore, Bergman (1995) and Sutton-Spence and Woll (1999) indicate that a negation facial expression which does not co-occur with a

headshake is not to be interpreted as a negator. In these cases, facial expression is rather interpreted as an emotional or attitudinal expression.

This general picture, however, is contradicted by exceptional cases in literature where negation facial expression is reported to negate a sentence without the use of a negation head movement or any manual negator. Bellugi and Fischer (1972) indicate that in some cases a headshake is 'diminished' to a slight frown which is sufficient to replace the headshake as negator of the sentence. However, Liddell (1980) disputes both Bellugi and Fischer and also a similar report by Baker, suggesting that what the researchers describe is probably a signal which expresses doubt. Veinberg and Wilbur (1990) make a similar observation based on an analysis of the negative headshake in ASL. They note the existence of three sentences which can be considered as negative sentences although no headshake or manual negator occurs and that negative meaning in these sentences was assigned by non-manual behaviour. They also point out that 'the prominence of the mouth can also be seen in three productions' (p. 230).

In a study on Jordanian Sign Language, Hendriks (2004) mentions that her language data includes a few sentences which are negated by means of negation facial expressions. As mentioned above, Jordanian Sign language uses negation head movements as negators. It is interesting in this case that although in one of the sentences a headshake occurs, Hendriks rather suggests that the headshake operates emphatically and not as non-manual negator. It is also noted by the author that these are regarded as preliminary findings which need to be confirmed by further research and additional data.

An exception, in which negation facial expression is used as a negator in its own right is to be found in Turkish Sign Language (Zeshan, 2003a). The researcher describes this facial expression as 'a puff of the cheeks with subsequent release of the air trapped in the mouth' (Zeshan, 2003a, p. 58). This non-manual signal conveys negative meaning and is sufficient to negate a clause even in the absence of any other manual negator (a).

_____puff

2.3.2.2 a OKUL sagEGITIM1

school (right) teach1

They didn't teach me anything at school.

(Zeshan, 2003a, p. 59).

A specific area of facial expression which has attracted the attention of sign language researchers is the use of the mouth. Relevant literature shows that the use of the mouth is indeed important in sign languages. In the previous section we referred to Veinberg and Wilbur (1990) who reported prominent use of the mouth in some negative sentences in some exceptional cases. Apparently, the authors indicate the use of mouth actions in these particular examples. Following Schermer's (1990) categorisation, Sutton-Spence and Woll (1999) divide mouth patterns into spoken components which are based on spoken languages, and oral components which are not. Boyes-Braem and Sutton-Spence (2001) note that mouth patterns deriving from spoken language are referred to as spoken components, word pictures and mouthing, whereas mouth patterns which are not related to spoken language are called mouth gestures, oral adverbials, mouth arrangements and oral components. The term mouthing is common among sign language researchers and its use is traced back to the initial issues of Sign Language Studies journal (Covington, 1973). Padden (1998) characterises mouthings as a natural representation of an oral language. According to Vogt-Svendsen (2001), a major difference between mouthings and mouth gestures is that mouthings can be traced back to the spoken language whereas mouth gestures cannot. As far as word pictures are concerned, Sutton-Spence and Woll (1999) state that they are borrowed from English, however due to the fact that their relation to spoken English cannot be easily traced they cannot be actually considered English. In this way word pictures are distinct when compared to other mouth patterns which can be directly traced to spoken English. Furthermore, Vogt-Svendsen (2001) refers to the use of mouth patterns as bound and free morphemes. The author explains that as bound morphemes, mouth patterns are part of the phonology of a manual sign, whereas as free morphemes they occur without a corresponding manual sign and in some cases they can modify a sign. In addition, Ebbinghaus and Hessman (2001) report the use of 'phonological "mouth components" ' in German Sign Language (DGS) in order to distinguish between BROTHER and SISTER which have identical manual parts.

To the best of our knowledge there is no dedicated study of mouth patterns of negation. However, generic studies of mouth patterns, do mention the use of negation mouth patterns. Sutton-Spence and Woll (1999) report the use of oral components like *vee, boo, thaw*, etc. with negation signs in BSL. Sutton-Spence and Day (2001) describe mouth gestures which are used with specific signs of negation like NO, NOTHING and NOT-YET in the same sign language. Vogt-Svendsen (2001) also illustrates the use of a mouth gesture with a sign meaning 'have not done' in Swedish Sign Language. In Finnish

Sign Language variations of a particular mouth gesture appear to be used with signs meaning 'not for long', 'not at all, it was not me' and 'not my fault; no more; no room' (Rainò, 2001). Furthermore, Boyes-Braem (2001) notes that in Swiss German Sign Language mouthings of the word *not* (*nicht* in German) is used to signify negation even in cases where no manual sign of negation or head movement of negation occur within a sentence. This mouthing primarily accompanies the sign *can* changing this way the polarity of the sign to *cannot.* The use of mouthings or mouth gestures combined signs of negation has also been reported in German Sign Language (Ebbinghaus and Hessman, 2001; Hohenberger and Happ, 2001) and in Italian Sign Language (Ajello, Mazzoni and Nocolai, 2001).

Another research area of non-manual features in sign languages regards the body movements. Wilbur and Patschke (1998) argue that body leans are phonetic stress markers which, among others, indicate emphasis or focus. In ASL, a lean back of the body is 'associated' with various verbs like DENY, AVOID and DON'T-WANT. Furthermore, researchers argue that a variant of backwards lean is the shrug. In a similar study, van der Kooij et al. (2006) notes that the backward lean of the body is associated with DON'T-WANT and DISAGREE among other verbs in the Sign Language of the Netherlands. It is important that in both studies (van der Kooij et al., 2006; Wilbur and Patschke, 1998), the authors argue that the backward lean conveys the notion of non-involvement when occurring with verbs. Also, the backward lean of the body may convey the notion of 'exclusion' and at a pragmatic level it can even indicate negation or denial (van der Kooij et al., 2006; Wilbur and Patschke, 1998).

2.3.2.3 The combination of manual negation signs and non-manual features of negation

It has already been mentioned that features of non-manual negation co-occur with manual signs. In relation to this co-occurrence, the physical and grammatical characteristics of non-manual signals and their temporal features in relation to manual signs are the areas that have been examined by researchers. The majority of the earliest work in this area was comprised by Scott Liddell (1980), Charlotte Baker-Shenk (1983, 1985) and Baker and Padden (1978). Liddell (1980) distinguishes two groups of non-manual components: grammatical and affective. Grammatical non-manual signals occur with particular sign categories, accomplish specific grammatical functions and their scope is related to their syntactic purpose. On the other hand, affective non-manual signals do not necessarily occur with manual signs. They carry information for communicative purposes, their

appearance is not determined by specific rules and their scope is independent of the syntax. The differences between grammatical and affective non-manual signals are also related to the onset and offset of non-manual features. Regarding this topic, many researchers have referred to Baker-Shenk (1985, 1983) and her work on the analysis of non-manual components. She describes how the onset and offset of grammatical non-manual signals is regulated by grammatical operations. The author also explains that the duration of a grammatical non-manual component correlates to the duration of the manual sign/signs over which it has scope. In contrast, affective non-manual features have inconsistent patterns of onset and offset in terms of the related manual part of the sentence. Bahan (1996), while examining negation headshake in ASL notes that an anticipatory turn movement just prior to the articulation of the negative particle is observed. The author informs us that anticipation of this form has also been noted by Baker-Shenk (1983) and Liddell (1980).

This categorisation and these remarks about grammatical and affective non-manual features are particularly important for sign language negation in relation to the use of negation head movements and facial expression of negation. Negation head movements are usually considered as grammatical non-manual components because they appear in negative sentences, their appearance is regular and their scope is related to the manual negation signs. In addition, negation head movements can be used to negate a sentence even when manual negation is absent.

Facial expressions in general have been recorded to have dual function: affective and grammatical (Baker-Shenk, 1983; Baker and Cocely, 1980; Baker and Padden, 1978; Liddell, 1980; Sutton-Spence and Woll, 1999; Valli and Lukas, 2000 and many others). However, only in a few cases have negation facial expressions been considered as performing the function of a non-manual grammatical signal. Zeshan (2004) points out that the grammatical status of negation facial expressions is uncertain in most languages. Their appearance is not always determined by specific rules and in most cases occurs in various combinations. They are generally considered as optional in contrast to negation head movements. In view of the small number of studies in which non-manual features of negation are reported as independent sentence negators (Baker and Cokely, 1980; Bellugi and Fischer, 1972; Veinberg and Wilbur, 1990; Zeshan, 2003a), we may conclude by saying that negation facial expressions cannot be considered to function alone as sentence negators in the majority of sign languages.

There is not sufficient data available regarding the relation to the onset and offset of negation head movements and negation facial expressions. Following Liddell's (1980), Baker-Shenk's (1985, 1983) plus Baker and Padden's (1978) analyses, it is assumed that the onset and offset of a negation head movement will be strictly related to the onset and offset of a manual negator since both are considered grammatical features in a sign language. Facial expressions, on the contrary, are expected to have a looser relation in terms of onset/offset time. Concerning the use of negation head movements, the question may be raised in respect of those sign languages that allow a negation head movement to occur after the end of a sentence/clause (Sutton-Spence and Woll, 1999, on BSL; Antzakas, 2006, on ENG; Hendriks, 2004 on Jordanian Sign Language; Yang and Fischer, 2002, on Chinese Sign Language; Zeshan, 2003a, on Turkish Sign Language; Zeshan, 2004, on Irish Sign Language). Post-sentence negation head movement does not follow the condition that a grammatical non-manual component co-occurs with the signs over which it has scope. However, it is important to note that in reported examples where the negation head movement occurs after the sentence, there is no manual negator present in the sentence.

2.3.3 The syntax of negation in sign languages

Few studies have been undertaken on the syntax of negation in sign languages. They rather refer only to sentential/clausal negation. The only study which provides some information about constituent negation is Zeshan's (2004) typological study. Zeshan has also noted elsewhere (2003b) that the Indo-Pakistani Sign Language does not have syntactic structures for constituent negation. The lack of data about constituent negation is not unexpected since research on the syntax of sign languages in general is a relatively new area. In many sign languages there are still questions about the function and the use of negation signs. Therefore, it comes as no surprise that some fundamental questions regarding syntax sign languages have not been answered yet, such as basic word order.

2.3.3.1 Word order in sign language negation

Most of the research on negation in sign languages has no explicit information regarding word order in a negated sentence/clause. Taking into account the numerous examples presented in the various studies, it appears that in many sign languages sentential negation is expressed by placing the negative item after the verb of the sentence. Zeshan (2004,

p. 39) remarks that this is found 'almost exclusively by European sign languages and their derivatives in Australasia and the Americas'. Disregarding for the present the individual syntactic differences amongst sign languages, it can be suggested that a general form of a sentence with pre-verbal negation would be similar to (a.1) and one with post-verbal negation would be as in (a.2).

2.3.3.1-a.1 INDEX1 **NO** EAT MEAT

a.2 INDEX1 MEAT EAT **NO**

Within these examples, it is also suggested that the post-verbal position of a negative item often coincides with the final position of the sentence, as in (a.2). Pfau and Quer (2003) claim that German and Catalan sign languages have a subject-object-verb (SOV) word order and accordingly 'the manual Neg sign follows the verb' (Pfau and Quer, 2003, p. 2) (a.3, a.4).

2.3.3.1-a.3 SANTI CARN MENJAR **NO** ___hs[13] (LSC)

Santi meat eat not

Santi doesn't eat meat.

a.4 MUTTER BLUME KAUF **NICHT** _____hs (DGS)

mother flower buy not

Mother is not buying a flower.

(Pfau and Quer, 2003a).

In a similar way, the negative particles in Indo-Pakistani Sign Language occupy clause-final position (Zeshan, 2003b).

2.3.3.1 b.1 $AHAR ACHA: **NAHI:N'**

city good NEG

Cities aren't nice.

b.2 GA:ON' ACHA:. $AHAR **NA:_NA:**

village good city NEG_CONTR

Villages are nice. By contrast, cities are not.

[13] Abbreviation of non-manual signals follows the abbreviations used by the researchers. Pfau and Quer (2003) use the non-manual feature 'hs' to indicate the use of a headshake.

b.3 MA:RNA: **NAKARO**

beat-I NEG_IMP

Please don't beat me!

(Zeshan, 2003a, p. 192-195).

On the other hand, there are sign languages which apply pre-verbal negation. One of the best known is pre-verbal negation in ASL. According to Neidle et al. (2000), the underlying word order in ASL is subject-verb-object (SVO). ASL employs pre-verbal negation when the negative particle *not* is used (c.1).

___neg[14]

2.3.3.1-c.1 JOHN **NOT** BUY HOUSE

John is not buying a house.

(Neidle, Kegl et al., 2000, p. 44).

However, it seems that pre-verbal negation, although valid for the negative particle, does not constitute a general strategy for negation sentences in ASL. According to Baker and Cokely (1980), although negation signs occur before the verb, they can also be found after the verb. Padden (1981) provides some examples with NOTHING as the manual negator of the clause. She points out that NOTHING occurs at the end of the clause and consequently after the verb of the particular clause (c.2).

_____n____[15]

2.3.3.1-c.2 I SEE PEOPLE, **NOTHING**

I don't see any people.

(Padden, 1981, p. 246).

Swedish Sign Language uses NOT, FUT-NEG and PERF-NEG for sentential/clausal negation. According to Bergman (1995), NOT and FUT-NEG can occupy either pre- or post-verbal position in negation. NOT corresponds to the negative particle *not*. Its position within the sentence varies in relation to the status of the predicate. Thus, NOT precedes a non-verbal predicate (d.1) and follows a verbal predicate (d.2).

---

[14] Neidle et al. (2000) uses the non-manual feature 'neg' to indicate a furrowing of the eyebrows and a headshake.

[15] Padden (1981) uses the non-manual feature 'n' to indicate squeezed eyebrows and a negation headshake.

_____**FaceNeg**[16]
_____**HeadNeg**[17]
2.3.3.1-d.1 INDEX-f1 **NOT** MEMBER

He is not a member.

_____**HeadNeg**
d.2 BUT INDEXdownx2 | COUNTRY IN EUROPE MANAGE **NOT**

But the European countries have not managed in this respect.

(Bergman, 1995, p. 87-88).

FUT-NEG occurs with time reference. In this case it can express a referent's intention but not if the referent is inanimate. It may also be placed before the verb (as an auxiliary) (d.3), or it can be sentence-final (d.4).

_____**HeadNeg**
2.3.3.1-d.3 TOMORROW |**FUT-NEG** WORK INDEX-c

I won't work tomorrow.

_____**HeadNeg**
d.4 INDEX-f1 EAT MEAT **FUT-NEG**

He doesn't eat meat.

(Bergman, 1995, p. 89-90).

PERF-NEG is a perfective marker of negation and it is placed before the verb in the auxiliary position (d.5).

_____t _____**HeadNeg**
2.3.3.1-d.5 POSS-c BROTHER | **PERF-NEG** MEET PERSON

My brother hasn't met him.

(Bergman, 1995, p. 91).

Quadros (1999, 2003), who examined word order in Brazilian Sign Language, provides interesting information about the position of the negative particle and its relation to the verb. She notes that the negative particle (NO) does not have a fixed surface position but it rather changes in relation to the class of verb: plain verb or non-plain verb. In non-plain verbs (an agreement verb in the following example) the negative particle occupies a pre-verbal position (e.1).

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[16] Bergman (1995) uses the non-manual 'FaceNeg' to indicate the use of negation facial expression in general.

[17] Bergman (1995) uses the non-manual feature 'HeadNeg' to indicate the use of a headshake.

_____neg[18]

2.3.3.1-e.1 JOHNa **NO** aGIVEb BOOK

John does not give the book to (her).

(Quadros, 2003, p. 10).

However, the particle position has to change to post-verbal final position if the verb is a plain verb (e.2).

_____neg

2.3.3.1-e.2 JOHN DESIRE CAR **NO**

John doesn't like the car.

(Quadros, 1999, p. 119).

Quadros (2003) also indicates that the post-verbal position of the particle must also be the final position of the sentence. In the case where this position immediately follows the verb but the verb is not sentence-final, the structure is ungrammatical (e.3). The sentence becomes also ungrammatical if the particle occupies a pre-verbal position (e.4).

_____neg

2.3.3.1-e.3 * JOHN DESIRE **NO** CAR

John doesn't like the car.

_____neg

e.4 * JOHN **NO** DESIRE CAR

(Quadros, 2003, p. 10).

Example (e.4) will become grammatical if an auxiliary (AUX) is signed before the verb and the negative particle is placed between the auxiliary and the verb (e.5).

_____neg

2.3.3.1-e.5 JOHNa aAUXb pro **NO** DESIRE

John does not like (her).

(Quadros, 2003, p. 10).

Quadros also mentions that although auxiliaries generally precede negators in Brazilian Sign Language (e.6), MUST is an exception. In negation with MUST, the negative particle has to occupy a pre-auxiliary position (e.7).

_____neg

2.3.3.1-e.6 I WILL **NO** BUY CAR

I will not buy any car.

---

[18] Quadros (1999) uses the non-manual feature 'neg' to indicate a negation head movement.

_____neg

e.7 I **NO** MUST BUY CAR

I must not buy a car.

(Quadros, 1999, p. 95).

There are a number of studies on sign language negation where there is no explicit reference to the position of the negator in relation to the verb of the sentence. However, taking into account the examples presented in these specific studies, it is possible to draw out the location of the negator in relation to the verb within a negative sentence. Thus, according to the reported examples, sign languages which allow a negator to occur after the verb/predicate include: BSL (Sutton-Spence and Woll, 1999), Jordanian Sign Language (Hendriks, 2004) and Turkish Sign Language (Zeshan, 2003a). In the following examples it becomes noticeable that the post-verbal position of the negator also coincides with the final position of the clause (f.1, f.2, f.3).

___neg[19]

2.3.3.1-f.1 WOMAN TELEVISION WATCH **NO** BSL

The woman doesn't watch television.

f.2 YESTERDAY EVENING PARTY COME **NO** Jordanian SL

I didn't come to the party yesterday evening.

_____neg

f.3 PARA KENDI **DEGIL** Turkish SL

money self not

There is no money involved for ourselves.

In a similar way, examples taken from the relevant literature indicate that in some sign languages verbs of negative incorporation occupy the final position of the sentence. Hendriks (2004), for example, reports a sign with the meaning 'there isn't' or 'I haven't' which in general can be used as a clause negator. In the examples presented by the author the negator occupies sentence-final position (g).

2.3.3.1-g YESTERDAY EVENING PARTY COME **MAI-FI**

I didn't come to the party yesterday evening.

In her work on ENG, Sapountzaki (2005) refers to the following signs with negative incorporation: NOT-BEEN, BE-OFF, CAUSE-TO-BE-OFF, NOT-YET and

[19] In these examples 'neg' is used to indicate the use of non-manual features of negation.

CANNOT. With the exception of CANNOT (h.3, h.4), the rest of the signs are found in the majority of the examples in clause-final position (h.1, h.2).

2.3.3.1- h.1 GRANDAD LESSON **NOT-BEEN**

The grand father has not gone to the school.

h.2 HE (MATURE) **NOT-YET**, SMALL MIND LIVELY PLAYFUL

He is not mature yet, he is little and his mind is naughty.

h.3 I TAKE-CAREc **CANNOT**

I cannot take care of it.

h.4 THEY **CANNOT** GET-PAID MONEY

They do not get paid.

(Sapountzaki, 2005, p. 97, 154, 287).

Finally, a feature reported in some sign languages regards the repetition of the manual negator before the verb and at the end of the sentence. This repetition resembles pronoun repetition reported in various sign languages as a pronoun copy. Baker and Cokely (1980) mention that a sign of negation can be repeated for emphatic purposes (i.1), and Quadros (1999) notes that in negation in Brazilian Sign Language the negative particle is often repeated (i.2). Hendriks (2004) also refers to manual negators often repeated in Jordanian Sign Language.

2.3.3.1-i.1 CRAZY, L-E-E **NOT** MOVE-TOrt DETROIT **NOT** ASL

You are crazy! Lee's not moving to Detroit. She's not!

_____neg ___neg Brazilian SL

i.2 IX<1> **NO** GO PARTY **NO**

I don't go to the party.

A similar pattern can be seen in the examples that Veinberg (1994) provides for the analysis of negation in Argentinean Sign Language (i.3).

__headshake ___headshake

2.3.3.1 i.3 ARGENTINA **NO** SER-JUSTA **NO**

There is no justice in Argentina.

2.3.3.2 The syntax of negation and the relation of manual negation to the negation head movement

As already mentioned, the relation of manual negation signs to negation head movement varies across sign languages. For some, the use of the negation head movement is obligatory in order to express negation, whereas in others, negation is expressed by the

use of a manual negator only and the negation head movement is an optional element. Similarly, Zeshan (2004) indicates that in many sign languages negation head movement and non-manual components of negation are optional features in a negative clause. In contrast, there are sign languages where manual negation is insufficient on its own to negate a clause and in order for the structure to be grammatical, a negation head movement must co-occur. The syntactic rules in these languages are specific in relation to the obligatory co-occurrence of a negation head movement and manual negator. Examples include ASL, German and Catalan sign languages. Neidle et al. (2000) provide the following sentences from ASL.

____headshake
2.3.3.2-a.1 JOHN **NOT** BUY HOUSE

John is not buying a house.

_____headshake
a.2 JOHN **NOT** BUY HOUSE

John is not buying a house.

According to the above examples, a headshake co-occurs with the manual negator and it can also spread over the verb phrase which is under the scope of negation (a.2). The authors point out that in both sentences the headshake and the negative particle occupy (see below Figure 2-1) the Head position of NegP. The headshake itself appears in this position as a [+neg] feature. The two structures differ in their interpretation with (a.1) being more emphatic. The negation head movement is an obligatory element for the expression of negation. In contrast to other sign languages, the next structure (a.3) is ungrammatical in ASL.

2.3.3.2-a.3 * JOHN **NOT** BUY HOUSE

Example (a.3) in relation to (a.1) and (a.2) clearly indicates that non-manual marking by a negation head movement is obligatory. The grammaticality of (a.5) and the ungrammaticality of (a.4) clarify the status of non-manual marking and show that the manual negator is optional in ASL.

_____headshake
2.3.3.2-a.4 * JOHN BUY HOUSE

_____headshake
a.5 JOHN BUY HOUSE

Examples (a.4) and (a.5) suggest that in the absence of the manual negator the spreading of non-manual features over VP is obligatory. As a result, a structure like (a.6) would be ungrammatical in ASL.

___headshake
2.3.3.2-a.6 * JOHN BUY HOUSE

Pfau and Quer (2003a, 2003b) provide a tree diagram which depicts all of the above analysis for the syntax of the negative particle in ASL (the X symbol in the tree diagram denotes that a particular movement is not allowed) (Figure 2-1).

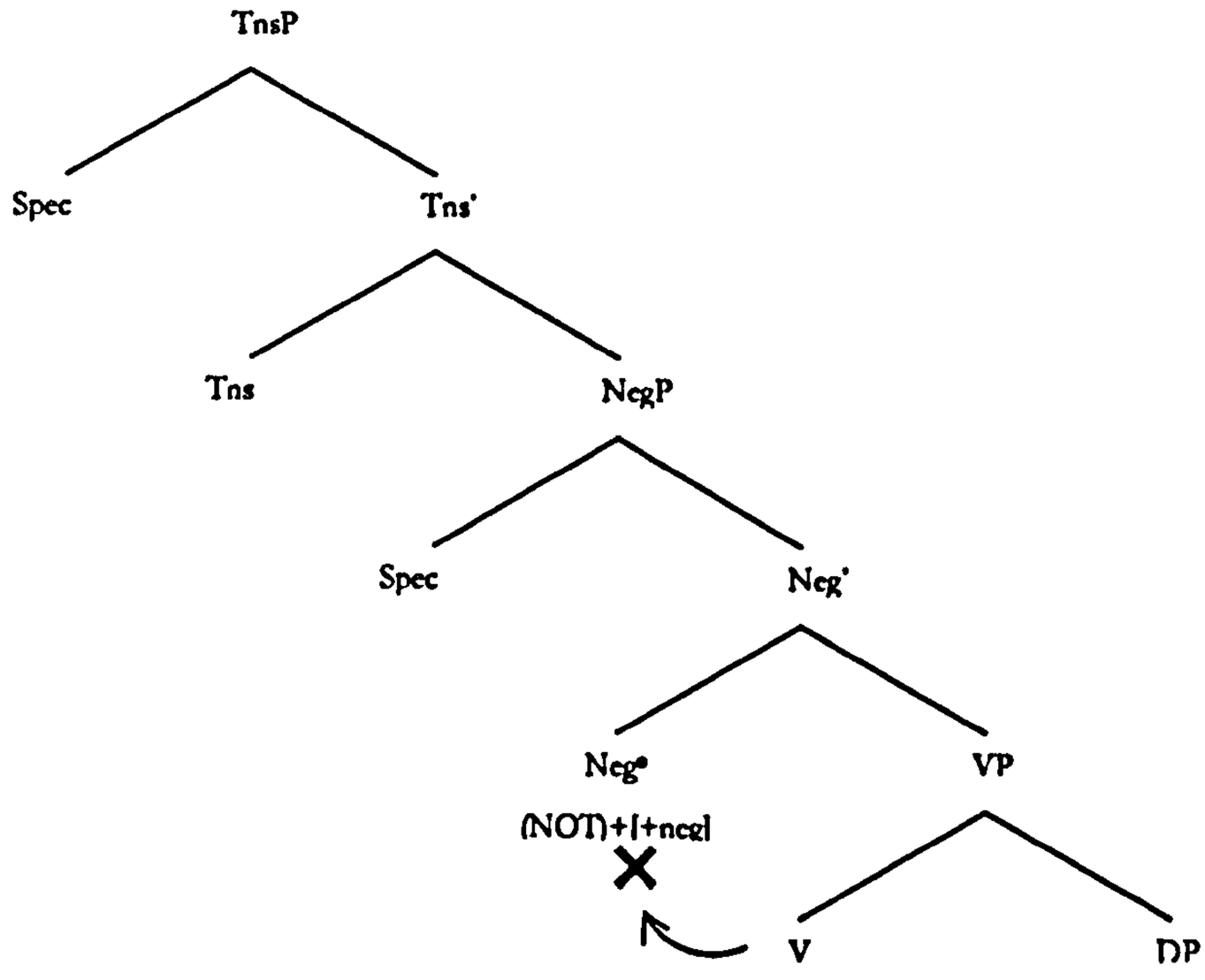

Figure 2-1. The syntax of the negative particle and the negation head movement in ASL

According to Pfau and Quer (2003a, 2003b), the verb never raises (X) to the Head (Neg°) of the negative phrase and this is the reason why (a.6) is ungrammatical. Absence of the negative particle forces the non-manual [+neg] to spread over the verb phrase (a.5).

The examination of NOTHING by Padden (1981) also suggests that the negation head movement is obligatory over the manual negator since none of the examples she provides comes without a negation head movement (a.7).

_____n____
2.3.3.2-a.7 I SEE PEOPLE, **NOTHING**
I don't see any people.

Padden (1981) interestingly notes that the negator NOTHING always negates the main verb of the clause even if it takes another verb as complement or if the negator is signed at the end of the clause (a.8). In other words, the negator takes scope over the main verb of the clause and not over the embedded clause. A reading of the clause where negation applies over the complement and not the main verb of the clause will be ungrammatical.

_____n____
2.3.3.2-a.8 1TELL2 2GIVE3 BOOK **NOTHING**

I didn't tell you to give him the book.

* I told you not to give him the book.

In the same study, Padden (1981) also provides examples of negative clauses where the manual negator is absent. In all of these examples, the negation head movement spreads over the verb phrase which is under the scope of negation (a.9).

_____n_____
2.3.3.2-a.9 I 1FORCE2 2GIVE3

I didn't force you to give it to him.

In a similar way, Pfau and Quer (2003a), and Pfau (2002) present some aspects of the syntax of sentential/clausal negation for German Sign Language in relation to the negative particle and the negation head movement (b.1, b.2, b.3).

_____headshake
2.3.3.2-b.1 * MUTTER BLUME KAUF **NICHT**

mother flower buy not

Mother is not buying a flower.

_____headshake

b.2 MUTTER BLUME KAUF **NICHT**

b.3 * MUTTER BLUME KAUF **NICHT**

Example (b.1) is ungrammatical indicating that co-occurrence of the non-manual item with the manual negator is insufficient to negate the sentence. It is necessary for the non-manual marking to spread over the verb of the negated verb phrase (VP) (see Figure 2-2 below). The next sentence shows that the negative head movement is obligatory feature for negation in German Sign Language and that the absence of a headshake would result in an ungrammatical structure (b.3).

When the manual negator is not overt, the headshake has to spread over the negated verb or over the negated VP. Both constructions are grammatical in this sign language (b.4).

_____headshake

2.3.3.2-b.4 MUTTER BLUME KAUF

To account for the use of the headshake in German Sign Language, Pfau (2002) and Pfau and Quer (2003a, 2003b) point out that NICHT occupies a specifier position within the negative phrase (Spec,NegP) and is lexically specified for a headshake.

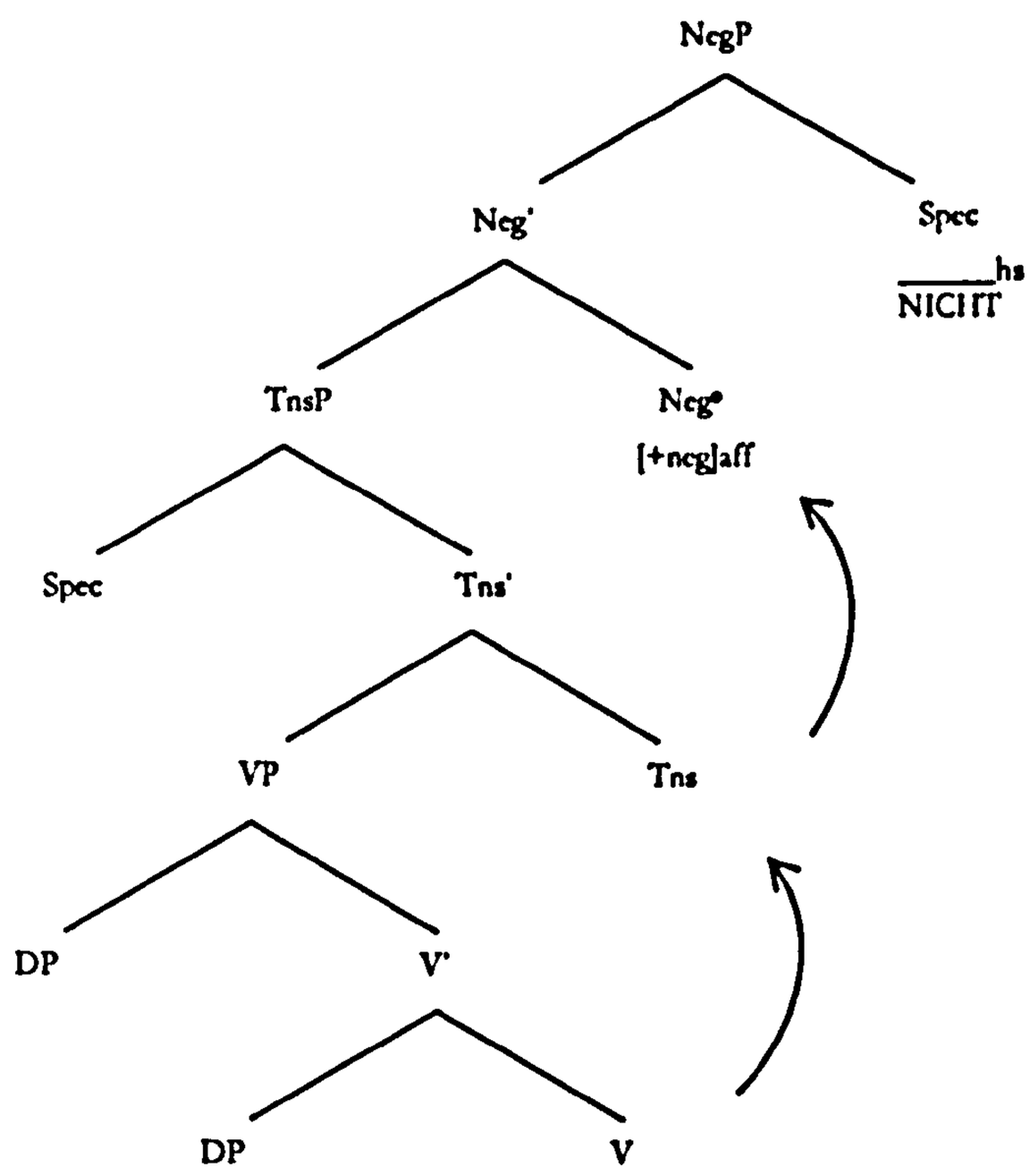

Figure 2-2. The syntax of the negative particle and the negation head movement in German Sign Language.

In German Sign Language, the feature [+neg] is affixal in nature and occupies the Head (Neg°) position of the negative phrase. Therefore, if the verb does not move to the Neg° in order pick up the [+neg] affix, the structure will become ungrammatical (b.1). Movement of the verb to Neg° position is also obligatory in the absence of the negative particle (refer to b.4 above).

Catalan Sign Language displays similarities with the German Sign Language (Pfau and Quer, 2003a; Quer, 2002). In Catalan Sign Language, the manual negator itself is not sufficient to negate a sentence (c.1).

2.3.3.2-c.1 * SANTI CARN MENJAR **NO**

Santi meat eat not

Santi doesn't eat meat.

Co-occurrence of the headshake with the manual negator is sufficient to change the above sentence to a grammatical one (c.2).

___headshake
2.3.3.2-c.2 SANTI CARN MENJAR **NO**

According to Pfau and Quer (2003a); Quer (2002, 2003b), NO occupies the Head (Neg°) of the negative phrase (NegP) together with an affixial [+neg] feature realised by the headshake (see Figure 2-3).

When the manual negator is not overt, the headshake has to spread over the verb or over the whole VP (c.3).

_ _ _ _ _____headshake
2.3.3.2-c.3 SANTI CARN MENJAR

Pfau and Quer (2003a, 2003b) provide the following tree diagram (figure 2-3) in order to depict the syntax of the negative particle and the negative head movement in Catalan Sign Language.

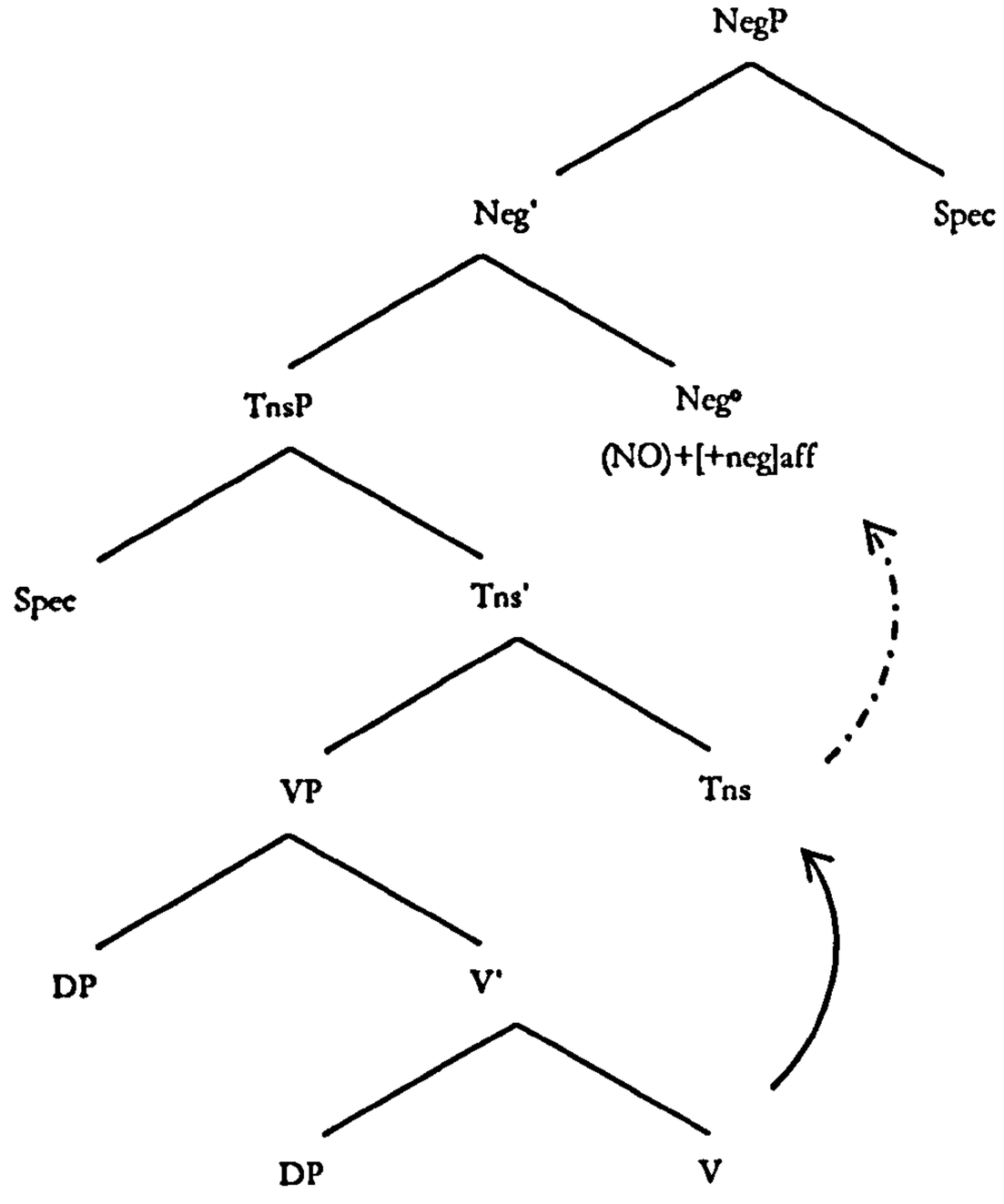

Figure 2-3. The syntax of the negative particle and the negation head movement in Catalan Sign Language

According to Pfau and Quer (2003a, 2003b), in the absence of the negative particle stray affix filter triggers movement of the verb to Neg° so that the affix [+neg] will have a host (c.3).

In addition, the literature available includes studies of negation which provide examples in which a negation head movement is always seen. Based on these examples, it might be suggested that the use of negation head movement may be obligatory in Argentinean Sign Language (Veinberg, 1994) (d.1) and in Brazilian Sign Language (Quadros, 1999) (d.2).

2.3.3.2 d.1 ARGENTINA **NO** SER-JUSTA **NO**
__headshake ___headshake

There is no justice in Argentina.

d.2 JOHN DESIRE CAR **NO**
_____neg

John doesn't like the car.

In all the examples presented above, negation head movement co-occurs with the negative particle. For both of these sign languages no example is provided where a negation head movement expresses negation in the absence of a manual negator.

As mentioned above (see section 2.3.2.1), there are also sign languages like Jordanian Sign Language (Hendriks, 2004[20]) and Chinese Sign Language (Yang and Fischer, 2002), where negation head movements are not sufficient to negate a sentence which lacks manual negation. In Chinese Sign Language in particular, a headshake over the verb results in an ungrammatical structure which can become grammatical only if the headshake is produced after the verb (see ex. b.2 and b.3 in section 2.3.2.1). The post-sentence headshake is similar to structures described in BSL (Sutton-Spence and Woll, 1999) Turkish Sign Language (Zeshan, 2004) and Irish Sign Language (Zeshan, 2004).

Bergman (1995), using Payne's definition for standard negation, characterises the headshake as a standard expression of sentential negation. However, the scope of the headshake in Swedish Sign Language varies. It can be the whole sentence or a constituent or a single lexical item. In relation to the headshake, Bergman (1995) also reports that in sentences with signs of incorporated negation the head movement is often omitted. A

[20] Unfortunately Hendriks does not provide any examples of a sentence where the headshake is ungrammatical or does not express negation.

similar observation has also been made by Baker and Cokely (1980) for ASL where the appearance of the headshake does not appear to be obligatory.

Finally, in Indo-Pakistani Sign Language (Zeshan, 2003b), the use of the negation head movement is optional. As a result, negation is expressed by a manual sign (e.1), by a headshake without any manual negator (e.2) or by a combination of a manual sign and a headshake (e.3).

2.3.3.2 e.1 $AHAR ACHA: NAHI:N'

city good NEG

Cities aren't nice.

_____neg

e.2 MAIN' FAUT

I die

I' m not dead.

_____neg

e.3 MAIN' KA:M NAHI:N'

I work NEG

As for me, I am not working.

2.3.3.3 Negative concord in sign languages

In comparison to other research areas, research on the topic of negative concord is limited. Liddell (1980) mentions that the headshake accompanying a negative lexical item, does not change the polarity of the sentence. Pfau and Quer (2003a) distinguish two types of Negative Concord:

a) Negative concord between a non-manual component and the manual sign of negation.

b) Negative concord between two different negation signs.

The examples already illustrated in the present study, suggest that the first type of negative concord occurs in ASL, BSL, Swedish Sign Language, German Sign Language, Catalan Sign Language, Jordanian Sign Language, Argentinean Sign Language, Brazilian Sign Language Chinese Sign Language, Turkish Sign Language and Indo-Pakistani Sign Language. Within the limits of the available data, it appears that most sign languages exhibit the first type of negative concord (since non-manual components are used by all sign languages) and usually accompany negation signs without reversing the meaning of

the sign or the sentence. The second type of negation is much rarer. Pfau and Quer (2003a) report that German Sign Language does not exhibit Type 2 negative concord, whereas Catalan Sign Language does (a).

				headshake
2.3.3.3-a	INDEX1	FUMAR	**NO-RES**	**MAI**
	I	smoke.NEG	NEG	never
	I have never smoked (at all).			

According to the authors, negative concord is grammatical in Catalan Sign Language under two conditions: that the negative particle follows the negated verb and that a sign of negation is signed after the negative particle. If two negation signs are used, then NO-RES precedes MAI (a.1). Hendriks (2004) also reports the use of the second type of negative concord in Jordanian Sign Language. In this sign language a similar rule to that of Catalan Sign Language is applied: if the negative particle NO is present, other negation signs must follow.

2.4 Gestures of negation used by hearing people and non-manual features of negation in sign language

Many sign language researchers have reported that non-manual features found in various sign languages often resemble gestures used by hearing people who live in the same area. It is natural for hearing and Deaf communities to interact, and this interaction can also include linguistic aspects. Gestures become part of the grammar of a sign language through the adoption process from the hearing majority.

The negative headshake, widely found in different sign languages, is also well known as one of the gestures used by hearing people in western societies. Yang and Fischer (2002) point out that the two basic ways of indicating negation in Chinese Sign Language, the negative handshape and the negative handwaving, are also used as negation gestures by the hearing Chinese community. Similarly, Antzakas and Woll (2001) and Hendriks (2004) mention the use of the negative headtilt by Greek and Jordanian hearing societies, respectively. In addition, Zeshan (2004, 2003a) reports that the negative headtilt, often co-occurring with raised eyebrows, is used by Deaf and hearing people in Turkey and Lebanon.

Evidence of this relationship derives not only from sign language research, but also from literary fiction and gesture research. The first reference to the use of the negative headtilt is found within the Ancient Greek language itself. Ancient Greek uses a specific verb, *ανανεύω* (move my head upwards/make a headtilt in order to signify negation), to indicate the use of a headtilt having negation meaning. The word is found as a lexical entry in dictionaries of Ancient Greek (Liddell and Scott 1972; Stamatakos, 1972). Liddell and Scott (1972) provide specific citations in Ancient Greek literature where the verb is used. In Homer's Odyssey, Rhapsody Φ (phi), the hero has returned to his homeland but remains undercover in order to punish his enemies. An archery competition using Odysseus' old bow is taking place in the main hall. Telemachos, Odysseus' son, is trying to shoot with the bow, with Odysseus himself standing near him. Verses 128-129 follow:

και νυ και δη ετάνυσσε τω δίη το τέταρτον ανέλκον

and now and then stretched the arrow the fourth took

and then (he) took (the arrow) immediately and stretched it for the fourth (time)

αλλ' Οδυσσεύς ανένευσε και έσχεσεν ιεμένον περ

but Ulysses **nodded no** and prevented throwing just

but Ulysses **nodded 'no'** and prevented (him) from trying again

(transcription and translation by the researcher).

During the Age of Enlightenment, there was a strong interest in gestural communication. Kendon (2000) has republished the work of Andrea de Jorio (1769-1851), which is on the use of gestures in Naples during the 18th-19th centuries and their relation to gestural expression in antiquity. De Jorio mentions the use of the negative headtilt by the Neapolitans and describes it as 'head raised a little as in pushing it backwards' (Kendon, 2000, p. 290). The use of eyebrow raising, as a gesture of negation, is also described by de Jorio as 'eyebrows rapidly raised as far as possible' (Kendon 2000, p. 289).

Recent research on gestures has established that the headtilt is still used by modern Greeks. Eibl-Eibesfeldt (1970) notes that Greek people use both a backwards lift of the head (headtilt), and a raising of the brows as gestures of negation. Morris (1977, 1979) labels the headtilt as a 'head toss', and reports its use in Greece, Cyprus, Turkey, some

Arab countries, Malta, Sicily, southern Italy and Yugoslavia. He comments that the geographical distribution of this gesture coincides with the territory on which the Ancient Greeks founded many of their colonies.

Finally, the distribution of the use of various gestures is reported by Bäuml and Bäuml (1997) in the 'Dictionary of Worldwide Gestures'. They note that the negative headtilt is recorded in ancient Greece and Rome, in Greece, Lebanon and all the areas of the southeast Mediterranean mentioned by Morris. Eyebrow raising is also reported in ancient Greece and Rome, and in Lebanon and Turkey. A combination of headtilt, raised eyebrows and hand raising is also reported here as a gesture of negation in Greece.

2.5 Sign language research in Greece

It is only during the last twenty years that research into sign language has begun in Greece. Initial work concentrated on the recording and transcribing of lexical items in ENG. This work resulted in the first small dictionaries of ENG (Logiadis, 1985; Triantafillidis, 1989); however, they are not complete and present only specific aspects of the ENG lexicon. Recently, two more dictionaries have been published: a dictionary for deaf pupils (Kourbetis and Eythimiou 2004) and an electronic dictionary of ENG (ILSP, 2002).

Research into the phonology of ENG was carried out by Lampropoulou in the 90s (Lampropoulou, 1997). Since then, more studies have been undertaken on ENG. Papaspyrou (1998, 1994) applies the theory of generative grammar to sign language. Kourbetis (2002) studied proper names in ENG. There are also studies on negation in Greek Sign Language (Antzakas 2006; Antzakas and Woll, 2001), and on the acquisition of pronouns/indices (Hatzopoulou, Bergman and Sideri, 2004). The recent doctoral dissertation by Sapountzaki (2005) describes the use of free functional elements for marking tense, aspect and agreement in ENG and investigates grammaticalisation of these elements and their possible use as auxiliaries. Sapountzaki's work includes a few negation signs which are examined with the goal of providing an analysis of functional elements in general, rather than to provide a comprehensive treatment of the grammar and syntax of negation.

In addition to these linguistic studies, there are several others related to education and thus to ENG and its Deaf users within educational settings. Lampropoulou (1994, 1998,

1999, and 2001)[21] focuses on the education and language development of deaf children. Kourbetis (1987) studies the academic achievement of deaf children by comparing groups of deaf children with Deaf parents to groups of deaf children with hearing parents and Koutsoumbou's thesis (2004) examines the writing skills of deaf children in relation to their knowledge of ENG.

The following chapter presents issues related to sign language research and the methodology employed by the current study. More specifically it examines the kind of sign language data provided by the various Deaf informants, and the background of these informants in relation to ENG. Furthermore the use of specific tools and computer programmes, on which the codification and analysis of ENG negation was based, are detailed.

[21] For more details on the work of Lampropoulou the reader may refer ro the following website: http://www.deaf.elemedu.upatras.gr/Lampropoulou/index.htm.

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3 METHODOLOGY AND METHODOLOGICAL CONCERNS

3.1 Introduction

All linguistic research and in particular that on under-researched languages, should consider methodological procedures seriously. In the present study, particular attention has been paid to data collection and methodology, especially in terms of design and analysis. The main aim of data collection was to create an adequate linguistic corpus in ENG. Having obtained this corpus, the next step was to select appropriate tools for each level of analysis so that valid conclusions could be reached.

Sign language data collection relies almost entirely on video recordings. The amount of information conveyed by manual signs and non-manual features is so vast that a single pen and paper transcription is inadequate for detailed research. Linguistic data is usually divided into two major categories: naturalistic data and elicited data. Naturalistic data consists of free linguistic sampling which is observed and video recorded in everyday contexts. Elicited data is collected following the process of a pre-designed research study. For both categories researchers should take into account the many variables which can affect data collection and the process of linguistic analysis. Sign language researchers have always had to cope with various complications related to the nature of the object of research, with specific issues relating to sign language data collection reported by other researchers (Neidle et al., 2000; Sutton-Spence and Woll, 1999; Valli and Lucas, 2000).

A major concern in relation to data collection is the quality of the language corpus on which the linguistic analysis is based. Obviously researchers aim for natural sign language data; however this is not always an easy task due to the fact that sign language is a minority language. The vast majority of the population uses a spoken language and it is often difficult to collect a pure, unaffected data sample of a sign language. In fact, we consider Greek Deaf people as bilingual, following Grosjean's (1992) suggestion of bilingualism, in the sense that they use two languages in their everyday lives. As a result, signers often change the language output by mixing the two languages or by switching between them. In these cases, their language output contains elements that are non-existent in ENG and that are actually based on Modern Greek; such examples are word order or the use of particles (see section 3.6.1.1.2). According to Neidle et al. (2000,

p. 8) the phenomenon of ' "code-switching" refers to the use of a signed form of the majority languages in conjunction with native sign language structures'. These changes in the language output affect the validity of the research results. The level to which Deaf people code-mix between the two languages depends on various factors such as the level of knowledge of Modern Greek or a range of other individual differences. However, code-mixing is not directly related to the fluency Deaf people have in Modern Greek. In addition, there are Deaf people whose signing is more related to a signed form of Modern Greek than ENG. This happens because they are either late learners of ENG, and therefore not fluent ENG signers, or because they believe it is more prestigious to use a form of language related to Modern Greek. In any case, the researcher has to eliminate sources that provoke this language accommodation wherever it is possible. This change is often triggered by the presence of hearing people, or by a formal social setting. The presence of a hearing person, no matter how many years s/he has had relations with the community and even if s/he has acquired ENG as a mother tongue, may cause language accommodation. Research settings can be also considered as a kind of formal setting, hence the resulting language accommodation and consequently ENG which may be strongly affected by Modern Greek. Therefore, data should ideally be gathered by a Deaf person. Although, data analysis in the present thesis has been based on video recordings made by Deaf people, instances of language accommodation may still occur.

All these difficulties are also associated with the phenomenon which Labov (1972) calls 'the observer's paradox'. Labov (1972) describes how a researcher needs to observe the way people talk when they are not observed, in order to be able to see how much they change their language when they are actually under observation. Deaf people, like all people acting as linguistic informants, tend not to sign naturally when they are being observed. The situation becomes more difficult and uncomfortable for a Deaf informant when a video camera is present. This can be explained because all people usually feel uncomfortable in front of a video camera and a formal research setting increases these feelings of anxiety. Moreover, a Deaf informant has an additional problem to cope with since video recordings do not provide the same level of anonymity that audio tape recordings do for informants in spoken languages. The presence of the camera may encourage Deaf informants to give what is considered to be the 'best' sign language output, which is not however always the most natural in linguistic terms.

The methodological process of linguistic analysis is also a complicated area for sign language research. It can be argued that the only common ground in linguistic methodology amongst researchers of sign and spoken languages is the use of analogue or digital video recording. Beyond that, matters become complicated. Researchers of spoken and sign language use terms like 'notation' and 'transcription' in different ways. Currently, there are various systems and computerised programmes available for sign language analysis. Stokoe notation, Sign Writing, HamNoSys, syncWRITER, can be used for phonological and sub lexical analysis, while SignStream is a computerised programme developed for morphological and grammatical analysis. All these above systems and programmes have developed from researchers' individual interests. Given that there is no written form in any of the sign languages being investigated to date; it is easy to explain why this variety of systems and tools for sign language research are in existence. Furthermore, the nature of sign language compels researchers to resort to this polyphony. Sign languages are expressed spatially, making simultaneous use of hands, body, head movements and facial expression and researchers have found it difficult to transfer these features to paper. Even if we simplify our coding to glosses, the use of head movements and facial expressions as linguistic features create difficulties for a written representation.

In the remaining part of this chapter, the following aspects off data collection and tools for data analysis are covered:

a) Criteria used for the selection of informants in the present study and some background information about them.

b) The steps were followed for data collection and the complications which emerged during this process. The data collection consisted of two main phases. Pre-pilot study and pilot study.

c) The database used in the present study. Information about the kind of data included in the database and the informants who provided these linguistic data.

d) Methodology for the lexical and morphological analysis. Coding of material for the subsequent analysis.

e) Methodology for the syntactic analysis. Initial attempts for material coding and problems which emerged during this process. Use of SignStream for data coding and description of the coding process.

3.2 Informants

Some of the difficulties that a researcher may encounter and need to overcome during data collection have already been mentioned. Throughout the collection process the objective was to create the appropriate conditions for collecting native language data, starting by choosing the best possible informants. In order to ensure that the analysis would be based on ENG data, native or near-native signers were chosen as informants for the present study. Native informants included those Deaf informants who had Deaf parents and/or siblings and for whom ENG was their first language acquired from birth. Near-native informants were those Deaf informants who did not have Deaf parents or siblings but were educated from an early age in residential or special schools for the deaf. Deaf children educated from an early age in such schools have well-established and strong sign language skills from early childhood; residential schools in particular have always been important for the maintenance and diffusion of sign language throughout Deaf communities.

The present research is based on data provided by nine Deaf informants, one female and eight males (see Table 3-1). Three of these males, participated in the pilot study, two of whom are native signers with Deaf parents and the third informant has a hearing father and a Deaf mother. Two of these informants also provided videotaped data where the Deaf informants signed stories. Aside from the two informants who provided the video stories, a further six Deaf informants were video recorded. All six, one female and five male are near-native signers with hearing parents. One male informant had attended a special private school for the deaf and the other four informants had attended residential schools for the deaf. Furthermore the female and two of these male informants had also lived on the premises of the residential schools for the duration of their education.

N	Name	Gender	Age	Parents	Education	Participation
1	Aggelos S.	Male	38	Deaf	School for the deaf	Pilot study
2	Nick G.	Male	40	Deaf	School for the deaf	Pilot study Video recorded data
3	Nick I.	Male	33	Deaf mother, hearing father	School for the deaf Higher education	Pilot study Video recorded data
4	Nick S.	Male	44	Hearing	School for the deaf Higher education	Video recorded data
5	George P.	Male	33	Hearing	Residential school for the deaf. Higher education	Video recorded data
6	Vassilis K.	Male	30	Hearing	School for the deaf Higher education	Video recorded data
7	George B.	Male	30	Hearing	School for the deaf	Video recorded data
8	Christos K.	Male	35	Hearing	School for the deaf	Video recorded data
9	Christine K.	Female	26	Hearing	Residential School for the deaf. Higher education	Video recorded data

Table 3-1. The informants

3.3 Data collection

The ENG database in the current study consists of naturalistic and elicited data. The collection process was organised into three phases. First, a pre-pilot study was designed and conducted in order to explore the marking of negation in ENG. Second, a pilot study was set up to support the observations already made and to elicit more linguistic data concerning the grammar and syntax of negation in ENG. Finally the pilot study was applied to the informants. Due to problems related to the set up of the pilot study (see section 3.3.3), the outcome of piloting the study raised great concerns about the validity of an analysis based solely on this type of data. Taking into account these concerns, it was decided that the linguistic analysis of the study should be based on naturalistic data (the naturalistic data used in the pre-pilot study was included in the linguistic analysis). Naturalistic data comprised of material developed by two of the pilot study informants and included material such as sign stories and various recordings in Deaf clubs or other social events. This material was developed by the informants during educational activities when they were both teaching ENG to hearing people. Elicited data from the pilot study provided a material platform to crosscheck and reconfirm results obtained by the analysis of the main study.

All data, both naturalistic and elicited, was recorded on videotape. Elicited data was recorded by the researcher, whereas naturalistic data had already been recorded by two of

the Deaf informants for other purposes prior to the start of this study. Both recordings were made in VHS format.

3.3.1 *The pre-pilot study*

The pre-pilot study was based on material consisting of half an hour of naturalistic data and half an hour of elicited data. The naturalistic data itself consisted of free conversations among Deaf people and signed stories. The signed stories were provided by the informant who also took part in the interview during the pre-pilot study (see 3.3.2 below). Video recordings of the naturalistic data also came from the same informant. Elicited data consisted of an informal interview with a Deaf informant. The interview was neither structured nor pre-designed, but simply based on the acquaintance between the researcher and the informant. The researcher tried to elicit as many negative responses as possible by asking the appropriate questions. The informant was a native signer who had attended a private primary school for deaf children (Martinou School) and a state special school for deaf children (Agia Paraskevi State School for the deaf) during his secondary education.

Data examination revealed that negation in ENG is realised through manual signs (negative signs and signs with incorporated negation), non-manual expressions (head movements and/or facial expressions of negation) or a combination of both. These initial observations along with the researcher's knowledge (native signer, Deaf parents) about ENG negation formed the basis for the design of the pilot study.

3.3.2 The pilot study

A pilot study was carried out to strengthen the above observations and to elicit more information about the grammar and syntax of negation in ENG. Initially, it was planned to involve three Deaf informants, but unforeseen complications resulted in only two informants taking part. Both were adult males and native signers and both had attended a primary private school for deaf children (Martinou School), and a state special school for deaf children during their secondary education (Agia Paraskevi State School for the deaf). The pilot study was organised into four phases including an introduction. Each section focused on the elicitation of expressions and information settings regarding negation in ENG.

The introduction itself was a relaxed informal chat. The camera was set up and recording started while the rest of the materials - pens and paper, videotapes, and the position of the television were arranged. During this introduction the informants were constantly assured that the recordings would only be used and seen by researchers and only used for research purposes, as this was the only way to obtain their consent. The whole of the pilot study (including this introduction) was videotaped.

The first section was a constructed interview. The intention in this section was to elicit negation in an interactive setting. The interview took place first, so that informants could familiarise themselves with the camera and the research setting. The aim was to enable to informants to and feel as if they were operating in an informal environment as much as possible. All participants were asked the same questions, which included general personal questions about family, work, social activities and so forth. For example: What is your name? Where do you live? Have you ever been married? Are there other Deaf people in your family? Are you a member of a Deaf club? Additional questions were asked wherever possible in order to elicit negative answers.

During the second section of the interview, the informant watched a video containing thirty samples of simple clauses in ENG (e.g. TOMORROW MORNING INDEX1 GO WORK, OVEN INDEX3 FOOD MANY, LIKE1 CHOCOLATE, BOY GIRL INDEX3 LOVE GIRL LOVE NOT). The clauses had been constructed, signed and videotaped by the researcher. The informant's task was to respond to each of these clauses by signing the corresponding negative clause or counter-clause. In this section the aim was to monitor the use of negation signs and signs of incorporated negation within a sign clause. The hope was that the designed clauses would elicit the corresponding negative clauses as responses.

Although during the introduction informants were told that this project was part of a study in ENG, they were not given any detailed information about the aim of the pilot study until the end of the second section. This was in order to elicit responses which were as natural as possible. Full information about the aim of the project was given to informants before they proceeded to section three.

The third section was another structured interview. The questions concerned the morphology and syntax of negation in ENG. The informants were asked specific questions about the marking of negation in ENG: use of negation head movements,

negation facial expression, and negation signs or signs which incorporate negation (e.g. can we say NOT in ENG without movement of the head or expression on the face; when do we use GOOD-NOT; do you know other signs like this; do you know other verbs which express negation and so on). Both informants were encouraged to give as many examples as they could and to provide their own knowledge of the grammar of negation.

In section four, informants had to sign two stories that were printed in picture books. One of them had no text and the other had minimal text in English[22]. Both stories contained pictures which could elicit the production of negative clauses. The stories were presented one after the other for the informants to sign (see Appendix 3 and Appendix 4).

3.3.3 Problems concerning the pilot study

The pilot study confirmed all initial observations made during the pre-pilot study. The linguistic output obtained by both informants was rich in ENG negation. Additionally, the researcher's initial observations concerning the use of manual signs (negative signs and signs with incorporated negation), non-manual expressions (negation head movements and/or negation facial expressions) and the combination of manual signs and non-manual expressions in ENG were verified.

Despite the quantity and quality of the linguistic output, the pilot study confronted difficulties during all three sections due to miscalculations made in the initial design of the study.

In section one of the pilot study, the researcher's first predicament related to language accommodation (ENG to language structures influenced by Modern Greek, see section 3.6.1.1.2). One of the informants changed to signed forms of Modern Greek (see section 3.6.1.1.2) for the greater part of the first section, and also in the interviews in the third section. The second informant was more reliable and language accommodation occurred only in few instances, and therefore did not affect the reliability of the pilot study and validity of linguistic examination.

In section two another design problem of the pilot study emerged where the informants were asked to sign the opposite clause of the one signed in the video. In this case the informants experienced difficulties in remaining focused on the actual task of the section,

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[22] One of the informants had some prelilminary skills in written English.

and the main objective of the section was often forgotten. Informants tended to respond in a natural way expressing their own will or belief. Thus, for example, in the clause 'I-LIKE CHOCOLATE' (I like chocolate very much'), the aim was to elicit the negative form of the verb 'like', so the target language was 'do not like' or even 'I hate', which in ENG is 'LIKE-NOT'. Instead, the informant's response to the clause was 'NO, INDEX1 LIKE BANANA' ('No, I like bananas'). Thus, despite the fact that section two was full of examples of negation in ENG only a few of the responses fulfilled the pre-designed aim.

The third section also had serious design problems. The attempt to elicit responses about negation by asking direct questions to the informants provided poor results. Not surprisingly, metalinguistic awareness became an obstacle for both informants who found it hard to answer questions concerning the grammar of ENG. Thus, this part of the pilot study did not achieve its aims in full. Many examples had to be given to the informants by the researcher to assist them in understanding the actual questions.

During the third section there were also some occasions where the informants' initial claims were not reinforced by their own signing. For example, one of the informants argued that a headshake is not a clear and distinct negation head movement equal to a headtilt. According to him, headshake is used more often than negation in order to express doubt and uncertainty. However, later during the pilot study, the same informant used headshake for the purpose of negation on a couple of occasions.

At this point it should be noted that this pilot study was the first attempt by the researcher to collect data from Deaf participants. Lack of experience certainly affected the design of the pilot study and made the process more difficult, especially for sections two and three where the stimuli for elicitation were not fully appropriate. Nevertheless, the researcher's lack of experience had no negative impact on the overall outcome of the study since the third section comprised only one part of the data collection.

3.4 The database of the study

Because of the problems already reported during the pilot study, it was decided that the naturalistic data would be used for the linguistic analysis of ENG negation, with the pilot study to be used as a source of information and for crosschecking whenever necessary during the analysis. Issues raised during the analysis of naturalistic data could be further supported or disconfirmed by observations and information provided by the pilot study.

As mentioned previously, two of the Deaf informants also provided the naturalistic data. These participants made the actual recordings themselves. The duration of the first videotape is 1hour 43minutes, and the duration of the second 3hours 3minutes. This data contains examples of sign communication by Deaf people in everyday settings (Deaf clubs, social events in the National Institute for the Protection of the Deaf, in public places) as well as stories signed in ENG. The total duration of the recorded data is 4 hours and 46 minutes (1hour 10minutes of this was every day communication and the rest signed stories). Both informants were assured that the video material was going to be used for research purposes only, and would only be seen by researchers.

It is believed that language accommodation was minimal for two reasons: first, because to the best of our knowledge no hearing person was present during the recordings and second because all the informants were native or near native signers. The recordings involved only the person signing a story and the video camera operator, both of whom were Deaf. In the recordings of everyday life no hearing person is involved in the recorded discourses.

Minimal instances of language accommodation did occur in the sign stories, something that can be considered as typical. The stories were signed in ENG by eight Deaf adults, seven male and one female. Six of the informants had hearing parents and two of the informants had Deaf parents (refer back to Table 3-1).

3.5 Methodology of the lexical and morphological analysis

Following examination of the videotapes containing the naturalistic data, the researcher decided to rely upon initial conclusions in the pre-pilot study, to apply a coding system to all manual signs (negative signs and signs with incorporated negation) and non-manual components (head movements and facial expression of negation). All types of manual and non-manual features of negation were coded accordingly: negation head movements, negation facial expressions, negative signs and signs with incorporated negation. Finally, all these tokens of manual and non-manual ENG negation were counted.

3.5.1 Tokens of negation

All manual and non-manual occurrences of negation in ENG were considered tokens of negation. According to this definition, these tokens of negation were divided into two main groups:

a) Tokens of manual negation. These are occurrences of negation where a signer signs a negative sign or a sign with the negation incorporated. Non-manual features may or may not accompany tokens of manual negation.

b) Tokens of non-manual negation. These are occurrences of negation where negation is expressed solely by the use of non-manual features.

As far as manual tokens of negation are concerned, any repeated movement of a sign together with the initial movement were together treated as a single token. These tokens with repetitions (a total of 38 tokens) were then re-examined in order to establish that they were in fact sign repetitions and not actually a different occurrence of the same sign which would involve a difference in meaning or a possible case of negative concord. After this second examination was complete, all cases were considered as sign repetitions and instances of emphatic negation. For example, the sign phrase FOOD NOTHING NOTHING has the meaning 'there was no food at all' and is therefore coded as a single token of negation. On the other hand, the occurrence of different types of negation signs (negative signs and signs of incorporated negation) or different signs of the same type was considered as two different tokens even in the case of emphasis. Thus for example, although NOTHING in a sign phrase like FOOD EXIST-NOT NOTHING clearly marked the clause as emphatic, two tokens of negation were assigned, one for EXIST-NOT and one for NOTHING.

3.5.2 Codification process for morphological analysis

Initially, all the instances of negation were coded during the initial data examination into four major groups[23]: A first notation was made by recording with a voice-recorder all observations made about negation tokens. Information about video time, translation of the ENG phrase under examination and occurrence of any manual and non-manual features of negation were included. The next step was to create a written record following

[23] All the groups are presented in detail in the next chapter (4.2.2 Codification)

the order of appearance of tokens of negation in the video. The written record included information about the time coding on the video, glosses of the phrase under examination and details of any co-occurring non-manual features of negation. Monitoring of the video time coding was particularly important in order to facilitate data accessibility at any point of the analysis.

Next, the tokens of negation were organised into individual tables, with each instance of a negation lexical item of non-manual negation being grouped into a separate table. Each table consisted of eleven columns: one column for the video time code, one column for the glossed phrase and comments, and the remaining nine columns were used to code non-manual features (three columns for negation head movements and six columns for negation facial expressions).

For analytical purposes, all tables were transferred into electronic tiles. This transfer made it easier to compare and examine negation tokens or groups of tokens according to their manual or non-manual manifestations. Microsoft Excel and Access were used for the examination of the data and for providing some basic information.

The process of coding and notating the database took approximately 300 working hours. This time was equally divided between the two videotapes, even though the first videotape was in fact much shorter than the second. The primary reason for this equal distribution of time was that the shorter videotape contained two, three and occasionally four signers in longer parts of the free conversations. This therefore made its analysis a lengthier and more detailed process.

3.6 Methodology for the syntactic analysis

3.6.1 Initial methodological approach for syntactic analysis

The same database was used for both levels of analysis. The videotapes were re-examined and the data was rearranged as clauses of negation in ENG. Once again, a first notation of negation clauses was made by recording, with a voice-recorder, all observations made about negation clauses. This notation contained all occurrences of ENG negations in terms of clauses of negation. Ambiguous or doubtful instances of negation were initially included, although some of these were later excluded for reasons explained in following chapters where the relevant analyses are presented. Information on the video time code,

occurrences of non-manual features, translation into Modern Greek and possible problems or ambiguities were voice-recorded during this first notation. The coding of non-manual features established during morphological analysis was also implemented here. Additionally, the occurrence of two body movements believed to be related to negation (backwards body movement and upwards movement of shoulders) were also noted.

A written notation was then created using this voice recorded information. During the development of this written notation the initial information was re-examined. The video time code for each written record, the glossed clauses under examination and any co-occurring non-manual features of negation were also noted, as was the name of the major signer of a story or the major signer on a free video recording and the 'title' or the 'topic' of a story or a free video recording. This whole process was repeated twice in order to confirm all the information. The written records were notated one after the other according to the sequence they appeared in the video. As with the notation for morphological analysis, verification of the video time code of these records was of special concern in order to facilitate data accessibility at any time during the analysis.

Each of these written record included one or more negation clauses that were related in terms of meaning. These records of sign discourse will be referred as a set of utterances or a set of sign utterances. These sets of utterances express only the specific pieces of negation that appeared, from the researcher's point of view, to be a coherent piece of signing discourse. The length of a set of utterances was also determined on the basis of its meaning cohesion. For example, adjacent negative clauses related semantically are included in a single set of sign utterances, as in the following examples[24] (a.1, a.2).

3.6.1-a.1 (314) RELATIVES ASK-ASK, **NOTG.** INDEX2 SAD **NOTBshk.** WHAT SEE-EYE. SAD **NOTBshk**

The relatives told them, no. You don't have to be sad. We will see what (is going on). Don't be sad.

a.2 (204) GIRL COME GREECE VACATION. ME WHERE **KNOW-NOT.** ME **CANNOT**

The girl had come to Greece on vacation. I didn't know where (she) was and I couldn't find (her).

[24] Signs glossed as NOTG and NOTBshk are negative particles of ENG (see section 4.2.2).

Once again, the written record was transferred to a computer programme to enable easy search and access. For grammatical analysis purposes, tables of the data were created in Microsoft Access. This programme was chosen because it facilitates the management of tables containing written records. More specifically, the 'Queries' function can provide immediate results concerning written records.

Initially, all negation clauses were listed in a table containing four columns; one for the serial number of the record, one for the number of the videotape (videotape one and/or videotape two), one for the time code and one for the glossed clauses. Negation clauses were re-examined and two more columns were added to the table. One column contained the syntax of the glossed clauses in abbreviated grammatical terms (N-oun, V-erb, Adv-erb and so on). The second column contained comments and observations about the sign clauses. An additional examination followed, during which clause boundaries were defined and applied (see 3.6.1.1). The separation of the clauses is presented in two columns, the clause column and the syntax column. The criteria for determining clause boundaries are presented below (see section 3.6.1.1).

The process of notation and grammatical transcription of the clauses took approximately 180 hours. After examining the data several times, the final form of the table resulted in the following columns:

a) A number column ordering the negation clauses by assigning serial numbers.

b) A column identifying the data as originating from either the first or second video.

c) A time column corresponding to the video time code as it appeared on the respective videotape for each set of utterances.

d) A clause column containing the written gloss of each clause.

e) A syntax column representing the grammatical form of each lexical item of the clause in abbreviation (V for Verb, N for Noun).

f) A comments column.

g) A non-manual column where the occurrence of non-manual features was noted.

The Microsoft Access database took its final form following the decision to use SignStream in the analysis (see below section 3.6.3). Once the coding process was complete, the Microsoft Access database consisted of a set of 552 utterances with a layout as shown in Appendix 2.

In addition to a main table containing all of the data, four more sub-tables were created using the 'Queries' facility of Access. In these tables the clauses were grouped according to the common characteristics of negation. Thus, all clauses of negation were streamed into three sub-tables containing groups of clauses where negation is marked by: negative signs, by signs with incorporated negation or by non-manual features of negation. Where a set of utterances contains more than one clauses of negation for example a clause with a negation sign and a clause with a sign of negative incorporation, then the clauses are included in both subgroup tables (negative sign clauses subgroup and sign with negative incorporation clauses subgroup) as they belong to a single set of utterances.

Further repetitions of this sorting process revealed instances of negation clauses which required further examination in order to be included in the database. These clauses were considered problematic; therefore a fourth table was created into which these problematic clauses were grouped separately. Evaluation of the corpus during notation combined with the development of the Microsoft Access database resulted in revisions concerning the status of these problematic clauses. In this way further analysis enabled some clauses to be classified and extracted, and the remaining problematic clauses were retained. It must also be noted that, there were also some cases in which the clause could not be satisfactorily coded; these cases were excluded completely from the initial listing.

At this point in the coding process, it became clear that every single attempt of data examination resulted in problems. This was due to the fact that, in the process of data analysis, simultaneous observation of the glossed clause and the video was not possible. Data tables were located in Access files and the signed clauses were on videotape. Furthermore, coding conventions were unable to incorporate detailed information about non-manual features in a functional way. For example, there was only a simple note (in the final column) identifying the presence of any of the negation non-manual features but there was no information about their spreading. The only option for the Access database was to keep a detailed record in written form. As this was of no help for an efficient analysis, it was decided to proceed using SignStream instead (see section 3.6.3).

Before presenting the criteria set for the syntactic analysis of negation we need to clarify a common complication about the numbers of tokens and the numbers of clauses presented in this study. The total number of tokens of negation as well as the number of tokens of individual lexical items of negation does not correspond to the total number of negation clauses and the number of clauses of individual lexical items of negation respectively. This is for two main of reasons. First of all, a significant number of clauses were not included in the examined database because of problems such as the quality of the image or the meaning. (a detailed presentation of the excluded group is given in section 5.2). Secondly, the video recorded data was digitalised only at the point when it was needed to create the SignStream database (see section 3.6.3). The unfortunate result of the use of the videotapes during morphological analysis was that image quality became so poor in some areas that it was not at all useful for our level of analysis. Therefore, differences in number are observed between the groups of negation sign tokens and the groups of negation clauses. In addition, expressions like EXIST NOTHING were analysed as two different tokens of negation in the morphological analysis, whereas they were part of a single clause in the grammatical analysis.

3.6.1.1 Setting criteria for syntactic analysis

In order to move further with the syntactic analysis, the need to set criteria for the ENG clauses emerged. Criteria were set for the boundaries of the negation clauses to be able to continue with the clausal analysis of the data. Furthermore, specific criteria were set in order to decide which clauses do not represent structures of ENG.

3.6.1.1.1 Criteria for clause boundaries

A specific concern during the transfer of the written notation to the Microsoft Access database was the determination of clause boundaries. As mentioned above, a set of sign utterances can contain one or more clauses of negation. Setting boundaries to clauses required an additional examination of the video data. Clause boundaries are indicated in the database by the vertical line symbol '|' (see section 1.4) which is chosen because it facilitates readers to discern clauses in contrast to the traditional full stop used in the written Greek/English translations, which may or may not correspond to the ENG clause boundaries. The use of clause boundaries is demonstrated in (a.1).

3.6.1.1.1-a.1 (204) GIRL COME GREECE VACATION | ME WHERE **KNOW-NOT** | ME **CANNOT**

The girl had come to Greece on vacation. I didn't know where (she) was and I couldn't find (her).

Sign prosody was employed for the definition of sign clause boundaries. Studies in ASL (Wilbur, 1999) and in Israeli Sign Language (Nespor and Sandler, 1999; Sandler, 1999) indicate that a pause (relaxed hands), a final lengthening of a sign or repetition of the final sign, a change of the head or body position, or facial expression changes are prosodic breaks indicating phrasal boundaries. In addition, Hansen and Hessmann (2006) report that eye blinks, changes of gaze direction and length of signs indicate sentence boundaries. The prosodic use of eye blinks was initially reported in ASL (Baker and Padden, 1978). Fenlon, Denmark and Woll (2006) conducted a perception study about sentence boundaries where two groups of people, six Deaf native signers and six hearing non-signers, had to decide about the sentence boundaries in two sign languages, BSL and Swedish Sign Language. The visual cues used by these groups in order to determine the boundaries of a sign sentence were: sign lengthening, head movement, head nod, eye gaze, hands at rest, and upper torso movements and brow movements. Because of lack of research in this area of ENG we will adopt these prosodic cues as indicators of clause boundaries together with event structure and semantic cues. The next table (Table 3.2) presents the prosodic breaks used as boundary indicators of a clause in the present study.

1. Pause or lengthening.
2. Upper torso movements.
3. Changes of non-manual features.
4. Changes of the position of the head.
5. Change of eye gaze.
6. Eye blinks.

Table 3-2. Prosodic cues used as indicators of clause boundaries

In most cases in the present study, features from Table 3-2 occurred in combination. Grammatical analysis was based on clauses of negation in order to be able to examine the scope of negation in both clausal and constituent negation. This entailed that clauses in complex sentences were examined as in the following examples (a.2, a.3).

3.6.1.1.1-a.2 (51) THEY LOVE OK | INDEX3 INTEREST **NOTG** | DEAF

They loved me and this was ok but they were not interested in me because I was deaf.

a.3 (165) ME STILL ONE-YEAR WAIT | WORK **NOTB** | EMPLOY **NOTB** | WAIT

I have been waiting for the past year. I don't work anywhere and nobody has given me a job. So, I am waiting.

Elliptic constructions were also considered as separate clauses (a.4).

3.6.1.1.1-a.4 (334) FAX, MOBILE MORE | *PAST-TIME **NOTG***

(Now there are) fax machines, mobiles and more (facilities) (which did) not (exist) in the past.

A particular dilemma rose in sets of utterances where two identical negative phrases are signed one after the other. It was decided that in these cases the phrases would be considered as a single clause, unless a pause occurred between them. In this manner, the following example (a.5) includes three negation clauses.

___headtilt _____headtilt
3.6.1.1.1-a.5 (139) STOP | HURRY | HURRY | INDEX3 **NOTB** INDEX3 **NOTB** |
_____headtilt
OTHER | INDEX3 **NOTB** | OTHER

Stop, (you are) in a hurry. Don't be in a hurry. It is not this, it is something else; it is not this, it is something else.

In the first negative clause, negation is marked non-manually by a head movement of negation. The repetition of INDEX3 NOTB is considered as a single negative clause because the phrases follow one after the other and non-manual features are applied over both phrases without any change. Finally, the third INDEX3 NOTB is considered a different clause because an elliptical clause separates it from the previous INDEX3 NOTB. The example below shows two identical negation phrases being signed the one after the other and the head movement of negation changes. Because no pause occurs between them, the phrases are considered as constituting a single clause (a.6).

_____headshake
3.6.1.1.1-a.6 (75) ASK-ME | COPY ME TOGETHER | INDEX1 **AGREE-NOT** INDEX1
_____headtilt
AGREE-NOT

If they ask me to work with him at the copy machine, I will disagree, yes I will disagree.

Repeated negation signs as below in (b.1) or different negation signs following one another and negating the same sign as in (b.2) below are all considered as instances of negation in the same clause.

3.6.1.1.1- b.1(18) **CANNOT CANNOT** TIME | BECAUSE BUS ARRIVE AT-USUAL-9.00

I can't because of the time. The reason is that the bus usually arrives at 9.

b.2 (222) SHOCK | MONEY **EMPTY EXIST-NOT** | COAT EXIST-NOT | WHAT

I was shocked. I had no money at all. I had no coat (and I didn't know) what (to do).

In both (b.1) and (b.2), emphasis is the reason for the additional sign of negation as in (a.5), where the clause contains two different signs they are both considered as part of a single negation.

3.6.1.1.2 ENG and Signed Greek

During the syntactic analysis of the data it had to be decided whether some exceptional clauses would be considered as examples of ENG or as instances of signed Greek. According to Klima and Bellugi (1979), Sutton-Spence and Woll (1999) and Valli and Lucas (2000), Signed English or Signed Exact English (S.E.E.) make use of BSL or ASL signs (in the UK and USA respectively) in English word order, together with specific sign markers which indicate grammatical elements like an article or past tense. Signed Greek is the equivalent of the above systems. Our corpus contains some clauses where sign order follows the word order of Modern Greek with prominent use of mouthings which also follow Modern Greek syntax (including articles, particles etc.). No manual markers for grammar (tense, articles, particles, etc.) occurred in any of the clauses throughout the data, including clauses where mouthings was used to indicate grammar. Data clauses having the above characteristics (prominent use of mouthings and Modern Greek word order) do not fully meet the characteristics of Signed Greek clauses since no artificial manual grammatical marker (tense, articles, particles, etc.) is signed in these clauses. For this reason, these clauses are considered as atypical types of signed Greek.

3.6.1.1.3 Making judgements about the clauses

At this point it needs to be stressed that the researcher's role during this study was dual; as a researcher, and as a native signer of ENG (acquired from birth by Deaf parents). This

dual role is often prominent throughout this thesis. During the analysis there were occasions where it was necessary to judge whether a clause (either hypothetical or from the database) is well-formed (in terms ENG structure) or not. Clauses from the database which were ill-formed were considered as performance errors of the signers, since all the informants were native or near-native signers. It should also be pointed out that all judgements made about the clauses are based on utterances drawn from the database and on the researcher's intuition in the cases where negation analysis is involved. This means that judgements about a clause derive only from the researcher and not from Deaf informants. Lack of resources and time during the research process did not allow for cross checking of particular clause structures with the Deaf informants. Therefore, the researcher's knowledge of ENG and evidence from data analysis, together have contributed to judgements on the status of some clauses.

3.6.2 Outline of the problems, the process and functional characteristics of SignStream

Returning to the issues related to data analysis. A solution to data management complications was provided by a programme designed for the management of sign language data. SignStream is a multimedia software programme for the management of linguistic data stored in digital video format (MacLaughlin et al., 2000). The programme seemed to have the features needed to overcome the difficulties encountered at this stage. SignStream manages moving image data only if it is converted into digital format and uses two main interactive windows: a video window and a gloss window. The video window displays any selected video file. Video files must be in standard Quick Time format. The gloss window is for the entry of written data (glossed sign language and the corresponding English translations) and any kind of information about the manual or non-manual features of the specific video file. Alongside the standard main gloss field, the gloss window provides further fields for the inclusion of a variety of linguistic features. Fields predefined by SignStream include, among others, non-dominant hand gloss, non-manual features (head movement, eye brows movement, topic markers, etc.), English translation. However, the programme also allows the researcher to define new fields according to the needs of the study. In addition, the gloss window includes a 'Notes' window and an 'Edit Participant' window. The 'Notes' window facility stores any kind of additional written notes or comments taken by the researcher and the 'Edit Participant' window allows the researcher to allocate a set of utterances to the participants of the study. Some

background information about the participants, such as name, age or gender can also be specified with this facility. Figure 3-1 shows the layout of a SignStream database.

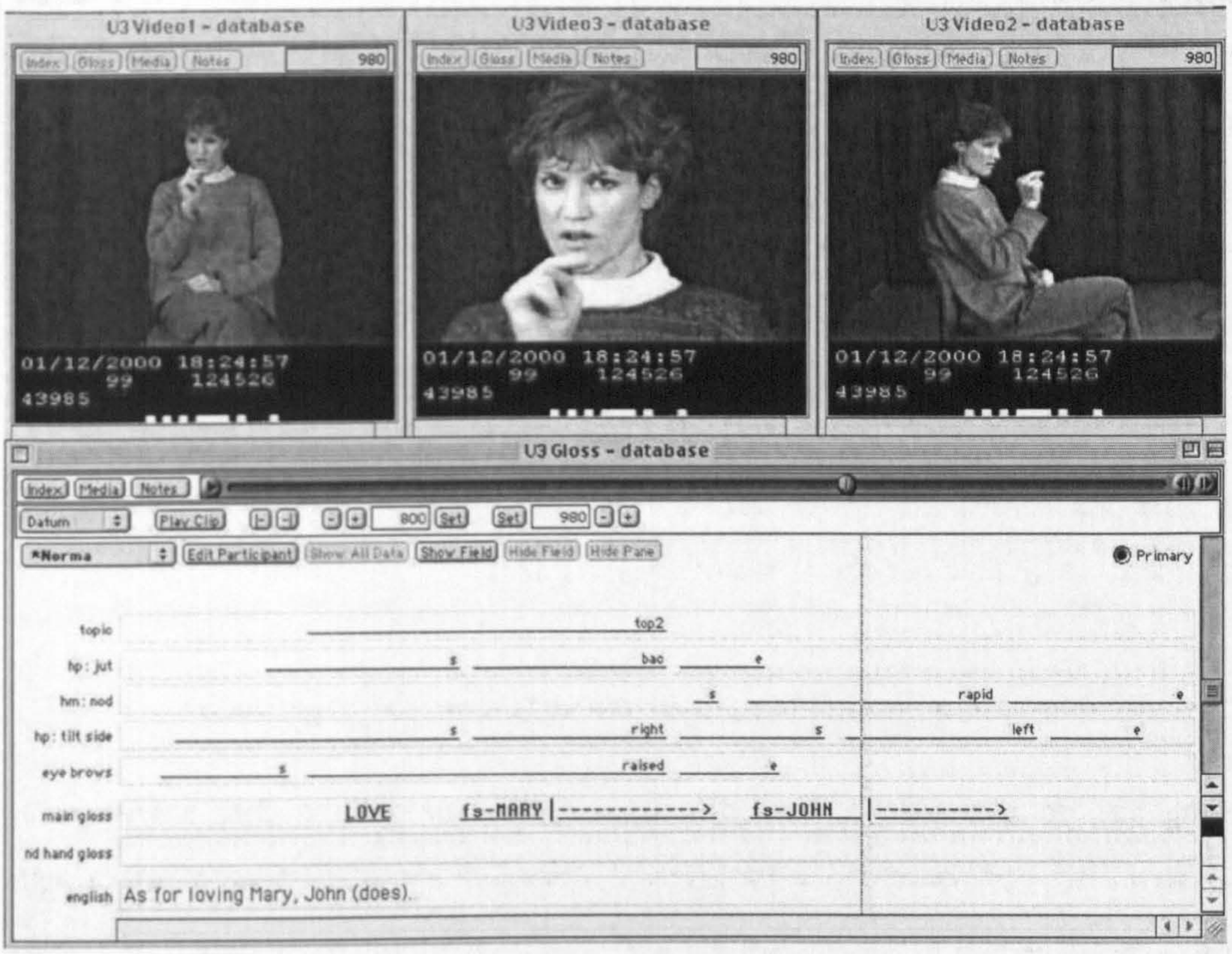

Figure 3-1. Layout of a SignStream working sheet

The process of entering data for the creation of a database is as follows. First of all, a video clip is selected from the video window. Then, the start and the end frame of the video must be specified on the gloss video and the actual sign clauses typed in the gloss field. For each glossed sign and non-manual feature the start and the end frame have to be defined.

Thus, by the end of this process all manual and non-manual information included in the gloss window are mapped onto the moving image. Information from different co-occurring fields is aligned on the screen spatially. A media alignment indicator moves horizontally along the gloss window each time the video clip is played, giving temporal field information for each video frame. The researcher is able to manipulate video files in relation to the linguistic information of any field in a temporal mode or in a frame by frame mode when necessary.

Additionally, SignStream includes a search tool for data analysis. According to MacLaughlin et al. (2000, p. 54), SignStream provides two search operators: Boolean

operators (AND, OR and NOT) and temporal operators (WITH, BEFORE, AFTER, STARTFRAME, ENDFRAME, FRAMED and UNFRAMED). The operators facilitate any analysis at lexical, grammatical and temporal level or any combination of these levels of analysis. Certain criteria affecting individual fields of the database can be specified by the researcher. Then, the database can be examined for all clauses matching these criteria. The results of the inquiries can be further refined by progressively setting additional criteria. Finally, the creation of subsets of clauses based on the main database is anticipated by SignStream. Thus, it is possible for the researcher to rearrange data files in smaller subgroups of clauses with the same characteristics or create files with the same criterion (MacLaughlin et al., 2000).

There was an initial attempt to create a SignStream file including all clauses where negation is expressed non-manually (see section 3.6.3.1). However, the final decision was to create a single SignStream database for reasons of accuracy and security. This was realised as follows:

a) The creation of a main database in Microsoft Access including all noted clauses of negation independent of the characteristics of the clauses. Decisions on inclusion or exclusion of clauses were left until after the construction of the SignStream database. Notes and observations made at earlier stages of the research were used for the elaboration of the database.

b) The digitalisation of the video data and the construction of a moving image database containing the same number of digitised video clips as the number of the set of utterances in the Microsoft Access database.

c) The creation of a SignStream database based on all above databases.

Data examination made at previous levels of the research had resulted in 552 sets of utterances. Thus, the SignStream database contained the same number of sets of utterances.

3.6.3 SignStream

3.6.3.1 An initial attempt of SignStream use

First of all, a small SignStream database was constructed. This database contained clauses of non-manual negation. In order to do this, all the videotaped material including the

non-manual negation clauses was digitalised, using Adobe Premiere. In creating the SignStream file of non-manual negation clauses, a number of concerns were raised. These are summarised below.

- Digitalising analogue prototype videotapes is extremely time-consuming.

- Many sets of utterances contain more than one negation clause which can result easily in confusion.

- Numbering of the sets of utterances and digitalised clips should be consistent and simple in order to avoid mismatches.

- Examination of negation non-manual features is managed better in a single database.

- Finally, a large number of data subgroups cannot be handled easily and threatens reliability and validity of the results.

In light of these concerns, it was decided that it was essential to construct a single database containing all clauses. In order to avoid any risk of multiple databases (e.g. a different database for each sign of negation) which would result in ambiguity, all categorisations had to be drawn from a shared 'pool' of data in other words a common database. An additional advantage was that this corpus database would easily compare the one already created as an Access file.

3.6.3.2 Digitalising data for SignStream use

SignStream manages video files only if they are in Quick Time digital format. In order to be able to proceed with any analysis based on SignStream, two steps must be taken. The first step is the conversion of the VHS analogue videotapes into a digital videotape format and the second is the creation of moving image files. Adobe Premiere digital video editing software was used for the construction and management of the moving image files. The problem here is that moving image files are extremely large. For example, a moving image clip of one second duration and with ten frames (1:10) is 4.9 MB in size. It was discovered that the size of the files could affect the efficient running of the SignStream programme as the moving image would not run and it was also difficult to make backup files or transfer them to another personal computer. In addition the capture of the moving image

capturing was not accurate whilst editing, resulting in the files being larger than necessary. For this reason, video files were edited frame by frame at a second stage. The size of the database was thus reduced radically by 8.141 gigabytes. At the end of the process, 552 video clips in total had been edited.

The identification of each video file was of special concern in order to avoid any mistakes or confusion in mapping a video file to the corresponding set of utterances. A serial number, a sample number (s1 and s2 for the first and the second videotape respectively) and the video time code were included in the identification code of each video file. This identification code was based on and coincided with the information given in the first three columns of the Microsoft Access database (number, sample and time).

3.6.3.3 The use of SignStream

After the digitalisation process, a main SignStream database was created which contained all instances of negation noted up to that point. Once again care was taken to ensure matching of the video files to the corresponding set of sign utterances. As was mentioned above, SignStream automatically assigns automatically a serial number for each set of utterances. This serial number appears in the database window to the left of the first words of each set of utterances as they appear in the glossed area. As a result, the layout of the database window is:

276 ROAD ALL EARTH
277 CAR INDEX3
278 CAR PASS
279 WHAT-FOR

Table 3-3. Appearance of the database in SignStream

However, this representation is not sufficient for immediate access to and direct inspection of the database. For this reason, it was decided that the sample number (s1 and s2 for the first and second videotape respectively) and the video time should also be entered into the gloss area preceding the glossed signs. By this means, the sample number and video time code appeared adjacent to the serial number of the database window, facilitating control and access for each set of sign utterances. Video files were also coded

in this way. The sets of utterances are in ascending order of sample number and video time code for each set of utterances. The final layout of the database window is as follows:

276 s1 01:34:16 ROAD ALL
277 s1 01:34:48 CAR INDEX3
278 s1 01:34:55 CAR PASS
279 s1 01:35:17 WHAT-FOR

Table 3-4. Appearance of the SignStream database in the present study

The same code description (a serial number, the sample number and the video time) also appears in each set of sign utterances coded in the Access programme. The result is a definite match of the SignStream database to Adobe Premiere and the Access databases, allowing monitoring and verification of the data at any stage of the process.

3.6.4 Using SignStream

Once the sets of utterances and corresponding video clips had been issued with a precise identification code, they were allocated to the SignStream database. For each set of sign utterances, the corresponding video file was selected and the identification code of the video and the accompanying information of the database were verified. Each set of sign utterances was coded and glossed. Next, the start and end frames were defined for every sign in the gloss field. Subsequently, the non-manual field or fields were specified, and start and end frames were assigned to all non-manual features of negation of the respective non-manual fields. Finally, any additional observation and comments were noted in the 'Notes' window. Written records and notes from earlier phases of the study were used throughout this process in order to verify decisions.

The use of the 'Notes' window was of particular importance during the process of allocating sets of utterances. For example, we had noted the sets of utterances containing more than one clause of negation. Although SignStream does not provide specific tools to store information and comments important to our analysis, it provides the search tools to recover any written information stored in the 'Notes' window. Therefore it was crucial to structure the 'Notes' window systematically in order to ensure the consistent use of the categories necessary for subsequent analysis. Category coding was achieved simply by

assigning each category a descriptive label. These were used consistently throughout the allocation of the sets of utterances in SignStream. The same information was added to the Microsoft database in the 'Comments' column.

Accordingly, the 'Notes' window contained information about:

a) The number of negation clauses contained in a set of utterances.

b) Negation clauses where negation was expressed non-manually.

c) Negation clauses where the spread of non-manual negation did not mark the corresponding manual signs.

d) Manual and/or non-manual responses of the addressee in those clips where two or more Deaf were signing.

e) Manual and/or non-manual responses of a signer telling a story and using role shift during the narration.

f) Exceptional formation of signs of incorporated negation which appeared. For example HEAR-NOT was an exceptional form of incorporation of negation.

g) Clauses where decisions were tentative and had to be considered further.

h) Clauses with ambiguities in meaning.

i) Negation clauses where the video clip was problematic or blurred.

j) Unusual use of signs and/or non-manual features of negation.

k) Extreme instances of non-manual or gestural negation.

l) Negation clauses for which the analysis remained unfinished at the initial stage of the process.

Completion of this process required approximately 380 hours of work. The process of creating the SignStream database proved to be extremely useful in resolving most of the ambiguities and obscurities noted at previous levels of the analysis. The frame by frame examination required to match both the glossed signs and non-manual fields to the corresponding video clip imposed an exhaustive exploration of the data. This thorough

and detailed analysis resulted in the radical reduction of ambiguous clauses. Furthermore, the whole process demanded close scrutiny of the existing written records and the Microsoft Access database. Through this process, various omissions and inaccurate assessments were identified and rectified (including the wrong assignment of a clause's boundaries).

3.6.4.1 Frame assignment

At this point, a specific complication concerning start and end frame assignment should be noted. The marking of the start and end frames, for manual signs and non-manual features, is a simple process in terms of software function. SignStream provides start and end frame buttons for this purpose.

However, frame assignment is a complex process by definition. The question to be answered is a simple one: which is the starting frame of a sign or non-manual feature and which is its end frame? In other words, where does a sign begin and end? The answer is not straightforward, and the task becomes more complicated when looking at signing in context because of the transition movements between signs.

Frame assignment was not regarded as an influential factor in our analysis. However, specific 'rules' were adopted so that all frame settings for both signs and non-manual features were accountable to specific unvarying conditions. These conditions then applied for the whole process. Determination of these rules is of utmost importance for reasons of methodological consistency.

3.6.4.1.1 Frame assignment for signs

The phonetic features of signs make frame assignment difficult. Handshape, location, palm/finger orientation and movement usually co-occur during a specific time period but their start and end points do not necessarily coincide. This lack of co-occurrence is the major source of complication in sign frame assignment. It is hard to define a sign only by a single temporal dimension.

Furthermore, a sign is perceived as a whole meaningful lexical entity and not as consisting of formational categories. It is the combination of handshape, location, orientation and movement over a period of time which results in a meaningful sign. However, decomposition of a sign into its phonetic parts is necessary for sign frame assignment.

The definition of frame assignment rules has implications for the consideration of signs both as meaningful linguistic entities and as combinations of their parts. Start and end frame assignment was initially determined by the appearance of a handshape in combination with location of the handshape. This was decided because the handshape in a specific location was considered to be the point at which the meaning of a sign can be perceived. A handshape by itself is not a sufficient element for frame assignment. If two sequential signs have the same handshape, then the handshape is already formed for the second sign. Similarly, it is possible that the hand or hands are already in the appropriate location because the previous sign was articulated in exactly the same location. This phenomenon is typical in casual signing. It should be noted that it has been observed by the researcher that sign location often changes and two-handed signs are signed with one hand in casual signing.

Thus, the first frame containing a 'meaningful' handshape-in-location combination is assigned as the start-frame. The end-frame is assigned as the last meaningful handshape-in–location frame respectively. Signs with internal movement contain an abrupt end to the movement which therefore facilitates end frame assignment. In some cases the handshape–in-location condition is not sufficient (one such example in rapid signing where handshapes are not well-formed). In these cases, facial expression, mouth pattern, eye blink and change in eye gaze (see below section 3.6.4.1.2) are also taken into account for frame assignment. Furthermore, it was observed that shoulder movements (left or right), changes in head posture and changes in body posture also signal the beginning or the end of a sign and hence should be taken into account.

3.6.4.1.2 Frame assignment for non-manual features

Based on the above, one could assume that frame assignment for non-manual features would be an easier task since they are not as complicated phonetically as signs are. Unfortunately, this does not prove to be entirely true. The problem here is to distinguish whether the start/end frame is to be the first/last frame where the head is moving or not. As a result, frame setting becomes essentially the researcher's own choice.

For analysis purposes, it was decided that, for a negation head movement in particular, the first frame indicating movement of the head would be assigned as the start frame and consequently the first frame of a non-moving head after the negation head movement

would be assigned as the end frame. Accordingly, for negation facial expression features, the first frame indicating a change of facial expression would be assigned as the start frame and the first frame after the change from negation facial expression to another facial expression or to a neutral face would be assigned as the end frame.

As with manual sign frame assignment, the casual signing environment makes the process more complex. Negation head movements and non-manual features of negation can occur simultaneously with, or in succession to, other grammatical or discourse markers. The head, for example, can be moved slightly from side-to-side because of the signing rhythm or it may be tilted backwards for emphasis. In both cases, the head movements resemble the corresponding negation head movements. Moreover, the facial expressions used for negation such as raised eyebrows, lowering brows and narrowing eyes, etc, are also used as topic markers, adverbial markers, wh-markers and so forth. For example in ENG, as well as in other sign languages, raised eyebrows can be used as a topic marker. Unfortunately to date there is no research in ENG on this topic and these remarks are based only on the researcher's observation of ENG. In cases with complex use of non-manual features, eye gaze, eye blink and body posture criteria may be taken into account in the frame assignment process. As in the case of sign frame assignment, the above features can signal the beginning or the end of a non-manual feature of negation or the switching of the non-manual feature to a marker of negation.

Additionally, changes in each class of non-manual features of negation (head movement and facial expressions) were taken into account for the analysis of the other group of non-manual features. Thus, changes in negation facial expression were considered for frame assignment of negation head movements, and vice versa. For example, if the head is already moved back for reasons of emphasis not related to negation, then the raising of the eyebrows can signal that the head position can now be interpreted as negative. Similarly, the interpretation of raised eyebrows can change from topic marker to negative marker because of the occurrence of backward tilt head movement.

3.6.4.1.3 Problems affecting frame assignment

There are several additional complications in frame assignment, relating to the video recording settings and features of the signing itself. Regarding the video setting, the recording angle of the camera during signing, people moving in front of the camera, and

insufficient light were the source of major obstacles in frame assignment. Many clauses present a combination of these problems.

Features related to casual signing also caused ambiguities and problems in the definition of start and end frames. Speed of signing was a major obstacle for frame assignment in the case of pronouns. For example, just a change of finger orientation of a B or G handshape towards the referent or towards the signer's body is sufficient to mark a pronoun. In such instances a pronoun may only consist of two frames – a start and an end frame. Another example of handshape change is EXIST-NOT. The sign which is normally articulated with a B handshape is often articulated with a lax 5 handshape. Moreover, the location of the articulation can be changed. In the case of CANNOT which is normally articulated under the chin we find it may often be articulated in a neutral space.

The next chapter examines issues related to the morphophonological characteristics of negation. Both manual signs of negation and non-manual features of negation are presented. Specific emphasis is given to the relation of head movements of negation to particular signs of negation.

4 RESULTS: LEXICAL AND MORPHOPHONOLOGICAL MARKING OF NEGATION

4.1 Introduction

The first step of analysis is concerned with issues related to the morphophonology of negation in ENG. According to the literature, sign languages express negation by using negation signs, signs of incorporated negation and features of non-manual negation. Non-manual features contain negation head movement and facial expression of negation. The analysis in the following sections will explore whether ENG uses the same classes of signs and the same classes of non-manual negation features as those found in other sign languages.

4.2 Process of the study

As was noted in the previous chapter, a pre-pilot and a pilot study were conducted. Because of specific complications in data elicitation, a database containing naturalistic data was created. These studies and the database contain data upon which the analysis is based.

4.2.1 Preliminary findings

The pre-pilot study used naturalistic and elicited data. Its findings established that ENG makes use of the following means in order to express negation:

a) Manual signs of negation. These signs can be divided into negation signs and signs with negative incorporation.

1. The negation signs comprise the following: NO (no), NOT (not) with the B or G handshape, NOTHING (nothing), NEVER (never), EMPTY (empty), NO-WAY (no way).

2. The signs with negative incorporation comprise: BELIEVE-NOT (do not believe), CANNOT (cannot), AGREE-NOT (disagree), EXIST-NOT/HAVE-NOT (do not exist/do not have), GOOD-NOT, (not good), KNOW-NOT (do not know), LIKE-NOT (do not like),

UNDERSTAND-NOT (do not understand), WANT-NOT (do not want').[25]

b) Non-manual features of negation. A clause or a phrase can be negated by the use of non-manual features of negation without the use of any manual negation. The use of negation head movements and/or negation facial expression features is sufficient for negation marking. These features can be described as follows:

- the head tilts backwards
- the head shakes from side-to-side rotating around the neck which acts as an axis
- the head makes a half movement to the one side only and then moves back to the initial position
- the signer raises the brows
- the signer lowers the brows with a frown and also narrows the eyes
- the signer lowers the corners of the mouth
- the signer uses mouth gestures.

c) Combination of both manual signs and non-manual features of negation. Manual negation signs and non-manual features of negation are not mutually exclusive. On the contrary, they are often used in combination, and non-manual features of negation accompany manual negation signs.

These categories are not unique to ENG. Researchers have reported the same means of expressing negation in various sign languages. Although differences can be found in specific signs, non-manual features and combinations of these, the semantic categories are common to all sign languages where data relating to negation has been reported.

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[25] All these signs as well as the non-manual features identified are described later in this chapter.

4.2.2 Codification

For the purposes of analysis, all negation signs and features of non-manual negation were categorised into groups. Then, the database videotapes were analysed into tokens of negation, and the occurrence of each manual and non-manual token of negation was coded.

Initial observations and categorisations verified during this process of token coding. Some features of the subcategories were not initially included in the first categorisation because it was not clear if their appearance is systematic in ENG negation. However, these lexical items and features of non-manual negation are included in the lists below. The four main categories of negation initially established are the following (Table 4-1).

1.	Negation signs (NegS).
2.	Signs with negative incorporation (NegInc).
3.	Negation head movements (h).
4.	Negation facial expression. (f).

Table 4-1. Categorisation of manual signs and non-manual features of negation

The following sections present the forms of manual and non-manual negation in these categories.

4.2.2.1 Negation signs (NegS): codification

This group contains signs for negation marking. Negation signs are similar to negative words in spoken languages.

N1. NO-As, (no). The sign is formed as follows:

The handshape is As fist:

Location is neutral space. Palm orientation[26] is downwards. Finger orientation[27] is away from the signer. As the hand moves upwards, the palm rotates to face upwards.

N2. NOTB, (not) with the B handshape. The sign is formed as follows:

The handshape is B:

Location is neutral space. Palm orientation is downwards. Finger orientation is away from the signer and to the contralateral side. As the hand moves upwards, the palm rotates to face upwards.

N3. NOTG, (not) with the G handshape. The sign is formed as follows:

The handshape is G:

Location is neutral space. Palm orientation is away from the signer. Finger orientation is upwards. The forearm moves from side-to-side repeatedly. Alternatively, only the palm moves and the forearm remains steady.

N4. NOTBshk, (not) with the B handshape. The sign is formed as follows:

The handshape is B:

Location is neutral space. Palm orientation is away from the signer. Finger orientation is upwards. The forearm moves from side-to-side repeatedly. Alternatively, it is only the palm which moves and the forearm remains steady.

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[26] Following Brennan et al. (1984), palm face indicates the palm orientation. This can be up, down, left, right, towards to signer and away from the signer.

[27] Following Brennan et al. (1984), the tips of straightened fingers (independently of the handshape) indicate finger orientation. This can be up, down, left, right, towards to signer and away from the signer.

NOTBshk was added to the list as a NegS after initial observation during the pre-pilot study. Up to that point the sign was not considered as an independent negation sign, but rather as an informal variant of the previous NOTB and NOTG negation signs. NOTBshk uses features from both NOTB and NOTG; the handshape from NOTB and the movement from NOTG. The consistent form used by informants for NOTBshk and its regular use supported the decision to code it as a separate NegS.

N5. NOTHING, (nothing). The sign is formed as follows:

The handshape is a 5 handshape with the tips of the thumb and the middle finger connected which ends in a 5 handshape:

Location is neutral space. Palm orientation is to the contralateral side. Finger orientation is away from the signer. The movement is a flicking open of the thumb and the middle finger.

N6. NEVER, (never). The sign is formed as follows:

The handshape is Y:

Location is neutral space. Palm orientation is downwards. Finger orientation is away from the signer and to the contralateral side. The forearm moves from contralateral to ipsilateral side (path movement).

N7. EMPTY, (empty). The sign is formed as follows:

The handshape is F:

Location is neutral space. Palm orientation is towards the signer. Finger orientation is to the contralateral side. The movement is pronation of the forearm.

EMPTY presented specific difficulties in the analysis. Although it was considered as a negation sign, the fact that the sign is glossed and translated as (empty) may be confusing. The glossing was not changed because (empty) is its core meaning and it is often mouthed by the signers. Its function within an ENG clause indicates its use as a negation sign and it was categorised with the group of NegS at that level of analysis[28]. As shown in the following examples (a.1, a.2, a.3).

4.2.2.1-a.1 SHOE EMPTY

(She) has no shoes.

a.2 FOOD EMPTY

There was no food.

a.3 SHEEP EMPTY

There were no sheep.

N8. F-NOTHING, (nothing). The sign is formed as follows:

The handshape is F:

Location is in the front of the mouth. Palm orientation is towards the signer. Finger orientation is upwards. There is no movement in the sign. Air is expelled through virtually closed lips.

F-NOTHING is included in the list of negation signs although it appeared only once. Its use as a NegS was confirmed by the Deaf informants.

NOTHING, NEVER, EMPTY and F-NOTHING are also reported by Sapountzaki (2005). She provides no specific description of the signs, although they are glossed similarly. The only exception is F-NOTHING which is reported as 'zero blow' (Sapountzaki 2005, p. 202).

4.2.2.2 Signs with negative incorporation (NegInc): codification

Signs with negative incorporation comprise verbs and other predicative elements which modify their form to incorporate a negative element.

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[28] As we will see in the next chapter the sign will be re-categorised.

I1. BELIEVE-NOT, (do not believe). The sign is formed as follows:

The handshape is a bent B which ends in an open B:

Location is to the ipsilateral side of the upper head. Palm orientation is to the contralateral side. Finger orientation is upwards. The fingers are extended to B handshape.

I2. CANNOT, (cannot). The sign is formed as follows:

The handshape is a bent B which ends in open B:

Location is under the chin. Palm orientation is towards the signer. Finger orientation is upwards. The palm changes to face away from signer and fingers are extended to B handshape.

I3. AGREE-NOT, (disagree). The sign is formed like the NO-As:

The handshape is AS:

Location is neutral space. Palm orientation is downwards. Finger orientation is away from the signer. The forearm moves upwards with a pronation movement and the wrist is extended. Alternatively, it is only the palm which makes the movement and the forearm remains steady.

I4. EXIST-NOT/HAVE-NOT, (do not exist/do not have). The sign is formed as follows:

The handshape is an open B which ends in a bent B:

Location is in front of the face. Palm orientation is towards the signer. Finger orientation is upwards. The handshape flexes to a bent B.

I5. GOOD-NOT, (not good). The sign is formed as follows:

The handshape is a closed B where the tips of the fingers are in contact with the opposite thumb which ends in a 5 handshape:

Location is neutral space. Palm orientation is upwards. Finger orientation is away from the signer. The movement combines pronation of the forearm and opening of the hand to a 5 handshape.

I6. KNOW-NOT, (do not know). The sign is formed as follows:

The handshape is G:

Location is beside the ipsilateral side of the head. The index finger touches the upper head. Palm orientation is to the contralateral side. Finger orientation is upwards. The movement is pronation and the palm is oriented away from the signer.

I7. LIKE-NOT, (do not like). The sign is formed as follows:

The handshape is G:

Location is in front of the throat. Sometimes the index finger touches the throat. Palm orientation is towards the signer. Finger orientation is upwards. The movement is pronation and the palm is oriented away from the signer.

I8. NO-WAY, (no way). The sign is formed as follows:

The handshape is Â:

Location is neutral space. Palm orientation is upwards. Finger orientation is away from the signer. The movement is supination.

I9. G-UNDERSTAND-NOT, (do not understand). The sign is formed as follows:

The handshape is G:

Location is at the ipsilateral side of the upper head. The index finger touches the upper head. Palm orientation is to the contralateral side. Finger orientation is upwards. The movement is pronation followed by NOTHING.

I10. Y-UNDERSTAND-NOT, (do not understand). The sign is formed as follows:

The handshape is Y:

Location is on the ipsilateral side of the upper head. Palm orientation is to the contralateral side. Finger orientation is upwards. The movement is small repeated movement of the forearm towards and away from the head.

I11. WANT-NOT, (do not want). The sign is formed as follows:

The handshape is 5:

Location is in the front of the chest. Palm orientation is towards the signer. Finger orientation is to the contalateral side. The movement is usually supination, although in some cases the hand pronates.

It should be noted here that the movement in all signs of negation (negation signs and signs with negative incorporation) involves no path movement. The sign movement

usually affects the palm (shaking, expansion, etc.), the fingers (flexing, flicking, etc.) or the forearm (supination, pronation), and cannot be expanded to move through signing space.

CANNOT, EXIST/HAVE-NOT, NO-WAY and Y-UNDERSTAND-NOT are also reported by Sapountzaki (2005). She glosses EXIST/HAVE-NOT as NOT-BEEN and NO-WAY is treated as two homophone signs, BE-OFF and (CAUSE-TO)-BE-OFF.

4.2.2.3 Negation head movements (h) codification

ENG makes use of three different head movements to mark negation.

a) The head tilts backwards (h1). The movement is non-repeated. The head tilts backward and returns to initial position. The amplitude and the duration of the movement vary from signer to signer, depending on whether the signer wants to indicate stronger or weaker negation.

b) The head shakes from side-to-side (h2). This is a repeated movement of the head. As has already been mentioned, this headshake has been reported in many sign languages. As in headtilt (h1), the headshake (h2) can vary in size, speed, amplitude and duration of the movement. There are individual differences between signers and differences related to whether a stronger or weaker negation is expressed each time.

c) The head makes a half movement to one side only and then moves back to initial position (h3). The movement is non-repeated. This movement (headturn) is also reported in other sign languages. As in headtilt (h1) and headshake (h2), a headturn (h3) can vary in size, speed, amplitude and duration of the movement.

In the current study negation head movements are considered to be grammatical non-manual behaviour, since they can be used as the sole expressors of negation. This categorisation is supported by information elicited during the pre-pilot and pilot studies.

4.2.2.4 Facial expressions of negation (f): codification

As noted earlier, initial observations reinforced by the pre-pilot and pilot study identified six different facial expression negations used to accompany negation in ENG.

a) The signer raises the brows (f1-br).

b) The signer lowers the brows with a frown and also narrows the eyes (f2-bl).

c) The eyes of the signer are closed or almost closed (f3-ec)[29].

d) The corners of the mouth are turned down (f4-md).

e) The signer raises the upper lip and pushes the lower lip outwards (f5-lo)[30].

f) The signer uses mouth actions of negation (f6). These mouth actions are divided into two subgroups.

1. Mouthings (f6-m) / Word Pictures (f6-wp) of negation. In mouthings, the signer articulates a Greek word with or without voice (this varies from signer to signer). In our view, recovering the Greek word is an easy task in most of the cases for an experienced signer. In word pictures, the signer tries to articulate, with or without voice only some parts of the word, often the first syllable.(e.g. [o:] for /oxi/ (όχι - not), [ðəpa] or [ðəp^h] /ðəniparxi/ (δεν υπάρχει - not exist), [po] or [p^h] for /pote/ (ποτέ - never), etc.).

2. Mouth gestures (f6-mg) of negation. These are specific mouth patterns which have no obvious relation to words in Greek. Mouth gestures bind to particular signs of negation and are considered part of the articulation of the sign. In the case of EXIST-NOT the sign is usually accompanied by the [ạp] mouth gesture[31]. Just as with mouthings and word pictures, mouth gestures can be voiced or voiceless.

g) The signer uses the body as feature of non-manual negation[32].

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[29] This expression (f3-ec) was not in the initial categorisation because it looks like a variation of f2-bl. It was added in the final categorisation as a separate group because its form was consistent and its use by the informants regular. In f3-ec it is only the eyes which are closing whereas in f2-bl the narrowed eyes is the result of brow frown.

[30] This expression (f5-lo) was not in the initial categorisation. It was added in the final categorisation.

[31] Where the [o] denotes voiceless vocalic gesture, and [p] a lip closure, which may or may not be explosive and may involve lip percussion.

[32] These movements were not originally coded as part of the non-manual features of negation. The movements were initially considered as gestural (since it was observed that they are used by the hearing community) and not part of the non-manual elements. However the regular use of both movements by the signers within a particular grammatical setting of negation led to a revision of the initial exclusion.

1. The body torso is moved backwards (b-back).

2. The shoulders are moved upwards (sh-up).

Mouthings and word pictures of negation are coded separately although for most of the research both terms refer to the same mouth pattern (see 2.3.2.2). This separation was based on a preliminary observation in which it was suggested that mouthings and word pictures of negation can form two distinct groups of mouth actions in ENG. In order to investigate if there really are any differences between these features they are purposely coded separately.

In relation to the negation body feature of the upward shoulder movement, it should be noted here that this particular movement resembles a shrug. The use of the shrug is regularly used within the hearing community as a gesture for expressing ignorance or lack of interest; however it is important to note that when it is used in this way the movement is relaxed. In contrast its movement as a negation non-manual feature is sharp and abrupt. Although it was expected that the feature would accompany signs like KNOW-NOT, it was also found to accompany a variety of signs of negation such as NOTG, NOTHING, CANNOT, EXIST-NOT, GOOD-NOT.

Based on the relevant literature (see section 2.3.2.3) and on consequent information elicited during the pre-pilot and pilot studies, negation facial expressions are considered as affective expressions which cannot signal negation without the additional manual negation signs or negation head movements.

4.2.2.5 Tables of occurrences

After each type of manual and non-manual negation had been identified, tables of occurrence for the tokens were created (see section 3.5). Negation tokens comprised all instances of negation expressed by manual negation signs (with or without features of non-manual negation), and all instances of independently occurring non-manual features of negation. In this latter group, the signer did not use any sign whatsoever of manual negation (NegS or NegInc), and negation was expressed by non-manual features only. Thus, two groups of negation tokens were created; tokens of manual negation and tokens of non-manual negation.

4.3 Presentation of the data

The video data included a total of 753 tokens of negation in ENG. These tokens represent the analysis of a total of 4 hours and 45 minutes of ENG data. The video image for 33 of these tokens was not clear enough because of poor lighting and these tokens were excluded from the final database. Thus, the analysis is based on the remaining 720 tokens.

4.3.1 Total negation tokens

Of the total number of tokens of negation in the database, 615 included a manual sign of negation and 105 used features of non-manual negation only. The term manual negation token is used for the former group and the term non-manual negation token is used for the latter group. The data shows, that in the majority of the cases (85%), negation is expressed by manual negation signs and in one sixth of the cases tokens (15%), negation consists of non-manual negation tokens only. This suggests that manual signs of negation are not compulsory elements for expressing negation in ENG. The distribution of tokens for the two types of signs of manual negation (NegS and NegInc) and for non-manual negation tokens is presented in Figure 4-1.

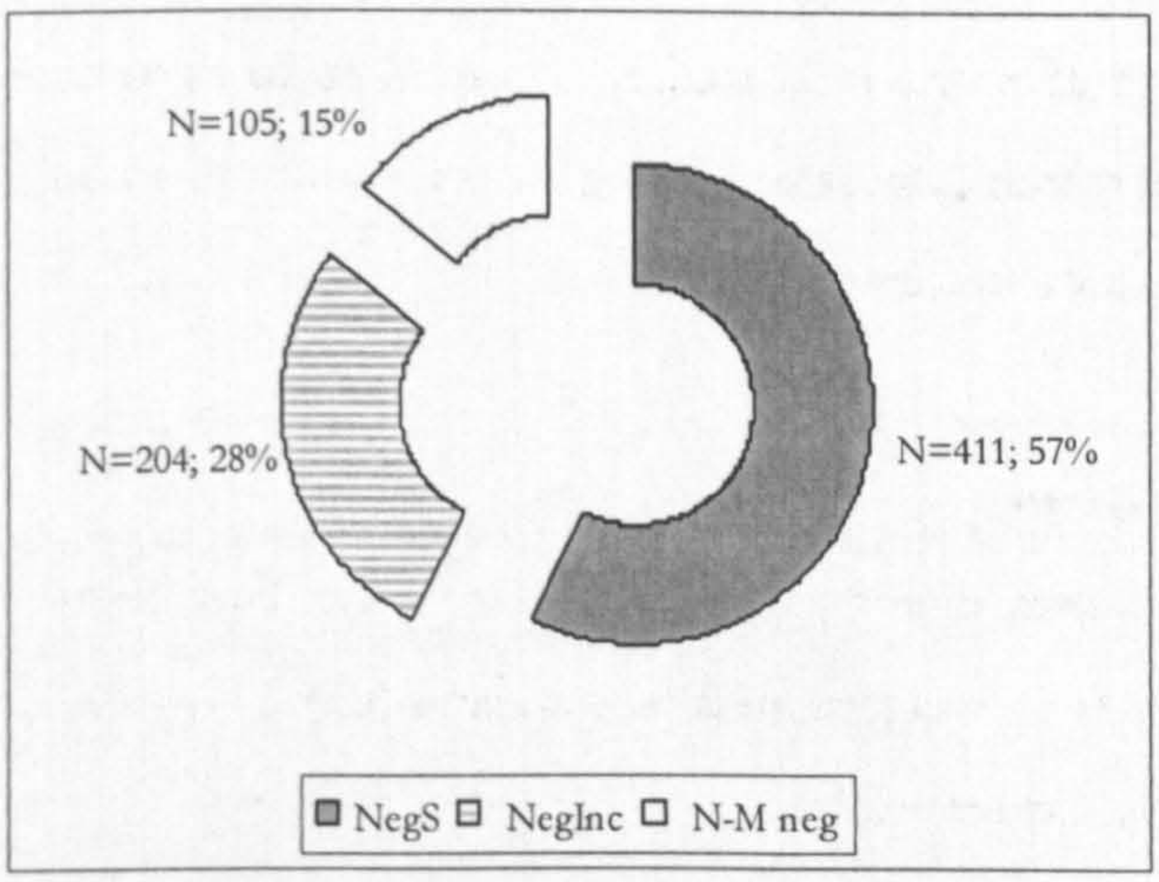

Figure 4-1. The distribution of tokens of NegS, NegInc and N-M negation [33]

Of the total of 615 tokens expressed with manual signs of negation, 411 are NegS tokens and 204 are NegInc tokens. Figure 4-1 shows that in the majority of the cases (57%),

[33] N refers to the number of items exhibiting a particular feature

negation is expressed with NegS, while in 28 percent of tokens, negation is expressed by NegInc.

The database also contains manual negation tokens which are not accompanied by any feature of non-manual negation. More specifically, it contains 116 manual negation tokens (19%) without any negation head movement or negation facial expression, whereas 499 manual negation tokens (81%) are accompanied by a feature of non-manual negation. This suggests that non-manual features of negation are not obligatory elements in ENG negation.

4.3.2 Tokens of negation signs

Negation is expressed by a NegS in 411 tokens. These tokens represent more than half (57%) of the data. The distribution within the category of NegS is presented below (Figure 4-2).

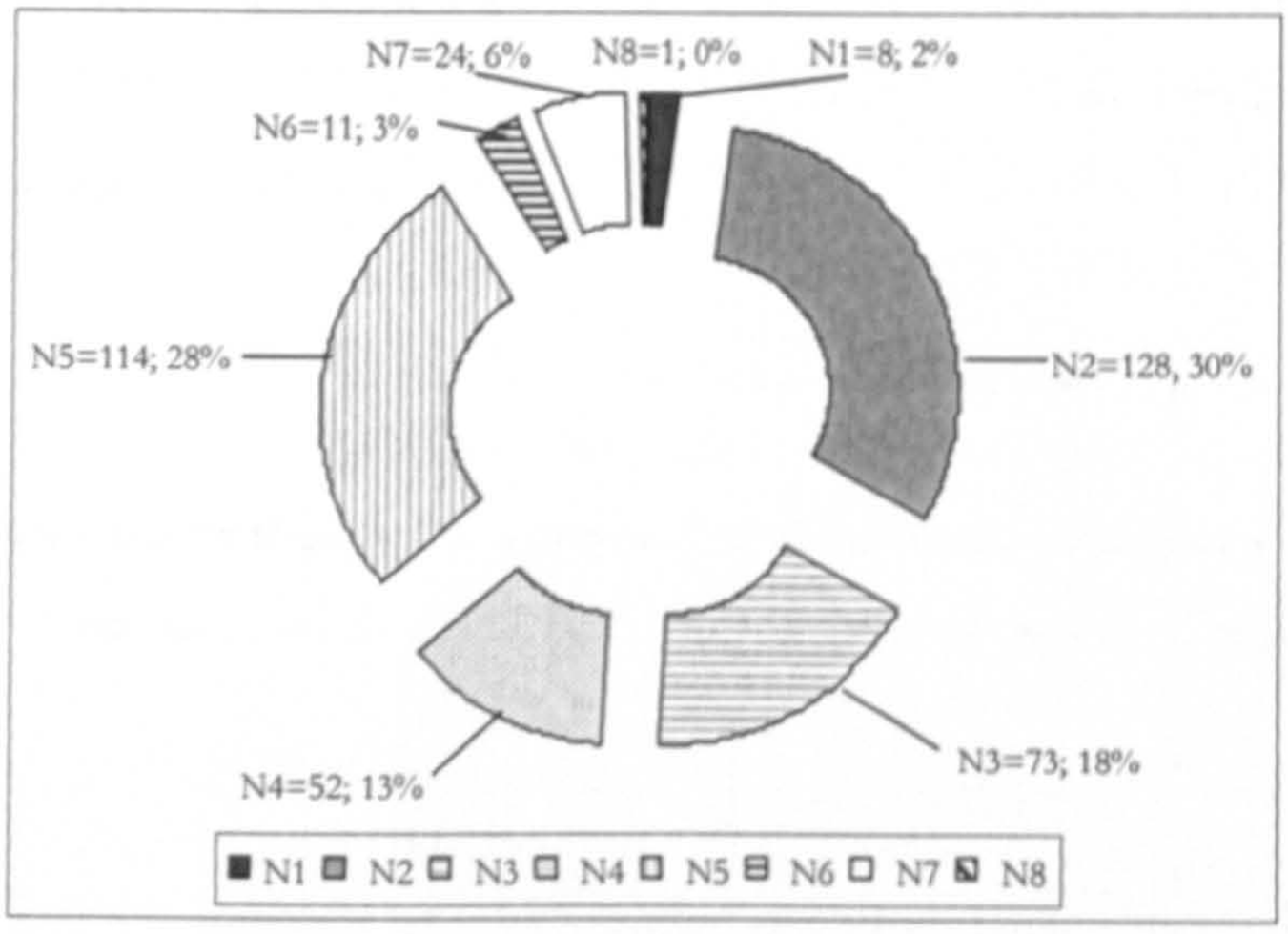

Figure 4-2. The distribution of NegS tokens

- NO-As (N1), 8 tokens (2%).
- NOTG (N2), 128 tokens (30%).
- NOTB (N3), 73 tokens (18%).
- NOTBshk (N4), 52 tokens (13%).
- NOTHING (N5), 114 tokens (28%).

- NEVER (N6), 11 tokens (3%).
- EMPTY (N7), 24 tokens (6%).
- F-NOTHING (N8), 1 token (< 1%).

Percentages show that within the group of NegS tokens, NOTG (N2) (31%) and NOTHING (N5) (28%) are the most frequent. NOTG (N2), NOTB (N3) and NOTBshk (N4) have the same meaning as the particle *not* in English and the particles δε(ν) (den) and μη(ν) (min) in Modern Greek. NOTG, NOTB and NOTBshk together express the most frequent negation marking within the group of NegS tokens (62%) and there are 239 tokens of these signs representing one third (33%) of the total of negation tokens. NOTG, NOTB, NOTBshk and NOTHING represent 89 percent of the tokens within the NegS group.

Features of non-manual negation very frequently occur with negation signs. The majority of NegS tokens (N=331; 81%) are accompanied by non-manual features. Nonetheless, non-manual features are not obligatory elements and in 19 percent (N=80) of NegS tokens none of the features of non-manual negation co-occurred (see Figure 4-6).

4.3.3 Tokens of signs with negative incorporation

There were 204 tokens of NegInc signs. These examples represented 28 percent of the total number of tokens. Figure 4-3 shows the distribution of these tokens.

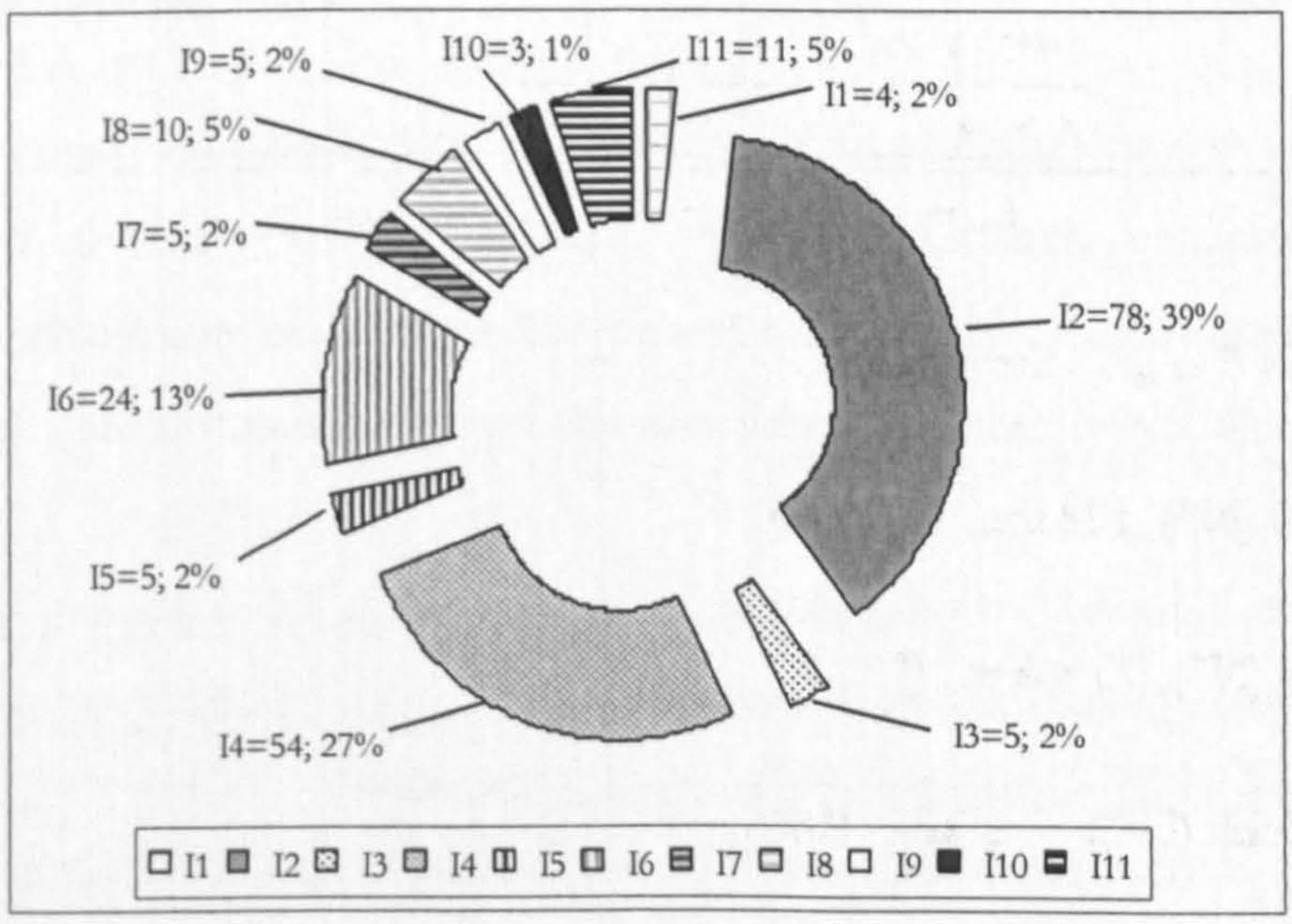

Figure 4-3. The distribution of NegInc tokens

- BELIEVE-NOT (I1), 4 tokens (2%).
- CANNOT (I2), 78 tokens (39%).
- AGREE-NOT (I3), 5 tokens (2%).
- EXIST-NOT/HAVE-NOT (I4), 54 tokens (27%).
- GOOD-NOT (I5), 5 tokens (2%).
- KNOW-NOT (I6), 24 tokens (13%).
- LIKE-NOT (I7), 5 tokens (2%).
- NO-WAY (I8), 10 tokens (5%).
- G-UNDERSTAND-NOT (I9), 5 tokens (2%).
- Y-UNDERSTAND-NOT (I10), 3 tokens (1%).
- WANT-NOT (I11), 11 tokens (5%).

According to the above figures, CANNOT (I2) (39%), EXIST-NOT (I4) (27%) and KNOW-NOT (I6) (13%) are the most frequent, representing 79 percent of NegInc tokens and 22 percent of the total of tokens. Data analysis shows that NegInc tokens may or may not be accompanied by features of non-manual negation. As in the case of NegS, the data suggests that non-manual features of negation are not obligatory elements for NegInc signs, since no feature of non-manual negation occurs in 17 percent (N=35) of NegInc tokens. Once again the majority of NegInc tokens (N=169; 69%) are accompanied by features of non-manual negation.

4.3.4 Tokens of negation head movements

Negation is accompanied by a negation head movement in 429 tokens (60%) whereas in 291 tokens (40%) no negation head movement occurs. The distribution of the different types of negation head movements is presented in Figure 4-4.

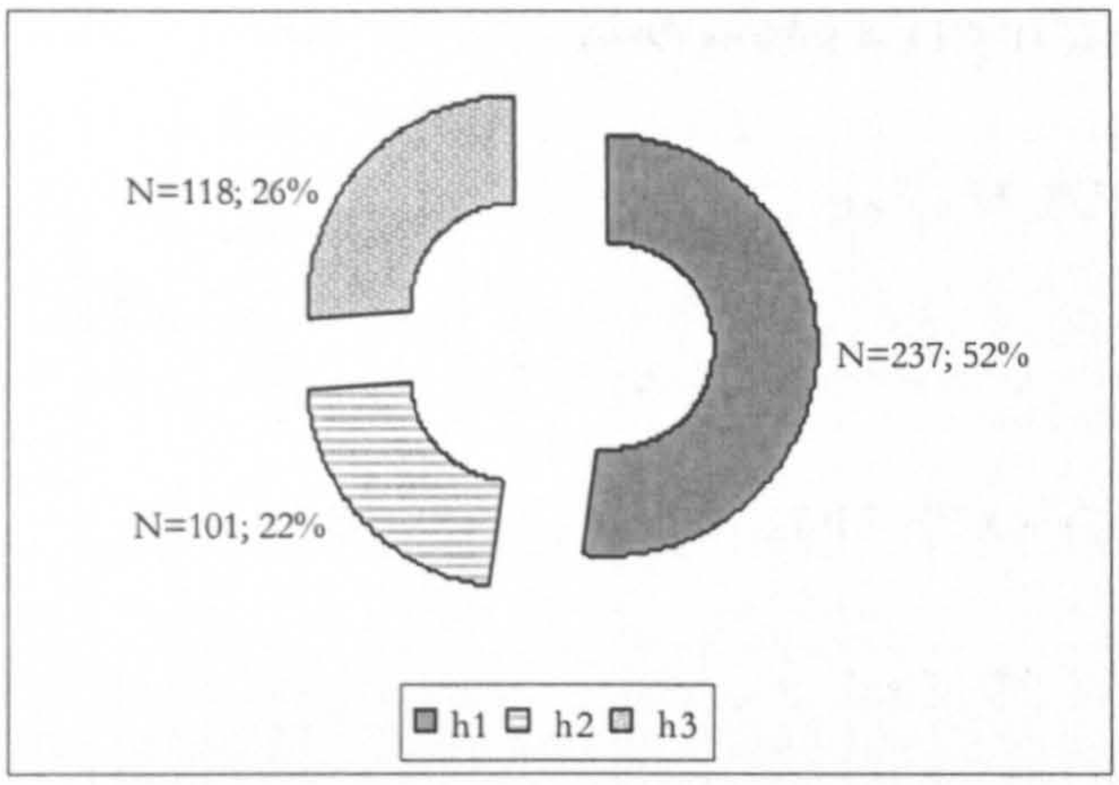

Figure 4-4. The distribution of negation head movements

- Headtilt (h1) appears in 237 tokens (52% of tokens with negation head movement/33% of the total number of tokens).

- Headshake (h2) appears in 101 tokens (22% of tokens with negation head movement/14% of the total number of tokens).

- Headturn (h3) appears in 118 tokens (26% of the tokens with negation head movement/16% of the total number of tokens).

The total number of tokens of different types of negation head movement (456) is greater than the total number of tokens including any negation head movement (429) because some tokens are accompanied by a combination of two negation head movements. These comprise 8 tokens where a headtilt (h1) co-occurs with a headshake (h2), 18 tokens where a headtilt (h1) co-occurs with a headturn (h3), and one token where a headshake (h2) co-occurs with a headturn (h3).

Tokens with headtilt represent 52 percent of the tokens accompanied by a negation head movement and 33 percent of the total number of negation tokens. Headshake (h2) and headturn (h3) are equally distributed: 108 tokens with headshake (23%) and 118 tokens with headturn (35%), comprising 14 percent and 16 percent of the total tokens respectively.

4.3.5 Tokens of facial expressions of negation

Features of negation facial expression accompany a token of negation in the majority of the cases (539 tokens, 75%). For the remainder of the tokens, no negation facial

expression feature was used. As mentioned above, the use of negation facial expression is independent of negation head movement. The distribution of negation facial expression is presented in Figure 4-5. The figure shows only the numbers of types of negation facial expression features, since often more than one negation facial expression can co-occur with the same manual token.

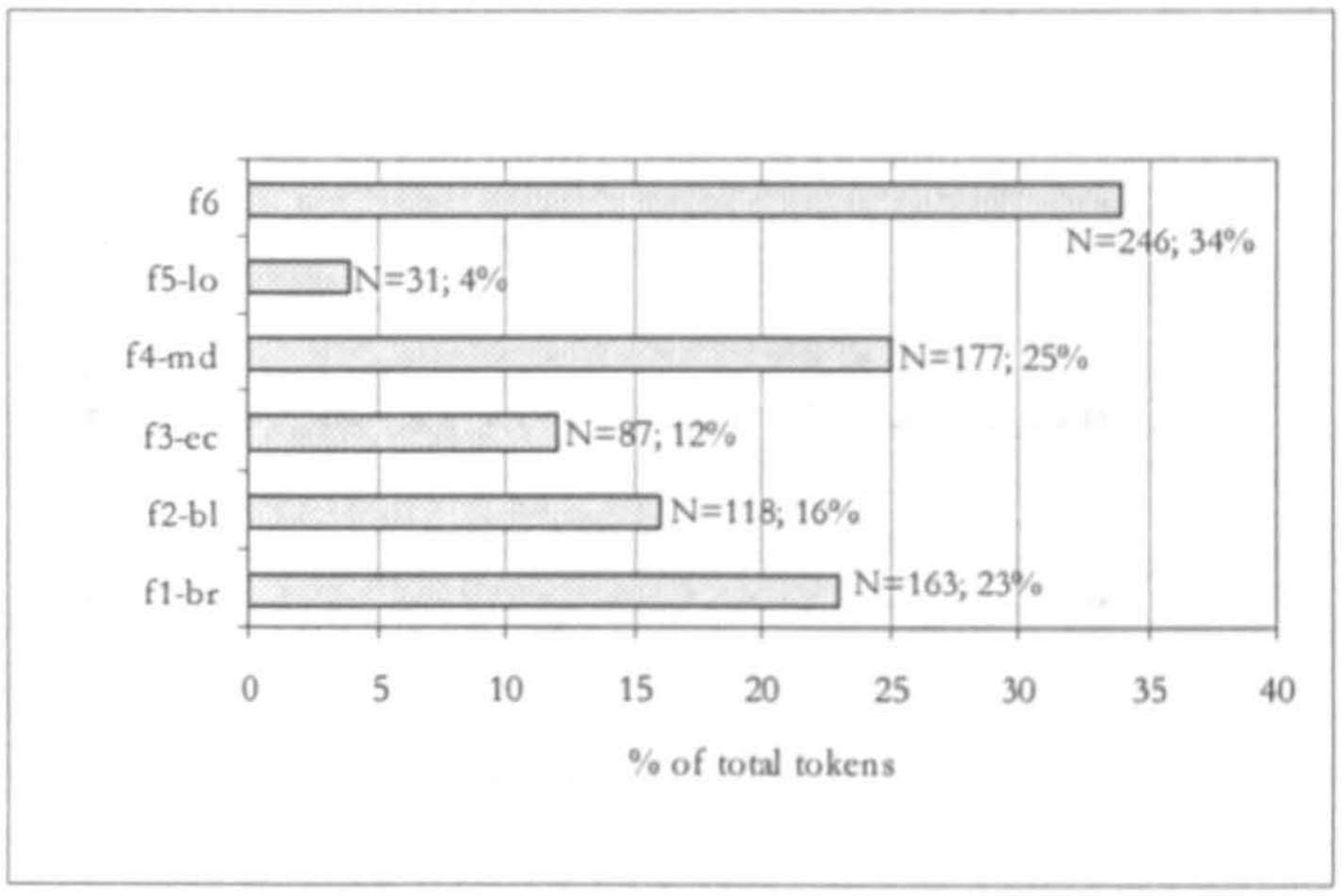

Figure 4-5. The distribution of types of facial expression of negation

- Mouth actions (f6) (mouthings, mouth gestures and word pictures) appear in 245 of the total tokens (34%).

- Corners of the mouth down (f4-md), appears in 177 of the total tokens (25%).

- Raising of the brows (f1-br) appears in 162 of the total number of tokens (23%).

- Furrowing of the brows with the eyes narrowed (f2-bl) appears in 118 of the total tokens (16%).

- Eyes closed (f3-ec) appears in 87 of the total tokens (12%).

- Raising of the upper lip and lowering of the lower lip (f5-lo) appears in 31 of the total tokens (4%).

Tokens can be accompanied by more than one feature of negation facial expression. Negation mouth actions (f6) (mouthings, mouth gestures and word pictures) accompany 34 percent of tokens. Mouth corners down (f4-md) and raised eyebrows (fl-br) are the most frequent after mouth actions, with 25 percent and 23 percent respectively.

4.3.6 Non-manual features in relation to negation tokens

The data about negation head movements and negative facial expressions already presented suggest that both these features of non-manual negation are not obligatory elements for negation tokens. The next figure summarises the relation of these features to manual negation tokens.

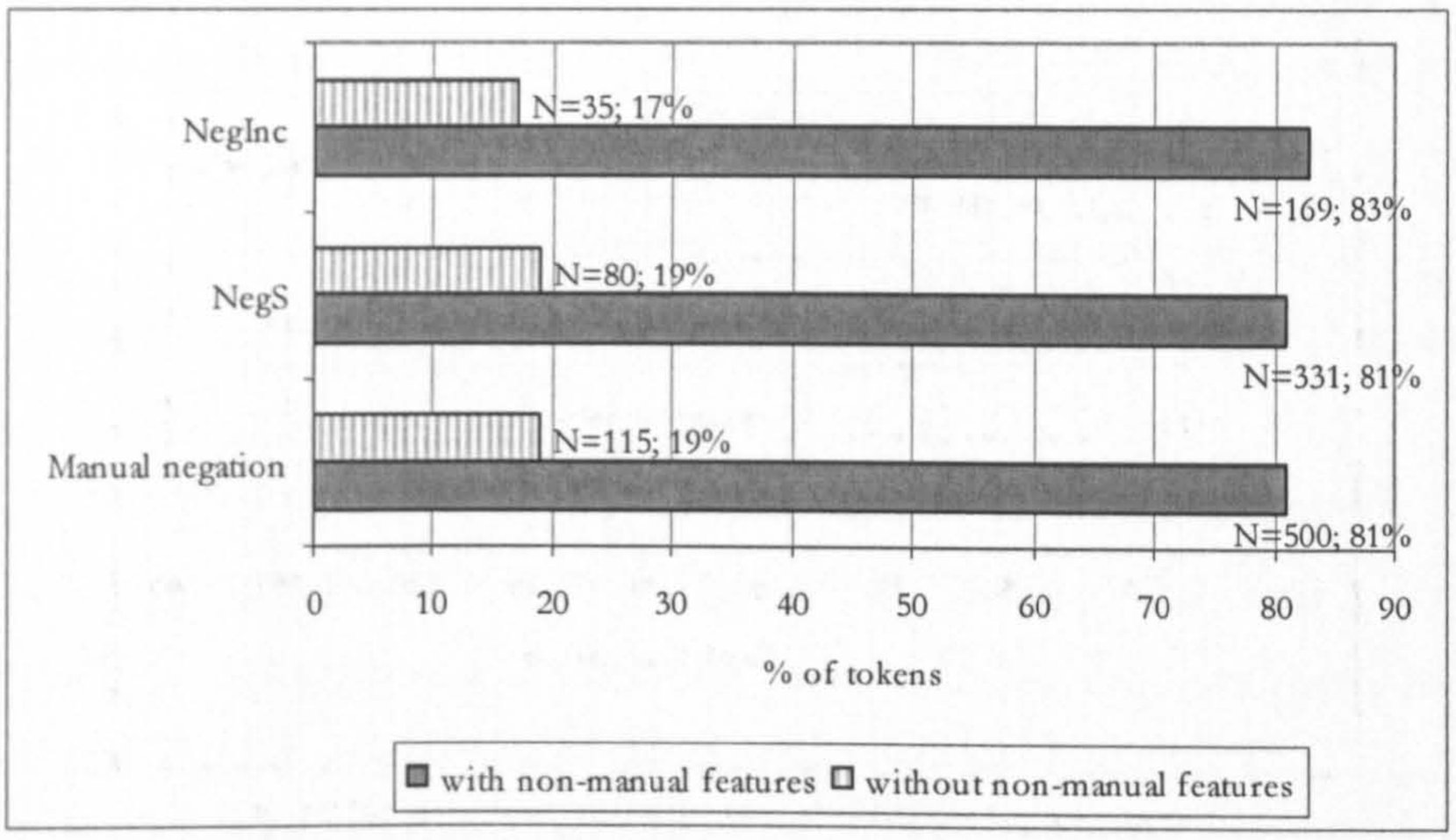

Figure 4-6. The use of non-manual feature of negation in relation to manual tokens of negation

Figure 4-6 illustrates the non compulsory nature of the non-manual features of negation in ENG. The majority of tokens are accompanied by features of non-manual negation. In the case of non-manual tokens of negation, all tokens are accompanied by features of non-manual negation as expected. The use of negation non-manual features is similar for both groups of manual negation tokens, NegS and NegInc. Thus, 81 percent for NegS and 83 percent for NegInc are accompanied by non-manual features whereas, 19 percent and 17 percent respectively are not accompanied by any feature of non-manual negation. The distribution of the use of negation head movements and negative facial expression in different groups of tokens is shown in the next figure (Figure 4-7).

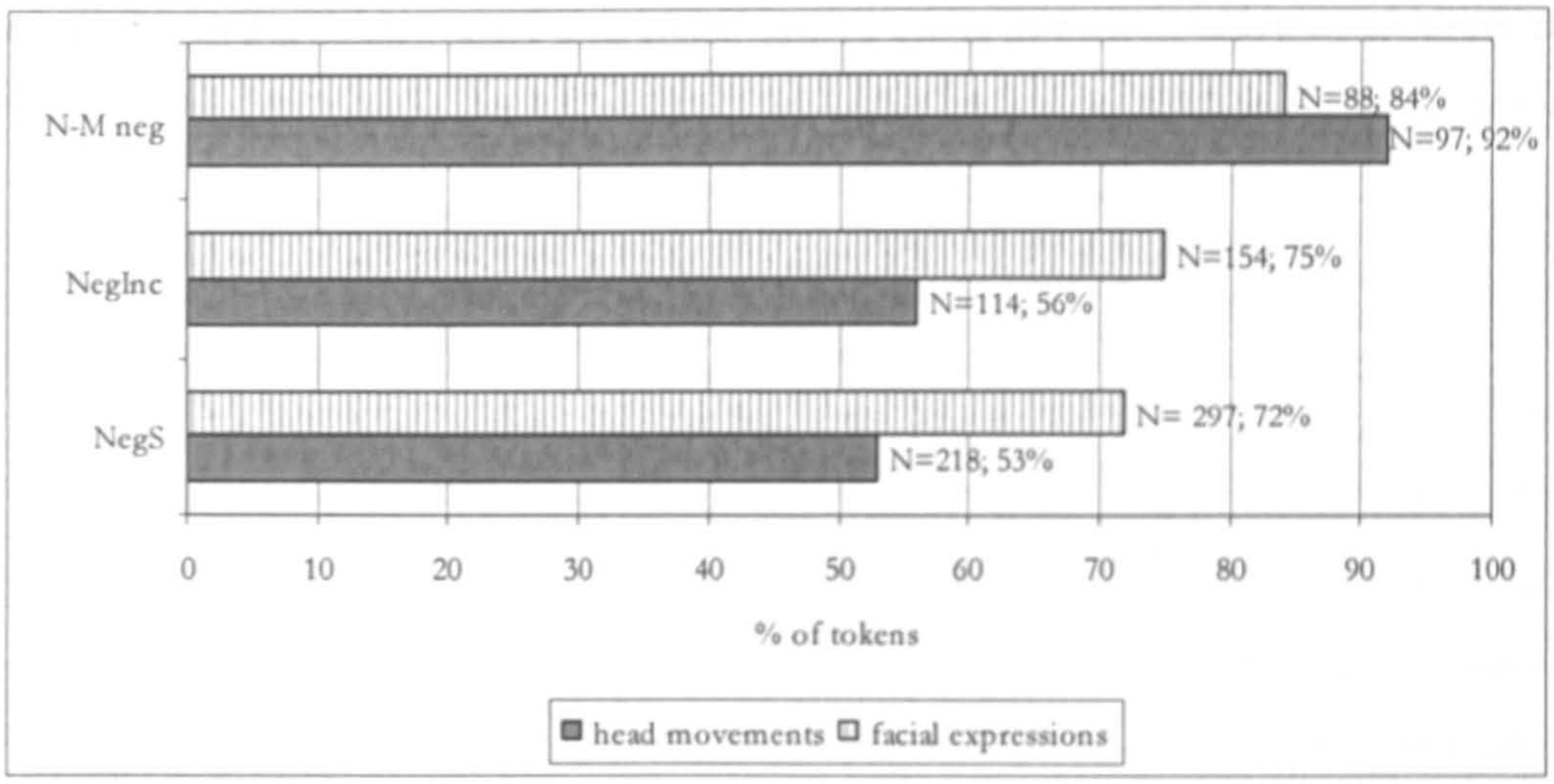

Figure 4-7. The use of negation head movements and negation facial expressions in different groups of tokens

Figure 4-7 shows the number and percentages of NegS tokens, of NegInc tokens and non-manual tokens of negation (N-M neg) that are accompanied by features of non-manual negation, both negation head movements and negation facial expressions. The numbers in Figure 4-7 overlap because in many tokens both a negation head movement and a negation facial expression co-occur within the same token. The percentages have been calculated in relation to the total number of each subgroup of tokens. The data shows that the percentages of tokens of NegS signs and NegInc signs which are accompanied by negation head movements and negative facial expressions are similar. 53 percent of the tokens of NegS signs and 56 percent of the tokens of NegInc signs are accompanied by negation head movements, and 72 percent of tokens NegS signs and 75 percent of tokens of NegInc signs are accompanied by negative facial expressions. For signs with only non-manual negation, 92 percent of the tokens are accompanied by a negation head movement and 84 percent by features of negation facial expression. It should be noted that there are non-manual tokens of negation where negation is realised by negation facial expression only without the use of any negation head movement. This is the case for 8 tokens.

In general, head movements are more unambiguous markers of negation than features of facial expression. The main characteristic that differentiates head movements and facial expression features as markers of negation, is related to their use. Headtilt (h1), headshake (h2) and headturn (h3) are found almost entirely as negation markers in ENG. Anecdotal observation suggests that the headtilt (h1) can be used as a topic marker and it often occurs with IF in conditionals. In these clauses, the headtilt movement is always long and

slow, while in negation, the movement of the headtilt can vary considerably. IF can also occur without the headtilt (a.1).

h1
4.3.6-a.1 TRY | IF ANSWER NOTHING INDEX1 GO

You try first. If (he/she) doesn't answer I will go.

The headshake (h2) can also occur with interrogatives. Similarly to the headtilt, variation of the movement of the headshake in an interrogative is limited in comparison with variation in negation clauses. In interrogatives, the side-to-side movement of the head is shorter and more abrupt than the movement used in negation clauses (a.2). In these examples the head movement does not change the polarity of WANT if it is spread over the sign.

h2
4.3.6-a.2 WHAT WANT?

What do you want?

Facial expression features realise a variety of grammatical functions in addition to negation. Thus, facial expression features are used in conditionals or in interrogatives. Moreover, these features are also used for affective expressions, such as surprise, confusion or ambiguity. They are also used to mark the topic in a clause and they often operate as adverbial markers. For example, brow raising (f1-bl) and brow lowering with a frown (f2-bl) are used in interrogatives, in conditionals and as adverbial markers. Thus, facial expressions are found to operate in various kinds of clauses in addition to negation. Mouth actions (f6) constitute a particular category within negation facial expressions. Mouthings and word pictures of negation are related to specific negative words of spoken Greek, negation words in this case, and mouth gestures are part of the phonology of specific signs. Therefore, mouth actions are particularly related to negation.

The argument that negation head movements are less ambiguous negation markers than facial expression features is also supported by the analysis of non-manual negation tokens. Negation in these tokens is solely marked by features of non-manual negation. An examination of the tokens where the only negation marker is a negation head movement and the tokens where the only negation marker is a feature of negation facial expression without the co-occurrence of any negation head movement will show how often the two

groups of non-manual features of negation (head movement and features of facial expressions) are exclusively used to mark negation.

Analysis of non-manual negation tokens where negation is marked solely by a negation head movement (no use of facial expressions of negation) and non-manual negation tokens where negation is marked solely by a negation facial expression (no use of head movements of negation) provides one more argument for the line of reasoning already followed. The database includes 16 tokens where negation is solely marked by negation head movements. There are also 8 tokens where negation is solely marked by features of negation facial expression. In 5 of those tokens marked by negation facial expression features, a negation mouth action (mouthings or word picture) was used. For the remaining 3 tokens, in 2 cases negation was marked by brow raising (f1-br) and in one case it was marked by a backward movement of the body (b-back). It has been observed that negation marked by negation facial features occurs often in everyday casual signing and not in formal situations of a social, educational or professional nature. Specifically, brow raising seems to operate as a substitute for a headtilt (h1) since it seems to be closely related to the particular negation head movement (see section 4.3.8.1). Often, in informal signing conditions, brow raising can operate as a single negator, when the signer expresses a 'relaxed', un-emphasized, negation or in cases where the signer does not want to be observed. Based on the researcher's observation, it is suggested that brow raising as a substitute for a negative headtilt (h1) is also used by hearing people in Greece.

4.3.7 Negation head movements analysis

The use of negation head movements is of specific interest in a study of negation. The relationship, if any, of negation head movement with particular signs is also of specific concern in the present study. This relationship was initially observed during the pre-pilot study. Negation head movement occurrences are examined in relation to manual and non-manual tokens of negation. Using a statistical test, we attempt to answer the question of arbitrariness concerning the choice of a negation head movement. This question is further explored through the examination of the co-occurrence of the negation head movements with specific signs. Finally, the connection of the headtilt to brow raising is presented.

4.3.7.1 *Negation head movements and manual negation tokens*

The percentages of tokens with or without the co-occurrence of a negation head movement are similar for the two subgroups of manual negation tokens (Figure 4-8).

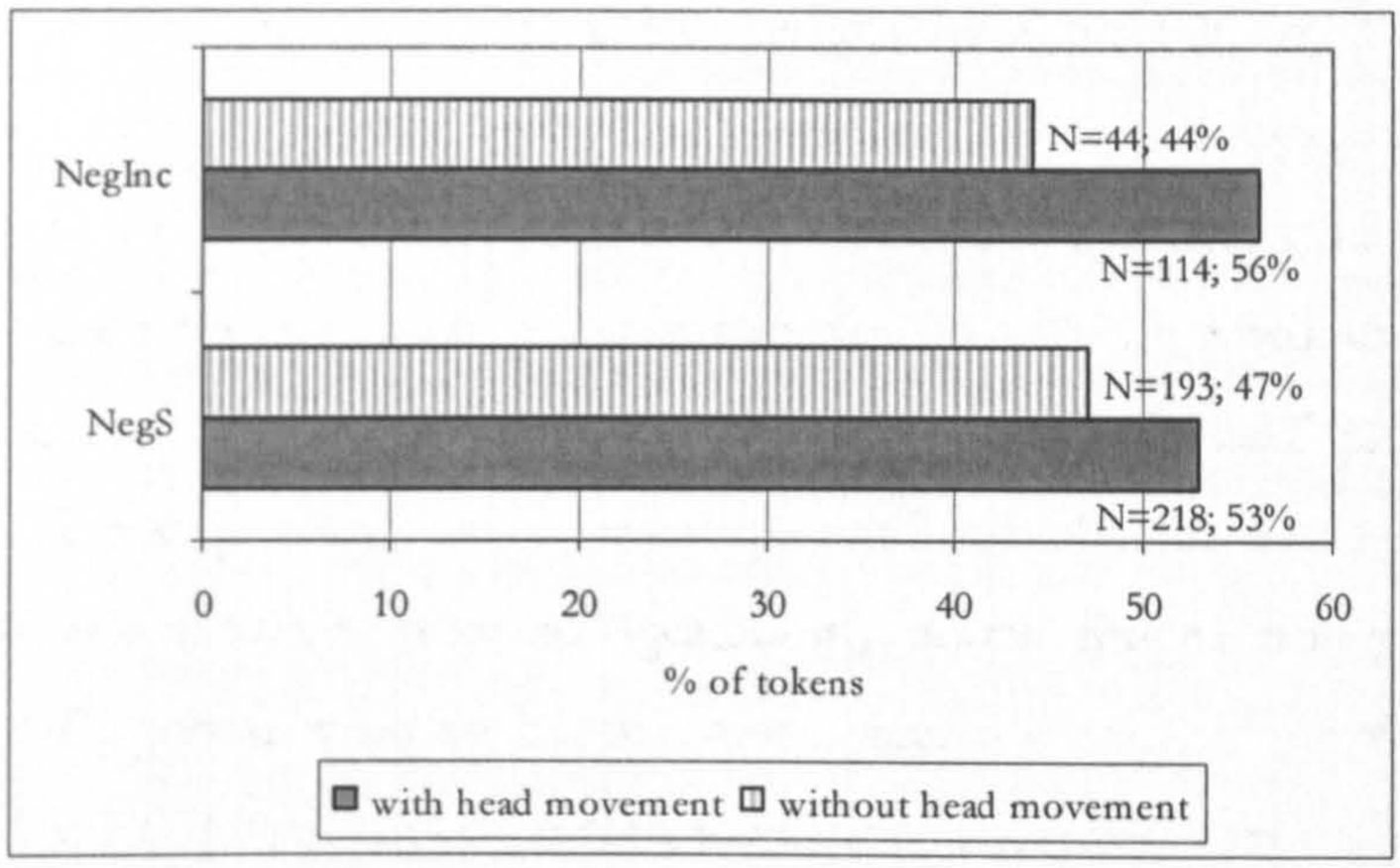

Figure 4-8. The use of negation head movements in NegS and NegInc tokens

The above figure clearly indicates that the use of the negation head movement is optional but balanced for both subgroups of manual tokens. 53 percent of NegS tokens and 56 percent of NegInc tokens are accompanied by negation head movements, whereas 44 percent and 47 percent, respectively, are not. Within the groups of manual tokens the choice of the negation head movements varies. The next figure represents the distribution of the negation head movements or a combination of them in NegS tokens and in NegInc tokens (Figure 4-9).

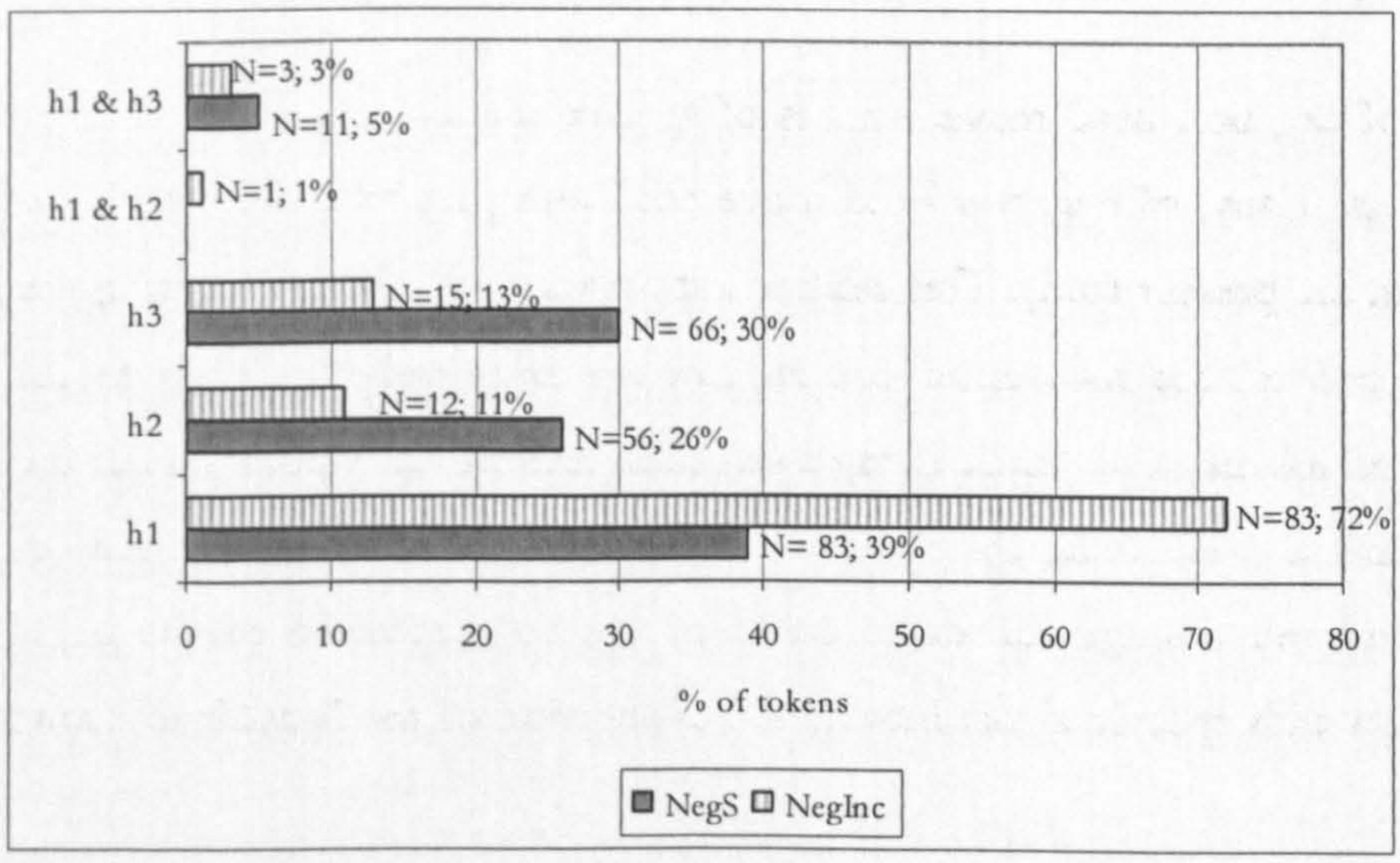

Figure 4-9. The distribution of negation head movements taken together NegS and NegInc tokens

A large number of NegS tokens (39%) are accompanied by a headtilt but, tokens accompanied by a headturn (30%) and a headshake (26%) are the majority group constituting more than half of the tokens at 56 percent. This pattern is better explained below (see section 4.3.7.4). On the other hand, the vast majority of NegInc tokens (72%) are accompanied by a headtilt whereas headturn (13%) and headshake (11%) together constitute 24% of the tokens accompanied by a negation head movement. In section 4.3.7.4 an explanation for this difference is provided. There is also a single NegS token with a headtilt and headshake (h1 and h2) combination and a single NegS token with a headshake and a headturn (h2 and h3) combination[34].

4.3.7.2 Negation head movements and non-manual (N-M) negation tokens

The distribution of the occurrences of the negation head movements in non-manual tokens of negation differs from the picture presented above for NegS tokens and NegInc tokens (Figure 4-10).

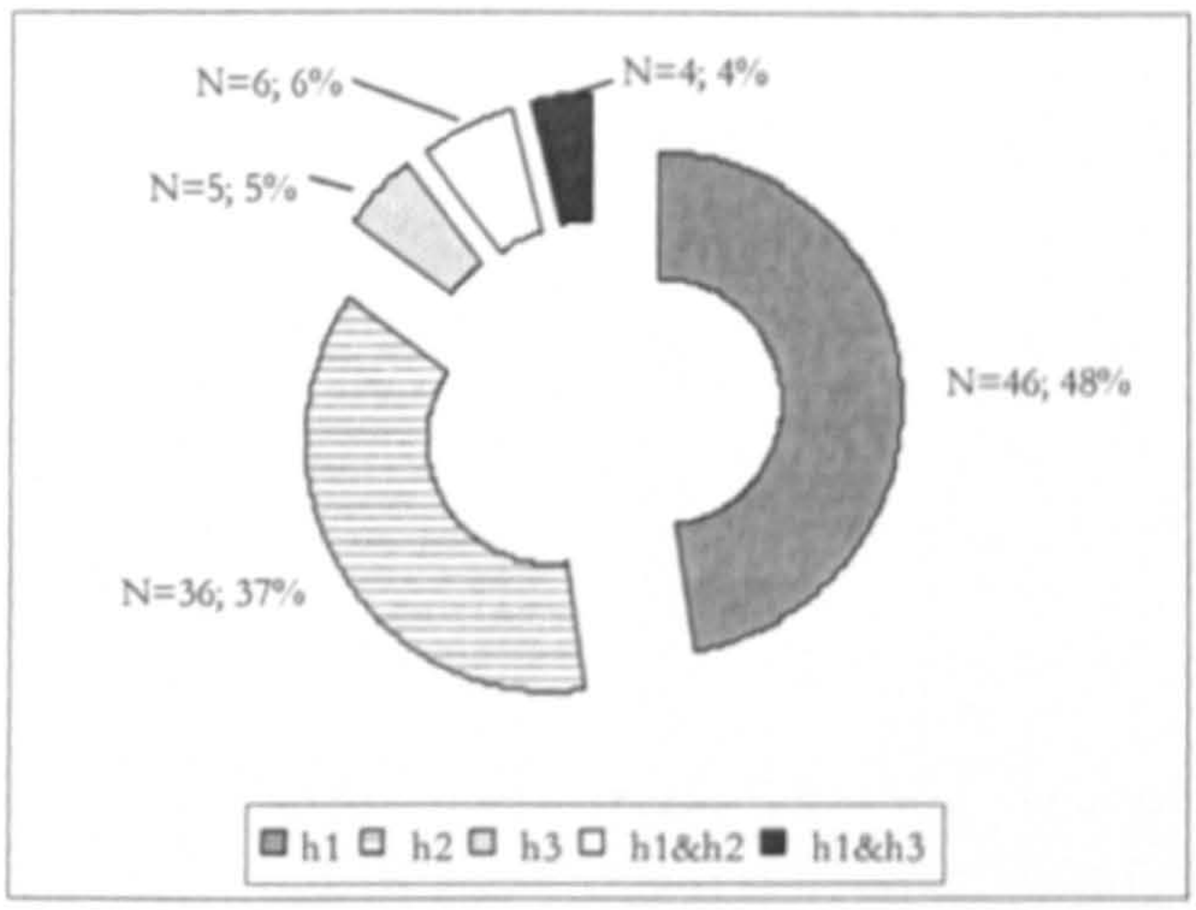

Figure 4-10. The distribution of negation head movements in tokens of N-M negation

Once again headtilt is the most frequently used negation head movement, accompanying almost half of the tokens with negation head movement (48%). Headshake is used in 37 percent of the tokens. Negation head movement use is prominent in non-manual negation tokens. For the vast majority of the cases of non-manual negation tokens, a negation head movement accompanies a negation token (92%). The negation head movements thus seem to be markers of non-manual negation but not the only markers of non-manual negation tokens in ENG.

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[34] Each token represents zero percent (0%) of the NegS tokens in Figure 4-9

A small number of tokens (N=8) were accompanied by negation facial expressions only, without the co-occurrence of any negation head movement. This result was unexpected since negation facial expressions were considered as affective elements in ENG and not clausal negators in their own right. These tokens were therefore examined further and it was observed that the tokens make use of mouthings and word pictures of negation, brow raising and in one example negation was expressed by a negation body movement. Negation is indicated by negation mouthings and word pictures in 5 of the tokens and by brow raising in 2 of them. Mouthings and word pictures of negation are strongly related to spoken Greek and represent part of a negative lexical item (usually a negative particle) in spoken Greek. None of the negation mouthings and word pictures are an obligatory accompaniment to the articulation of a sign and their use varies among signers. Brow raising as a sole negator seems to sufficiently act for the negative headtilt. Based on these tokens it is suggested that mouthings and word pictures of negation and brow raising are found as sole negators in ENG.

4.3.7.3 Is the choice of a negation head movement arbitrary?

During the coding process, it was noted that the choice of the use of a negation head movement with some signs is not arbitrary but depends on the relationship between the features of movement of the head and the hands. It was observed that if the sign involves upward movement or supination, whether it be forearm, palm, or finger, is upward then a headtilt (h1) is the most possible choice as a negation head movement. However, if the movement of the sign is side-to-side, then a headshake (h2) or a headturn (h3) are the most likely choices for negation head movement.

In order to find out if the choice of the negation head movement is arbitrary or not the distribution of the occurrences of the use of different negation head movements with different groups of signs was examined (Figure 4-11[35]).

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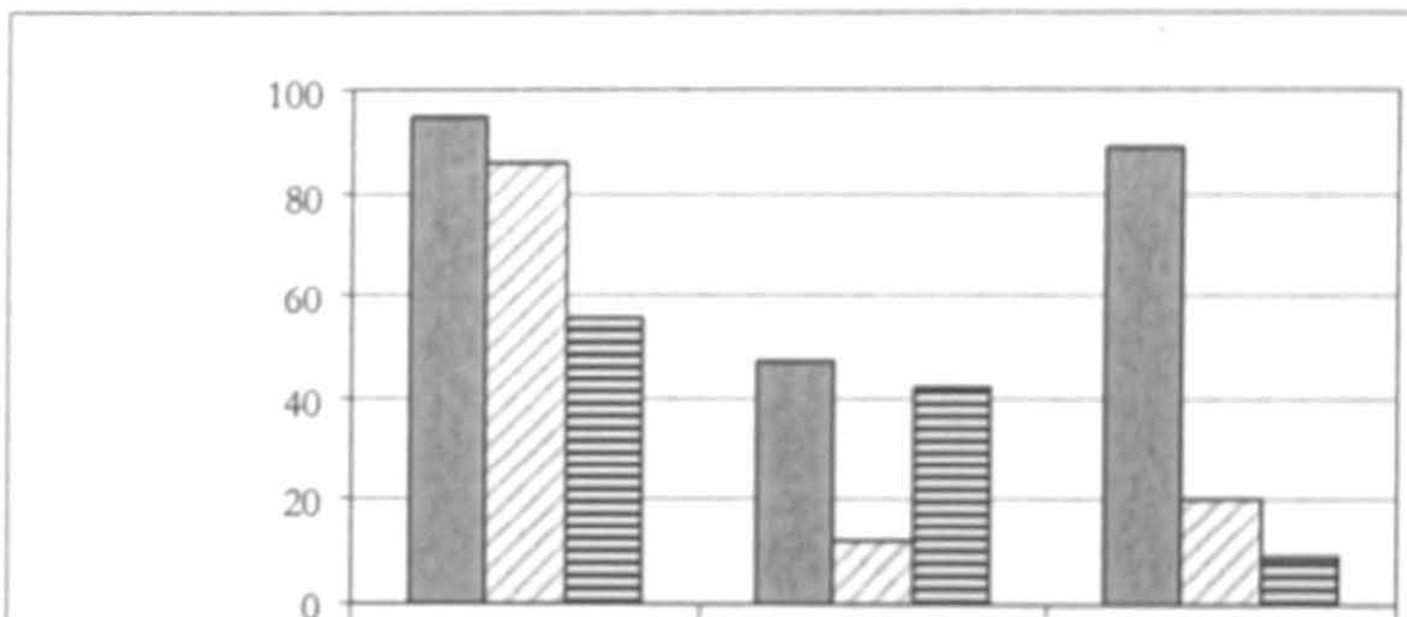
[35] The sum of non-manual tokens subgroup is 107. As has been mentioned, there are tokens where two head movements of negation co-occur or are used one after the other, during the same token. This is the case for all three groups of negation tokens. The database contains 8 tokens where headtilt (h1) and headshake (h2) are used together, 18 tokens where headtilt (h1) and headturn (h3) are used, and 1 token where headshake (h2) and headturn (h3) are used.



	h1	h2	h3
NegS	95	47	89
NegInc	86	12	20
N-M negation	56	42	9

Figure 4-11. The distribution of different negation head movements with different groups of tokens

A chi square (χ^2) test based on the patterns shown in Figure 4-11 was conducted in order to examine if the relationship between the choice of different types of negation head movements and different types of manual negation (NegS, NegInc and N-M negation) was significant. The subgroups of tokens (NegS, NegInc and N-M negation) are the independent variables and the different types of negation head movement are the dependent variables (h1, h2 and h3). The value of χ^2 is 67.81 ($p<0.001$). Therefore, there is a highly significant difference ($p<0.001$) between the numbers of occurrences for different types of negation head movements with different types of manual negation.

4.3.7.4 Negation head movement in relation to sign movement

The above analysis demonstrates that the occurrence of negation head movement in different groups of tokens is not the result of random choice. This is in agreement with the initial observation that the movement of a sign resembled the negation head movement. Further examination of NegS and NegInc tokens shows that phonetic features determine the choice of negation head movement in negation signs. Thus, when the movement of the sign is upwards, a headtilt (h1) is the preferred negation head movement, and when the movement of the sign is side-to-side then a headshake (h2) or a headturn (h3) is preferred.

CANNOT, WANT-NOT and NOTB belong to the first category, where it would be predicted that the headtilt (h1) would be preferred. In contrast, NOTG and NOTBshk belong to the second category, where it would be predicted that the headshake (h2) or headturn (h3) would be preferred.

4.3.7.4.1 CANNOT, NOTB and WANT-NOT

The next figure (Figure 4-12) shows the relationship of CANNOT and NOTB to the negation head movements found in the corpus (Figure 4-12). The figure represents percentages of the total number of negation head movements that accompany each sign. For WANT-NOT the 8 occurrences from the database provide greater clarity since the headtilt is the only option for all tokens with negation head movement.

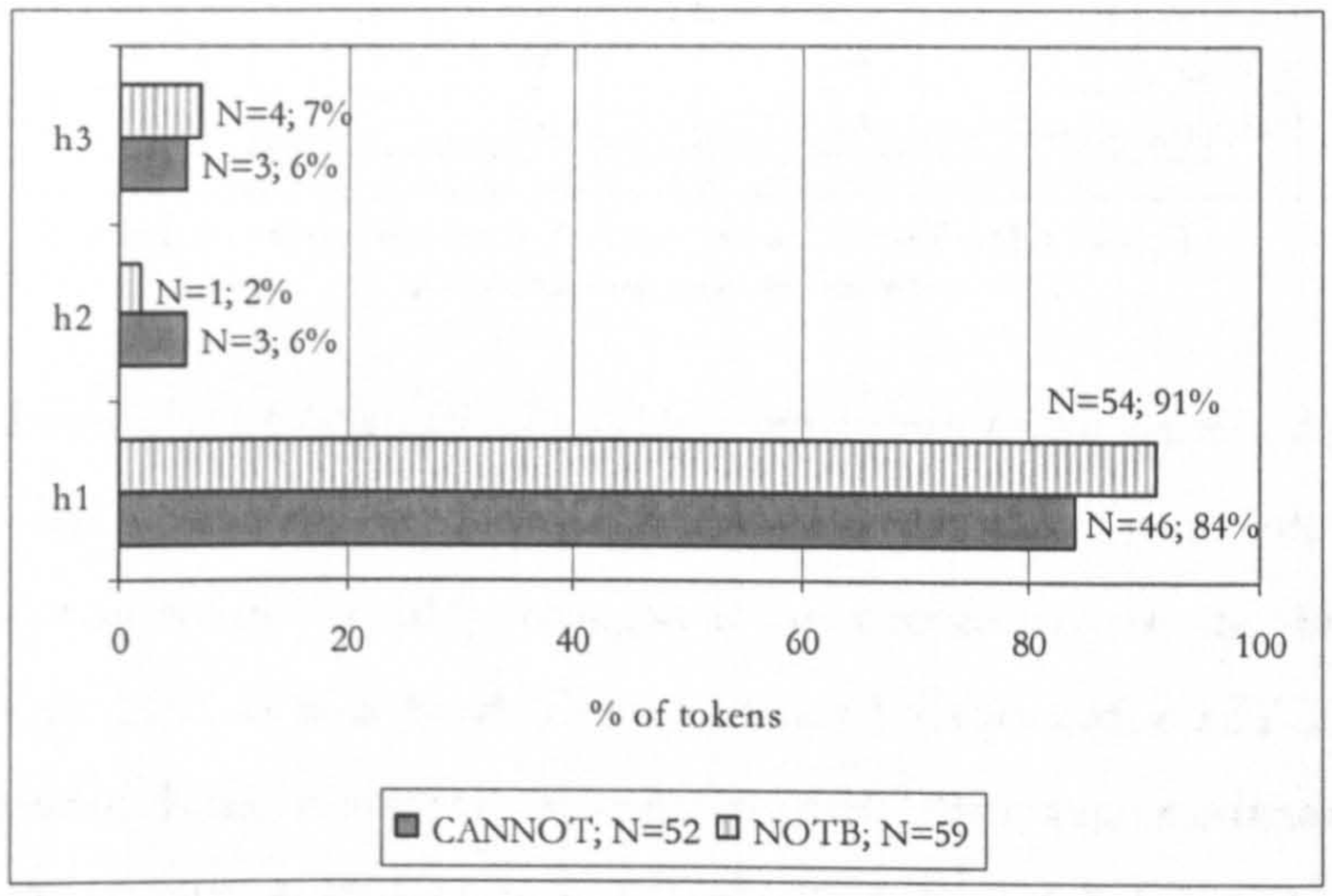


Figure 4-12. The distribution of negation head movements in CANNOT and NOTB tokens

Initial observations about the relation of the movement of the sign to the choice of the negation head movement are supported by the distribution of those head movements in CANNOT, NOTB and WANT-NOT. As predicted, a headtilt accompanies the majority of these signs. 88 percent of CANNOT tokens are found with negation head movement, 91 percent of NOTB tokens with negation head movement and 100 percent of WANT-NOT tokens with negation head movement. It should be noted here that, in some cases, a headtilt (h1) co-occurred with an additional negation head movement. A headtilt (h1) and a headshake (h2) occurred together in one case (CANNOT token), and a headtilt (h1) and a headturn (h3) occurred together in eight cases (1 CANNOT token, 1 WANT-NOT token and 6 NOTB tokens). Data analysis did not reveal any specific pattern that could explain these co-occurrences.

4.3.7.4.2 NOTG and NOTBshk

The next figure shows the relationship of NOTG and NOTBshk to their accompanying negation head movements.

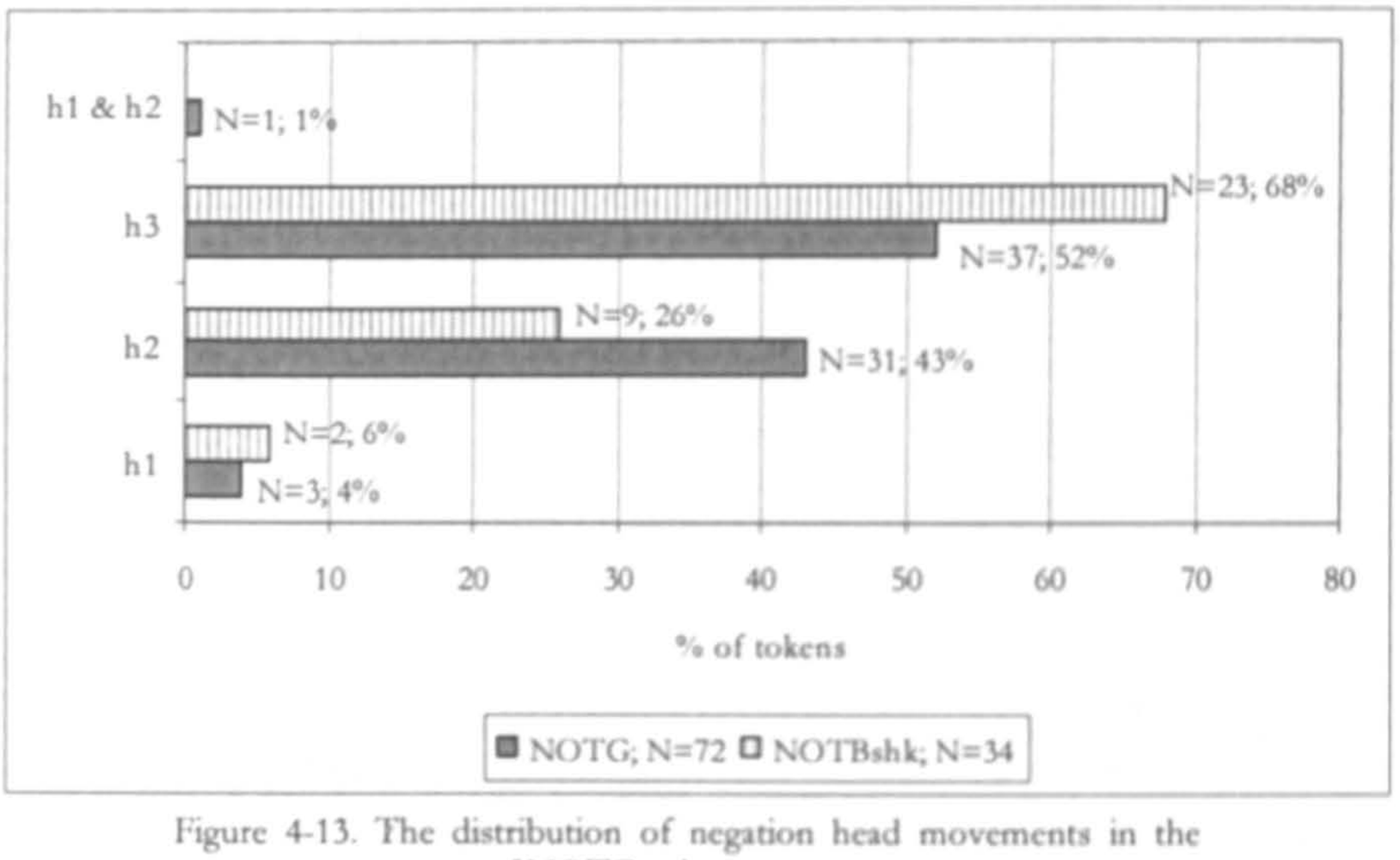


Figure 4-13. The distribution of negation head movements in the group of NOTG tokens

NOTG and NOTBshk are primarily associated with the headtilt (h2) and the headturn (h3) respectively. This supports our initial observations concerning the relation of manual movement to the choice of the negation head movement. These total percentages are 96 percent for NOTG tokens and 94 percent for NOTBshk tokens. Once again, there were some head movement co-occurrences. A headtilt (h1) and a headshake (h2) occurred together in 1 case (NOTG token), a headtilt (h1) and a headturn (h3) occurred together in 4 cases (1 NOTG token and 3 NOTBshk tokens), and there was also a case of a headshake (h2) and a headturn (h3) occurring together (NOTG token). Once again it seems that the co-occurrences are the result of everyday or casual signing settings.

In order to establish if there is a relation between the different types of negation head movements and different signs (NOTB, CANNOT, WANT-NOT, and NOTG, NOTBshk) a χ^2 test was conducted. These negation signs are the independent variables and the different types of negation head movement are the dependent variables (h1, h2 and h3). The value of χ^2 is 171.4 which is statistically significant at $p<0.001$. This suggests that the correlation between the two variables is statistically significant.

4.3.8 Negation facial expression analysis

Like negation head movements, facial expressions of negation are also not obligatory elements in negation. There appears to be no special relation between choice of negation facial expressions and specific signs or negation head movements. Only mouth actions are related to specific signs. Furthermore, the analysis does not provide any evidence for any differences between negation mouthings (f6-m) and negation word pictures (f6-wp). As

far as the relation of negation head movements and negation facial expressions is concerned, the only exception is the relation of brow raising to the headtilt, which is examined below (see section 4.3.8.1). Tokens of manual negation are accompanied by negation facial expressions in 451 cases (73%), whereas in 164 tokens (27%) no such feature occurs. This situation remains almost the same for the subgroups of negation sign tokens and tokens of signs with negative incorporation (Figure 4-14).

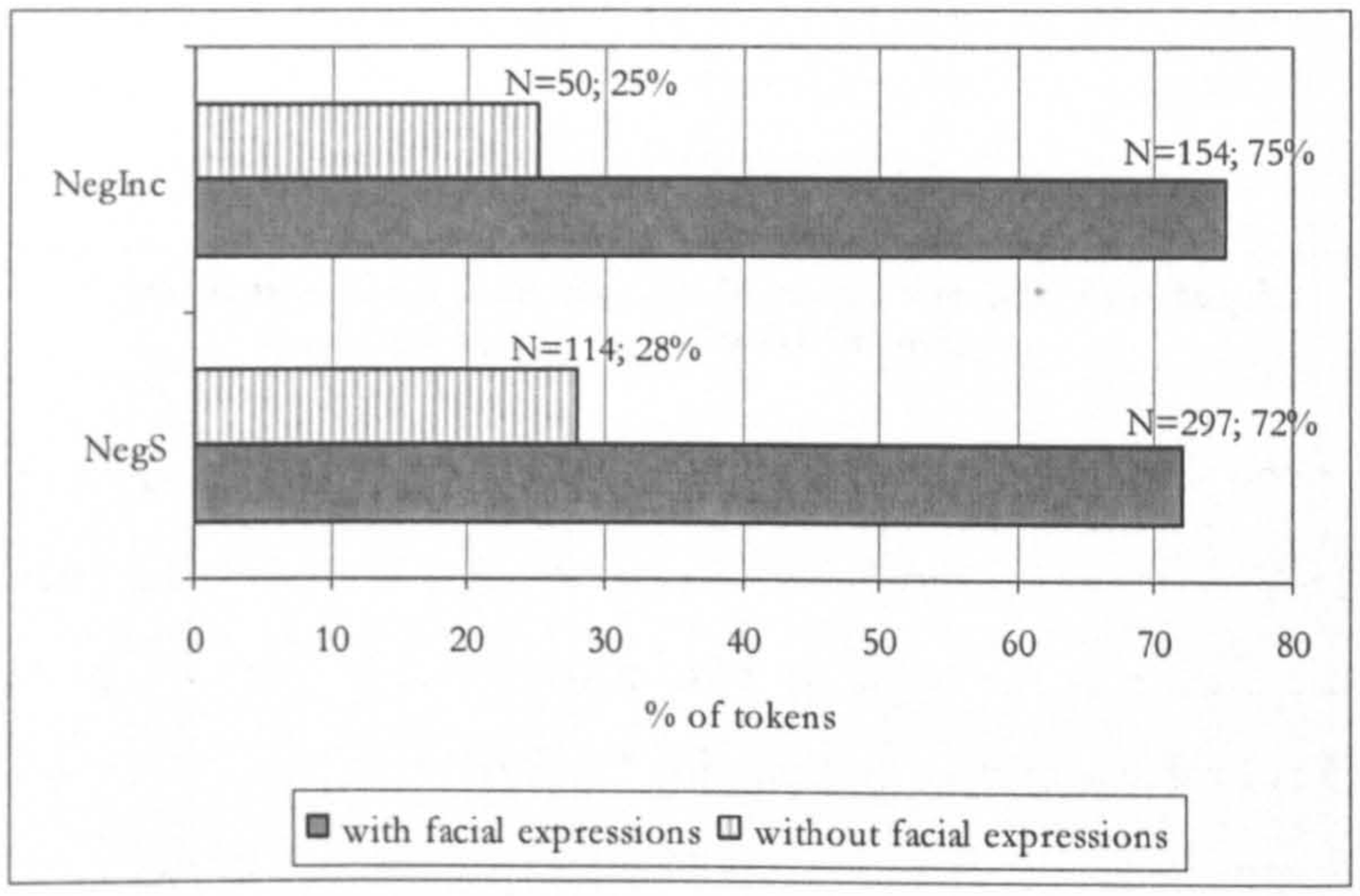


Figure 4-14. NegS and NegInc tokens and features of facial expressions of negation

In both subgroups, more than two thirds of the tokens are accompanied by a feature of non-manual negation.

4.3.8.1 The relation of headtilt (h1) and brow raising (f1-br)

Up to this point the data does not indicate a regular and systematic relationship of negation facial expression to particular negation head movements. The choice of negation facial expression does not seem to be influenced by the use or choice of a negation head movement and vice versa. The only exception to this observation is the relationship of headtilt (h1) and brow raising (f1-br). Brow raising (f1-br) often co-occurs with headtilt (h1). This is clearly shown by the analysis of occurrences of brow raising (f1-br) and headtilt (h1) in CANNOT, NOTB and WANT-NOT (Figure 4-15).

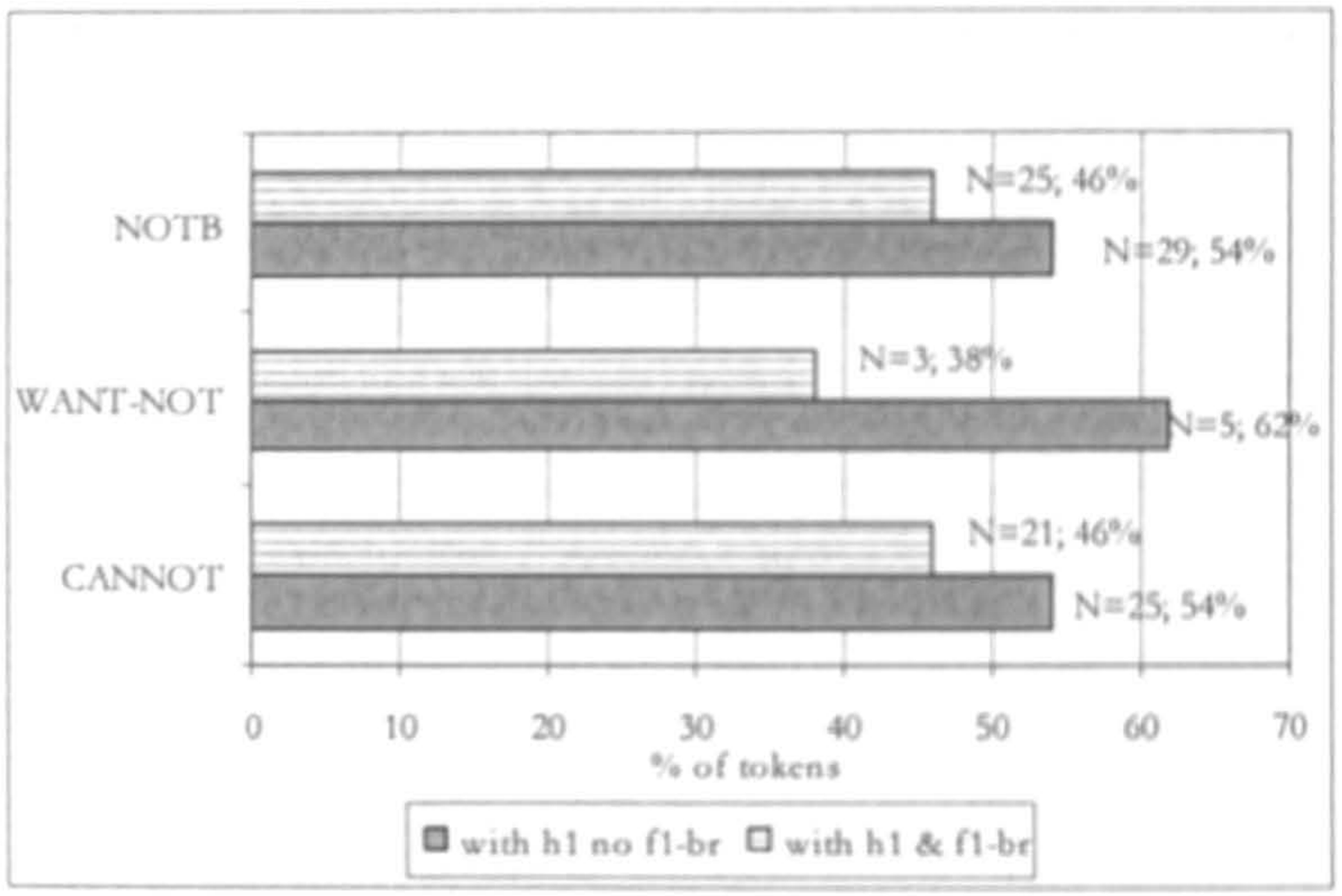


Figure 4-15. The use of headtilt (h1) and brow raising (f1-bl) with CANNOT, WANT-NOT and NOTB tokens

The above figures show that headtilt (h1) and brow raising (fl-br) co-occur in more than one third of the tokens which are accompanied by a headtilt (h1). The pattern remains the same for the total of tokens with headtilt (h1), where in 92 of these tokens (39%) the headtilt (h1) is accompanied by brow raising (f1-br). However, statistical examination (x^2, chi-square test) of the occurrences of the headtilt (h1) and brow raising (f1-br) in relation to these lexical signs (CANNOT, WANT-NOT and NOTB), and in relation to groups of tokens (NegS, NegInc and N-M negation) revealed that the relation between the headtilt (h1) and the brow raising (f1-br) is not statistically significant.

However, it has been observed that this particular combination of non-manual elements is a widespread negation gesture within the Greek hearing population in informal settings. Consequently, it can be argued that ENG has drawn upon this usage, adopting the backward tilt of the head and possibly the brow raising, at least in the cases where it is bound to the headtilt, from the Greek hearing community. No other negation head movement has any particular systematic connection with a negation facial expression.

4.4 Summary of lexical and morphophonological markers of negation

The data presented confirms that ENG uses all of the manual signs and features of non-manual negation that were observed and categorised during the pilot study. ENG, like other sign languages, makes use of negation signs, signs with negative incorporation, head movement and facial expressions for negation purposes. During the pilot study we did not make any observation about the use of suffixes in ENG. However, some

interesting 'exceptional' signs with negative incorporation occurred. These are discussed further below (see section 4.5.3).

All types of manual negation signs and all non-manual features of negation reported in ENG (in terms of semantic categories) have also been reported in other sign languages. Negation in ENG makes use of three particles: NOTG, NOTB and NOTBshk. No specific functional differences between these negative particles were found.

In addition to negative particles, the following negation signs were found: NOTHING, EMPTY, NEVER, NO-As, F-NOTHING. EMPTY was not originally included in the group because there were doubts concerning its negative meaning. Further analysis is presented in this chapter explaining the status of the sign (see section 4.5.1.1). Signs with negative incorporation that were found are: KNOW-NOT, WANT-NOT, LIKE-NOT, GOOD-NOT, G-UNDERSTAND-NOT (which also has a characteristic pronation movement); AGREE-NOT (which can be signed with or without a pronation movement); and CANNOT, BELIEVE-NOT, EXIST-NOT, Y-UNDERSTAND-NOT and NO-WAY. All negation signs can occur with features of non-manual negation, negation head movement and/or facial expressions of negation. CANNOT and EXIST-NOT are usually signed with one hand but can occur in two-handed variants. No formal difference between these variants has been established and the two-handed forms of the signs are considered as emphatic variants.

Sapountzaki (2005) also reports the following signs: CANNOT, EXIST-NOT/HAVE-NOT (glossed as NOT-BEEN by Sapountzaki), NO-WAY. She also reports the use of a sign glossed as NOT-YET, which does not appear in the present database. Sapountzaki (2005) also discusses NEVER, EMPTY, NOTHING, F-NOTHING and UNDERSTAND-NOT, which appear in various examples in her analysis.

Initial examination of negation tokens revealed that negation is marked by manual signs of negation or by non-manual features of negation only. Intact non-manual features of negation can appear on their own as negators. This suggests that lexical signs of negation are not obligatory elements for marking negation in ENG. Interestingly, the majority of manual negation tokens (81%) are accompanied by a feature of non-manual negation. For both subgroups of manual negation, the picture is similar and the percentages of tokens accompanied by features of non-manual negation are 81 percent for NegS tokens and 83

percent for NegInc sign tokens. This also suggests that non-manual features are not obligatory features for manual negation signs. ENG makes use of all three reported negation head movements. Negation head movements accompany just over half of all manual sign tokens. NegS tokens and NegInc tokens are accompanied by negation head movements in 53 percent and 56 percent of the tokens respectively. Figures are similar for occurrences of negation facial expression features. Here the percentages of occurrences range from 53 percent to 57 percent.

It was expected that in tokens of non-manual negation, only negation head movements would be consistently present. However, the data does include a few tokens where negation is expressed by negation facial expression features only, which raises questions about the categorisation of these features of ENG as affective elements of negation only. Mouthings and word pictures of negation and brow raising can be used for marking negation in tokens of non-manual negation. The use of these features is not obligatory and varies among signers. It was observed that negation facial expressions are used as sole markers of negation in casual signing settings. The number of examples of facial negation is small, and not sufficient to merit the revision of negation facial expressions as purely affective elements of negation. This issue will be re-examined during the analysis of negation at clausal level.

Analysis has also shown that negation head movements can be used in combinations: headtilt (h1) and headshake (h2); headtilt (h1) and headturn (h3); and headshake (h2) and headturn (h3). However, these pairings do not perform any specific function and are not categorised separately. Anecdotal observation suggests that theses pairings are found in informal sign registers and in most cases the signer uses them for emphasis. In contrast, the data suggest that occurrences of the different negation head movements with specific signs may be rule-governed. The form of the negation sign determines the choice of negation head movement. In cases where the movement of the sign is upward or side-to-side then the choice of the negation head movement tends to agree with the movement of the sign. Therefore, CANNOT, NOTB and WANT-NOT„ which have a clear upwards movement of the palm, choose a headtilt, whereas NOTG and NOTBshk, which have a side-to-side movement, choose a headshake or headturn. Statistical analysis of the negation head movement use reveals the consistency of this pattern. This resembles the phonological assimilation known as phonological harmony or vowel harmony in spoken languages. In some languages like Hungarian or Turkish, the vowel of a root word

assimilates the vowels of the affixes with respect to the features [back], [front] and [round]. In a similar way in ENG it seems that the movement of the head tends to assimilate the movement of the sign. However, vowel harmony is a strict rule whereas; this pattern is not strict in ENG as it allows the use of negation head movement with an unsuitable movement.

An additional observation should be made in relation to negation head movements. The headshake and headturn occur with equal frequency with NOTG and NOTBshk. It might be expected that a headshake would be a more prominent negation head movement than a headturn, since it is also used as a gesture by hearing people. However, overall the headturn occurs more frequently with manual negation (Figure 4-9) than the headshake. What is interesting is that this high percentage of occurrence does not apply to non-manual tokens of negation (Figure 4-10). The use of the headturn in non-manual negation is considerably more limited. It may be that in cases where there is no manual negator, signers may prefer a clearer marker and therefore the headshake is chosen. A possible relation of the hand movement and the choice of the negation head movement in non-manual negation tokens was not examined. This examination did not take place at this level of analysis because the movement of the signs that co-occur with a negation head movement can vary and is not limited to upwards or side-to-side hand movements.

4.5 Grammaticalisation and change

Before proceeding with the grammatical analysis, some issues related to lexical items will be addressed. During the construction of the database for the analysis of negation at clausal level, various matters were raised which relate to observations concerning the function of negation in ENG and consequently resulted in some modifications to the handling of the data already examined during the lexical analysis.

4.5.1 The case of EMPTY and NO-WAY

The categorisation of EMPTY and NO-WAY made in the morphological analysis needs to be slightly revised. At the morphological level, EMPTY and NO-WAY were categorised as a negation sign and as a sign with negative incorporation respectively. At that level both signs were analysed as individual entities without examination of the contexts in which they occurred. As mentioned in the methodological section (see section

3.6), the data used for morphological analysis was re-divided into clauses for the grammatical analysis, and the SignStream and Access databases were created. A database containing a set of utterances as opposed to a set of tokens is more suitable for the analysis of the function of a sign. The initial categorisation of EMPTY and NO-WAY was questioned, and as a result EMPTY was re-categorised as a sign with negative incorporation and NO-WAY as a negation sign. The reasoning for these changes is presented in the next two sections.

4.5.1.1 EMPTY

In general, EMPTY functions more like a verb than like a simple negation marker. For example, the database includes examples of EMPTY as the sole element of a clause.

4.5.1.1-a (535) FAMILY MANY POOR-POOR | EMPTY | HUNGRY

This family was extremely poor; they had no (goods at all) and (they) were hungry.

(less possible) This family was extremely poor; ? no//? but not//? empty and (they) were hungry.

(less possible) This family was not extremely poor; but (they) were hungry.

The clause in (a) exemplifies that EMPTY can function as a verb. Negation in (a) is not elliptical, with a non-overt verb and EMPTY operating as negator. However, if EMPTY is considered to be a negation sign and the negative clause as elliptical, it then becomes to obtain a meaning. There is no direct or indirect indication of what is negated neither of what the negation refers to. As a negator, EMPTY would need a clause, full or elliptical to be hosted in. The next example provides a possible case of a clause with EMPTY and a noun (b).

4.5.1.1-b (548) SEARCH | VOICE | CRY-CRY | SHOE EMPTY | (SHOE-NOT) | ARRIVE...

(She) was searching (around) and calling (his name). (There was no response) and she was crying. (She) had no shoes (she was not wearing any shoes). Then she arrived.....

(less possible) (She) was searching (around) and calling (his name). (There was no response) and she was crying. The shoes are empty/it is empty of shoes. Then she arrived.....

Once again in (b), the interpretation of EMPTY as a negation sign raises problems related to meaning as demonstrated in the (less possible) reading. The problem here is that there is no sufficient indication contextually for the missing verb. The two most likely interpretations would be *the shoes are empty* and *empty shoes*. Both interpretations make the whole example obscure in terms of meaning. A full explanation is missing under all

examinations; shoes empty of what? An alternative analysis could consider this as an instance of constituent negation. However, even this analysis does not have a better outcome. Questions remain regarding meaning, such as: 'No shoes, but what?' or 'What is full if the shoes are empty?'. On the other hand, all these ambiguities are erased if we consider EMPTY to be a verbal predicate and specifically a negative existential.

EMPTY also has some specific characteristics at morphophonological level which support the sign's categorisation as predicative. First of all, at phonological level, EMPTY has the twisted movement (pronation) initially reported by Woodward (1974) as being characteristic of signs with negative incorporation in ASL. However, this is a weak argument since there is no positive form of this sign having similar morphological structure. In addition, the sign has some functional characteristics which cannot be attributed to a simple negator (negation sign). As a lexical entry in a dictionary of ENG, EMPTY would be described as articulated in a neutral space. However, EMPTY is often articulated near the hips, expressing 'lack of money' (trouser pockets); or near the top of the head, expressing 'lack of ideas' or even referring to someone who is 'mindless'. In these cases the actual arguments (MONEY, IDEA and MIND) are often omitted. Thus, EMPTY incorporates an argument by changing the place of articulation. This property of object or complement incorporation further supports the claim that EMPTY is to be regarded as a negative verb. All the above examples in this section illustrate that EMPTY functions as a negative existential and for this reason it should be categorised as a sign with negative incorporation and not as a negation sign.

The above analysis suggests that EMPTY may have become a negative existential as a result of grammaticalisation. The initial use of the sign as an adjective has changed and the sign is now also used as a negative existential. However, grammaticalisation is not yet complete and the sign does not have all the characteristics of a negation sign. We will return to this issue again (see section 5.4.1.2.4).

The use of a sign glossed as EMPTY which is used as a negative existential marker is also reported in Jordanian Sign Language (Hendricks, 2003) as shown in (c) below.

4.5.1.1-c DOOR-KNOCK EMPTY GRANDMOTHER **EMPTY**

They knocked on the door, but nothing. Grandmother wasn't there.

Pfau and Steinbach (2006) note that, according to Hendriks, EMPTY is used both as an adjective and as a negative existential. The researchers mention that the

grammaticalisation of EMPTY in Jordanian Sign Language resembles a similar process of grammaticalisation in spoken languages. Thus a lexical item that has a negative meaning may be grammaticalised into a negation marker (Pfau and Steinbach, 2006).

4.5.1.2 NO-WAY

Observations contrary to those for EMPTY were made for NO-WAY, which resulted in recategorisation of NO-WAY as a clausal negation marker and not as a verb of negation. Firstly there is a major difference between NO-WAY and the rest of the signs categorised as signs with negative incorporation. Usually, signs with negative incorporation also have a positive or affirmative version. Accordingly, there are pairs like KNOW – KNOW-NOT; LIKE – LIKE-NOT; WANT – WANT-NOT, etc. However for NO-WAY there is no such pair. Although this particular feature was observed at the previous level of analysis, NO-WAY was initially retained as a sign with negative incorporation, since in morphological analysis the signs were examined as single lexical items and not as constituents of either a phrase or a clause. In addition, this observation alone would not be sufficient for re-categorising the sign. Only the grammatical examination of the sign within a negative clause can provide relevant data. Examination of NO-WAY within a clause clearly indicates that the sign is a negator.

4.5.1.2-a.1 (116) SAME STOP | ME MONEY GIVE-MONEY **NO-WAY** | UNIFORM TAKE INDEX1

Wait (because) it is the same. I won't give (you) any money at all. I (can) buy the uniform.

In (a.1) NO-WAY functions as a negator of the verb GIVE-MONEY. If NO-WAY is considered as a sign with negative incorporation in the above clause then some serious problems in interpreting the clause result. The sign can have two additional meanings, 'to be closed' and 'something that must stop/not continue or happen'. However, as we can see from (a.2) neither meaning is possible in the example clause.

4.5.1.2-a.2 (116) ME MONEY GIVE-MONEY **NO-WAY**

I won't give (you) any money at all

* To give you money is closed.

? I (must) stop giving you money.

Furthermore, NO-WAY follows a distribution pattern that is found with negation signs. This pattern is about the possible position that negation signs can have within a negative

clause. As will be shown in the next chapter, negation signs have a post-verbal position within the clause which also coincides with the final position of the clause. NO-WAY is in this position in all the clauses in which it occurs.

The above observations suggest that NO-WAY does not function as a verb, but that instead, it has been grammaticalised to a negator marker. The source sign is a lexical verb still in use with its phonological form unchanged. It has the meaning of 'a place is closed' or 'completely closed up and there is no access to get in there' (b.1). The sign is not used for closed things such as a box, drawer, etc. (b.2). For these clauses, ENG employs another sign CLOSE which has the meaning 'to close'.

4.5.1.2-b.1 INDEX1 GO HOME | **CLOSE**

I went to (his) home but it was closed.

b.2 BOX FIND **CLOSE**

I found the box closed.

Using a different line of analysis, Sapountzaki (2005, p. 99, 156) reports that the same sign, which she glosses as (CAUSE-TO)-BE-OFF, operates in a binary way as an 'aspectual negative posterior' marker and as a 'modal auxiliary for prohibition'.

4.5.2 NO-As sign: Grammaticalisation or language loan?

NO-As has been categorised as a negation sign. NO-As may constitute a case of grammaticalisation in ENG. In this hypothesis, NO-As derives from AGREE-NOT and has undergone grammaticalisation to become a negative particle. AGREE-NOT has been categorised as a sign with negative incorporation. The two signs are almost identical morphologically (see sections 4.2.2.1 and 4.2.2.2) and they differ, although not always, with respect to movement.

NO-As is used mostly by young Deaf people for expressing negation in formal as well as informal sign language settings. The database does not provide any evidence that NO-As functions as a negator in a negation clause in the way that NOTG does. In our view NO-As does not differentiate from AGREE-NOT in clauses like (a.1) and (a.2) whereas, this is not the case for a negative particle (a.3).

4.5.2-a.1 ME MONEY GIVE-MONEY **AGREE-NOT/NO-As**

I disagree to give any money.

a.2 ME MONEY GIVE-MONEY **NO-As**

? I won't give (you) any money.

a.3 ME MONEY GIVE-MONEY **NOTG/ NOTB**

I won't give (you) any money.

? I disagree to give any money.

The constructions in which NO-As occurs are few. It mostly appears as a response to yes/no questions or as part of a rhetorical questions (b).

4.5.2-b AGAIN GO YES-As **NO-As** KNOW'-NOT

I don't know if I will go again or not.

The above examples and morphological similarities between NO-As and AGREE-NOT imply that NO-As may have derived from AGREE-NOT through grammaticalisation. On the other hand, based on personal observations an alternative hypothesis is suggested, according to which NO-As may be a loan from another sign language. NO-As is a relatively new sign. It is believed to have been part of ENG only for the last fifteen to twenty years together with its opposite, YES-As. YES-As is identical to NO-As but with a repeated downward movement resembling a head nodding affirmatively. It is assumed that the signs have been introduced from ASL where a similar sign (NO-As) is used for negation in the context of lexical YES (with an S handshape). The only difference is that NO-As in ASL has a radioulnar movement which resembles the movement of a negation headshake whereas, in ENG the movement has changed to upwards movement which probably occurred in analogy to the negative headtilt which is used as a negation marker in ENG. Further research is needed to confirm these assumptions.

4.5.3 Derivational morphology and signs with negative incorporation

The initial categorisation of signs with negative incorporation included eleven signs. The creation of the database showed that signs with negative incorporation were not a closed group. Examining negation at clausal level revealed how native signers of ENG follow morphological processes to create signs with negative incorporation. These signs are formed with two basic components: a verb, and a negative morpheme bound or free. The bound morpheme is identical for many of the signs with negative incorporation and is

formed by a sharp pronation of the forearm. Signs which use this bound morpheme are: HEAR-NOT and SUIT-NOT[36] as highlighted in (a.1).

4.5.3-a.1 HEAR + neg pronation movement → HEAR-NOT

Verbs can also be formed with NOTB as a free morpheme in order to form a newly derived form. The morpheme is often incorporated in the movement of the verb and the sign ends with a final B or a 5 handshape. Examples include: GO-NOT, TELL-NOT, ENOUGH-NOT, MATCH-NOT such as in (a.2).

4.5.3-a.2 GO + NOTB → GO-NOT

NOTB functions as a suffix in these cases. All these signs have been considered as signs with negative incorporation since they are grammatical in terms of morphophonology and grammatical function within a clause. The next chapters show that all signs follow rules related to negation.

The above introduction has not included a sign with negative incorporation, because of its special formation. This is HAVEN'T-SEEN and it derives from SEE but it does not employ the usual pronation movement in order to express negation. Instead the sign has the movement in EXIST-NOT/HAVE-NOT where a B handshape with palm orientation towards the signer flexes to a bent-B handshape. HAVEN'T-SEEN has the V handshape of SEE with palm orientation towards the signer and finger orientation away from the signer. Then, instead of moving away from the signer as its positive sign (SEE) does, the hand makes a slight movement towards the signer and the V handshape flexes to a bent-V handshape. The meaning of the sign is always perfective 'haven't seen'. It is suggested that the sign derives from SEE EXIST-NOT/HAVE-NOT. HAVEN'T-SEEN has also been considered as a sign with negative incorporation and can be included in that group. However, the above suggestion also provides information about the status of EXIST-NOT. Apart from its lexical use as a negative existential, EXIST-NOT has been grammaticalised and functions as a negative perfective marker. A reduced form of this negative perfective marker is affixed to SEE, resulting in the negative perfective meaning of HAVEN'T-SEEN.

[36] Signs HEAR-NOT and SUIT-NOT can be found with both bound and free negative morphemes.

These signs are considered as a marginal group of signs with negative incorporation because they are often found in 'un-affixed' form expressing negation with a verb and a separate particle. This never happens with the core group of signs with negative incorporation in the original coding. It seems that the affixed signs are well formed morphologically and their meaning is clear. This affixation does not apply to all verbs but only to specific lexical signs. However, at the present it is not clear which verbs can take affixation. A common characteristic of the signs taking negative incorporation is that they are all affective/experiential but this is not the only condition that permits the construction of a negative form of a verb. Negation affixation has also been reported in other sign languages (see section 2.3.1.3).

4.5.4 NOTG and NOTB in negative imperatives

During the coding of NOTG, NOTBshk and NOTB, it was observed that a second form of these signs can occur. The movement is altered to be short and abrupt. It was not clear during morphological analysis if these different forms are variants or if they are related to some grammatical function, in particular to the imperative. The coding of the clauses in the database made it clear that the signs with the altered movement are imperative forms. The changes in the movement of the signs are as follows:

- NOTG/NOTBshk. The repeated side-to-side movement changes to a single non-repeated movement from the contralateral to the ipsilateral side.

- NOTB. The upward movement with the pronated palm is retained but the movement becomes abrupt with a longer holding of the handshape in the initial and the final position of the hand.

The imperative types of the signs are often accompanied by specific facial expression features like brow raising and widened eyes.

5 RESULTS: THE STRUCTURE OF NEGATION CLAUSES

5.1 Outline of the chapter

The present chapter examines issues related to the structure of negation in ENG. Before proceeding with the grammatical analysis we will provide an outline of the chapter. Firstly, clauses excluded from the database are presented together with the reasons for their exclusion. Then the main corpus of the data on which the analysis is based is presented. Clauses are categorised as those clauses with manual negation and those with non-manual negation. Manual negation clauses are further subcategorised as negation sign (NegS) clauses and incorporated negation (NegInc) clauses. These clauses are analysed in relation to the position of the manual negation element within the negative clause. The groups and subgroups are presented in the table below (Table 5-1).

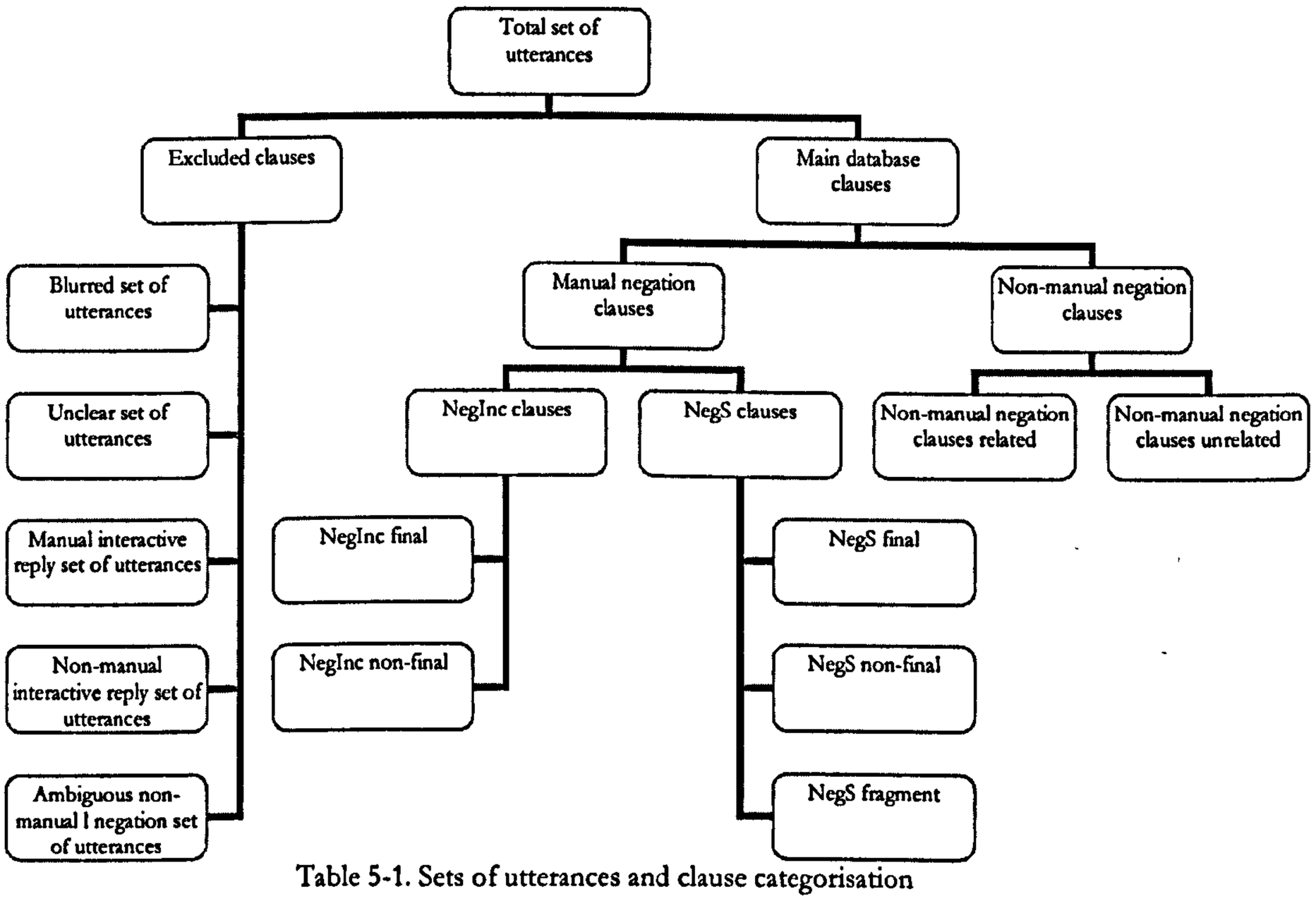


Table 5-1. Sets of utterances and clause categorisation

After the analysis of manual negation clauses, the use of negation head movements is presented for clauses with each manual sign of negation and for clauses with non-manual negation. Finally the use of negation facial expressions for each of these is analysed in relation to negation head movements and to manual negation signs.

5.2 Excluded clauses

The database on which the present analysis is based initially contained all instances of negation identified. During the coding process it was noted that a number of clauses were problematic. These clauses were initially included in the database in order to retain a consistent code number for each set of utterances. One of the first concerns following construction of the SignStream database was the identification and categorisation of the problematic clauses so they would not influence the analysis. In most of the cases it was not only the actual negation clause which was problematic but the whole set of utterances. Sets of utterances excluded from the analysis fall into the six categories presented below.

5.2.1 Sets of utterances coded as 'blur'.

This category comprises clauses where the video clip image is so blurred that identification of individual signs is not possible. 19 sets of utterances were identified and coded as 'blur'.

5.2.2 Sets of utterances coded as 'unclear'

This second category comprises clauses where the meaning was unclear, for reasons other than the quality of the recording. These reasons include a change in the circumstances of the recording session, a pause/restart of the picture, interference caused by someone passing in front of the camera, etc. Such problems resulted in lack of knowledge regarding the context and caused comprehension difficulties. In total 34 sets of utterances were identified and coded as 'unclear'.

5.2.3 Sets of utterances coded as 'manual interactive reply'

Clauses in this category occur when two Deaf people are involved in a conversation, but only one is visible in the frame. In most cases we have a short response such as in (a.1) and (a.2).

5.2.3-a.1 (86) WANT-NOT | AS-WANT

(pt)[37] I don't want it, if you want it.

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[37] This symbol (pt) means 'possible translation'. Due to the fact that it is difficult to establish the exact translation therefore a possible translation is proposed.

a.2 (83) **EXIST-NOT** | THREE EMPLOYEE THERE WORK

This doesn't exist. There are three employees working there.

The absence of the second participant and the nature of the answer meant that these clauses could not be used for this level of analysis. 31 such sets of utterances were identified and coded as 'manual interactive reply'.

5.2.4 Sets of utterances coded as 'non-manual interactive reply'

This category is similar to the previous category, but the negative response is expressed non-manually (a.1) and (a.2).

5.2.4-a.1 (96) **_____neg** INTERPRETER

(pt) No, an interpreter.

a.2 (130) ONE | **_____neg** **_____neg**

(pt) One, no no.

Once again the absence of the second participant on camera made the analysis difficult. For example, in (a.2), it was not clear whether the non-manual negation refers to the sign ONE or if it is a response to something being signed by the other participant. For these reasons all sets of utterances identified and coded as 'non-manual interactive reply' were excluded from the main database. This category comprised 21 sets of utterances.

5.2.5 Sets of utterances coded as 'ambiguous non-manual'

This category concerned sets of utterances where non-manual features used by the signers did not have a clear negative meaning. Ambiguous non-manual negation features largely indicated signer uncertainty rather than negation.

5.2.5-a (33) WORK BEGIN 9.00 | **_____non-manual features** | WRONG 9.15

(pt) Work begins at 9 o'clock, no I was wrong (work begins) at 9.15.

(pt) Work begins at 9 o'clock, well....I was wrong (work begins) at 9.15.

In total 4 sets of utterances were identified and coded as 'ambiguous non-manual'.

To conclude, a total of 87 sets of utterances were excluded from grammatical analysis (some were assigned to more than one of these categories). The analyses below are therefore based on the remaining 462 sets of utterances.

5.3 Main corpus categorisation

This section starts with a presentation of the subcategories created for analysis together with some notes on grammar. Next, the position of negation signs within a negative clause is examined. Finally, the use of non-manual features is analysed in relation to manual negation signs and in relation to non-manual negation clauses. Many sets of utterances (121) contain more than one clause with negation and each of these clauses is assigned to a different subcategory. As a result the numbers of groups of sets of utterances overlap. The search tools of both SignStream and Access were used to identify the various subgroups. Thus the database comprises of 462 sets of utterances containing 630 clauses.

The main corpus was initially divided into two categories. Firstly clauses with manual negation, where a manual sign of negation expresses negation with or without the co-occurrence of non-manual features of negation, and secondly clauses with non-manual negation where no manual sign of negation is signed and negation is solely expressed by non-manual negation features. 420 sets of utterances contained clauses with negation realised by NegS and/or NegInc (a.1), and 72 sets of utterances contained clauses where negation was marked only non-manually (a.2).

5.3-a.1 (265) ME SHOE SEARCH | FIND **NOTHING**

I am searching for my shoe but I can't find anything.

h1

a.2 (7) DAMN| ME ENTERTAIN | STAY-ALONE

Damn. I won't have any fun and I will stay home alone.

Non-manual features of negation are also found in the majority of clauses where negation is realised by manual signs. Non-manual features are used in most negation clauses (342 sets of utterances). In 22 percent of manual negation clauses (98 sets of utterances) there is no non-manual negation. There are also 20 sets of utterances (included in these subgroups) which contain both manual negation clauses accompanied by non-manual features and manual negation clauses not accompanied by any feature of non-manual negation.

Regarding the occurrence of a verbal and non-verbal predicate within a negative clause, negation clauses are categorised into two groups: they are either 'complete clauses' (b.1) or 'elliptical clauses' (b.2), in which a main constituent of the clause is omitted.

5.3-b.1 (425) LETS-GO BACK | DIVE **NOTB** | WHAT | HAPPY

Let's go back (home). We won't dive. There is no reason for it. We are happy now.

b.2 (334) FAX, MOBILE MORE | PAST-TIME **NOTG**

(Now there are) fax machines, mobiles and more (facilities) (which did) not (exist) in the past.

5.3.1 The structure of manual negation clauses

Negation in clauses with manual negation is realised by the use of NegS and/or NegInc. Features of non-manual negation may or may not co-occur. Clauses containing NegInc appeared in 193 sets of utterances, and clauses containing NegS appeared in 272 sets of utterances.

Examination of the group of NegS clauses reveals that in many cases NegS is not accompanied by any other phrasal constituent (verb, noun, etc.). Therefore, NegS clauses were further subdivided into two groups. The first group comprises clauses where a NegS is accompanied by at least one additional lexical item (verb, noun, etc.). These clauses may or may not be elliptical. The second group comprises clauses where the only lexical item of the clause is the NegS itself. These clauses are considered as a specific group of elliptical negation and are examined separately.

In general, elliptical constructions are clauses where a main constituent of the clause is omitted, usually the verb. The current database contains many negation clauses of elliptical construction. There are two main patterns for elliptical clauses with negation in ENG (a) and (b).

5.3.1-a (386) INDEX2 INDEX3 WOODSMAN STRONG | LION **NOTHING**

The woodsman is stronger than you (lion); (you), the lion are not (strong) at all.

b (184) OPEN-BOX | THROW-TOY-BACK | SEARCH | **NOTHING**

(The boy) opened the box and threw all the toys out of it, he searched around but (he found/couldn't find/the result was) nothing.

For analytical purposes these two types of elliptical negation are classified separately. For negative clauses like (a) where NegS is accompanied by a noun phrase or other constituent

elements, the terms 'elliptical clause' or 'negative elliptical clause' will be used, whereas negative clauses like (b) which lack these elements and have NegS as the only lexical item of the clause, will be referred to as 'NegS fragment'. In line with the above distinction, NegS clauses are further sub-categorised as 'NegS with constituent' clauses (type-a) and as 'NegS fragment' clauses (type-b). 'NegS with constituent' clauses included both elliptical and non-elliptical clauses with negation. The data showed that there were 106 sets of utterances (36%) containing clauses consisting of NegS fragments (type b). Additionally, there were 186 sets of utterances (64%) containing clauses with negation where a NegS was accompanied by at least one additional phrasal constituent (type-a). These sets of utterances contain either elliptical clauses as in the above example (b), or non-elliptical clauses as in (c.1) and (c.2) below.

5.3.1-c.1 (376) CLEAN-CLEAN ALL-RIGHT | PAIN | HURT **NOTHING** | ALL-RIGHT

(He) cleaned the whole area. (He) was in pain but (he) was not hurt. (He) was all right.

c.2 (379) INDEX1 CAT BE-TEASE **NOTHING**

(I am) the cat (who) is not teased by nothing (anyone).

5.3.1.1 The position of negator in NegS clauses (type-a)

The database includes 186 sets of utterances containing NegS clauses of type-a. A detailed examination of this group provides valuable information in relation to the position of the sign within the clause. For the vast majority (161 sets of utterances; 84%), NegS is located after the main verb of the negative clause whereas in 30 sets of utterances (16%) NegS is not in a final position (NegS non-final). Clauses of both subcategories can contain more than one clause of NegS final or NegS non-final. The subgroup of NegS final sets of utterances includes 20 sets of utterances with 2 NegS final clauses and 1 set of utterances with 3 NegS final clauses. Similarly, the subgroup of NegS non-final sets of utterances includes 3 sets of utterances with 2 NegS non-final clauses. The total number of NegS final clauses is 183 and the total number of NegS non-final clauses is 33. The total number of type-a NegS clauses is 216. For the vast majority of clauses (85%) NegS is placed in a post-predicate clause-final position (a.1, a.2). For the remaining 15 percent, NegS is placed in a non-final position of the clause (b).

5.3.1.1-a.1 (531) INDEX3 BIRD STILL DIE **NOTG** | ALIVE

The bird there had not died yet; it was alive.

a.2 (265) ME SHOE SEARCH | FIND **NOTHING**

I searched for my shoe but I couldn't find it.

b (46) FATHER **NOTB** FAULT-BE | SMILE

It was not father's fault. So, you can smile.

The analysis now continues with the examination of clauses with final NegS and then with the analysis of clauses with non-final NegS.

5.3.1.1.1 NegS in clause-final position

In the majority of type-a NegS clauses, NegS occupies clause-final position. In these NegS final clauses the verb of the clause can be realised within the clause or it can be missing, resulting in an elliptical clause. An example of a NegS final clause with an overt verb is presented in the following example (a).

5.3.1.1.1-a (348) MICHALIS GET-DOWN-HORSE | GO TAVERN **NOTBshk** | STAY | WAIT

Michael got down from the horse. (He) didn't go to the tavern (with the others). He stayed (there) and he waited (outside the tavern).

The database contains 134 NegS final clauses with an overt verb. In 5 of these clauses the verb of the clause is a sign with negative incorporation (NegInc) as the next example illustrates (b).

5.3.1.1.1-b (311) WHERE-FROM DEAF | HEARING | HOW | **KNOW-NOT NOTHING**

For what reason and how it happened and I became deaf (while) I was hearing, I don't know at all.

There are also NegS final clauses where the verb of the clause is missing. The database contains 49 elliptical clauses with NegS final. The following clause (a) is an example of this category of clauses.

5.3.1.1.1-c (293) SAME-EACH-OTHER | INDEX1 EARS **NOTHING**

(I should have) the same (status) as other (people). I should not have any problem with the ears (hearing).

The above examples illustrate that the NegS clause-final position is independent of the occurrence of a verb within the clause. Absence of the verb does not affect the position of the NegS. This might be an indication that the standard position of the negator in ENG is the post-verbal position. In addition, this group of clauses includes 5 clauses with a

NegInc as the verb. A NegInc has in itself a negative meaning which might result in less constrains about the position of NegS. However, the post-verbal position of NegS in these clauses remains unchanged even if the verb of the clause is a NegInc.

5.3.1.1.2 NegS in clause non-final position

Although the negator generally appears in post-verbal/clause-final position in NegS clauses, the database includes some clauses with non-final NegS in post- or pre-verbal positions. Based on the previous analysis it might be thought that any NegS not placed in clause-final position results in ungrammatical clauses. This is not the case and there is no evidence which supports such a proposal.

The non-final NegS clause group comprises of 30 sets of utterances containing 33 clauses. The NegS–verb relationship is examined firstly by examining word order. Clauses are grouped in the following categories:

a) Clauses where the NegS is located after the verb and followed by one or more arguments (VERB – NEGS – CONSTITUENT).

b) Clauses where NegS is located before the verb (NEGS – VERB).

c) Clauses where the verb is missing and NegS is followed by one or more lexical items (NEGS – LEXICAL ITEM).

The following subsections look at these categories in more details.

5.3.1.1.2.1 WORD ORDER: VERB – NEGS – CONSTITUENT

This subgroup initially comprised four clauses (252, 253, 254, 497). Example 497 (a.1) was excluded from this subgroup because it was considered to be a case of emphatic negation. Thus, the number of clauses remaining in the subgroup was reduced to three (252, 253 and 254).

5.3.1.1.2.1-a.1 (497) ONE INDEX3 SAD | WHAT | MILK MILK-PUMP NOTHING
_____h1
CANNOT

There is one (more) sad thing about this (goat). What is that? There is no milk at all to milk (from the goat).

The above example (a.1) was initially included in this subgroup because NegS (NOTHING) follows the verb (MILK-PUMP) of the clause and then NegS is followed by a NegInc (CANNOT). However, this clause must be considered a single clause of post-verbal negation for two reasons. The verb of the clause is MILK-PUMP and this is negated post-verbally by NOTHING. The use of the negative modal CANNOT does not change the situation. Both NegS and NegInc can be considered as a single negation. Furthermore, features of non-manual negation spread over both signs. Absence of NegS or NegInc would not change the syntax or meaning of the clause. The usual form would be (a.2) or (a.3).

5.3.1.1.2.1-a.2 (497x) MILK MILK-PUMP **NOTHING**

a.3 (497x) MILK MILK-PUMP **CANNOT**

In (a.1) the signer emphasises by using the negative modal. NegS is placed after the verb (MILK-PUMP) and a NegInc is added for emphasis.

Negation clauses in 253 (b.1) and 254 (b.2) seem to have similar characteristics to clause (a.1).

5.3.1.1.2.1-b.1 (253) UNDERSTAND NOW UNDERSTAND | ALL PEOPLE **CANNOT**
____f6-m (without)
LIVE **NOTG** HOUSE | FINISH

Now I understand that people can't live without a house. That is for sure.

____f6-m (without)

b.2 (254) HOUSE | NOTBshk | **CANNOT** LIVE **NOTG** HOUSE | KNOW

(Without) a house! No. I can't live without a house. You should know that.

The negation in both examples (b.1) and (b.2) will be examined together because they are identical except for the initial part 'ALL PEOPLE' in (b.1). The structure of the negative clause strongly indicates interference from Modern Greek syntax (b.3).

5.3.1.1.2.1-b.3 Δεν μπορώ να ζήσω χωρίς σπίτι.

not can to live without house

I can't live without a house.

The syntax of (b.1) and (b.2) is almost identical to that of (b.3). In addition, the signer can be clearly seen mouthings *χωρίς* (without) while signing NOTG HOUSE. ENG has no specific sign equivalent to 'without'. Instead, a signer can use the negative existential (EXIST-NOT/HAVE-NOT), NOTHING or in some cases the negative particle NOTB.

Here the signer is using a version of NOTG with the single movement which is found in imperatives. Thus, it is considered that NOTG negates HOUSE following the Modern Greek construction. If negation arising from the presence of NOTG is attributed to the verb LIVE the clause will be meaningless (b.4).

5.3.1.1.2.1-b.4 (254x) **CANNOT** LIVE **NOTG** HOUSE

* I can't live at all not house.

The signer also makes extensive use of mouthings. In particular, during NOTG the signer mouths the spoken word 'without' although usually the mouthed word is 'not'. Therefore, based on the criteria set in the methodology section, the clauses are considered as instances of signed Greek and are not included in the analysis.

The last negation clause of the subgroup is 252 (c).

5.3.1.1.2.1-c (252) INDEX3 FORGET **NEVER** UNTIL-NOW

I have never forgotten this (story) until now.

In (c), NegS has been placed after the verb and the structure of negation seems to be well-formed. What makes the clause unusual is the position of the adverb, which does not facilitate the interpretation of the verb as perfective. Once again the presence of clear mouthings by the signer implies a spoken language influence. In spoken Greek the adverb can be placed at the end of the clause. However the signed clause does not follow the word order of a spoken Greek equivalent. This clause has not been excluded for the moment because it is not clear in which cases adverbs are allowed to follow after a negative item, and also because the clause does not fulfil the criteria to be categorised as signed Greek.

5.3.1.1.2.2 Word order: NegS – verb

This group comprises 20 clauses, which can be further sub-divided according to the verb of the clause (verbal/non-verbal predicate or NegInc). In 11 clauses a verbal/non-verbal predicate follows the NegS, whereas in 9 clauses a NegInc follows the NegS. In the latter group of clauses (NegS–NegInc), NegInc is the only verb in the clause.

At first glance, the syntax of the first group of sentences resembles the syntax of Modern Greek. In Modern Greek syntax, the negative particle precedes the verb. A closer analysis

of the clauses shows that the majority of the clauses in this group are exceptions. Nevertheless, the group also includes 2 clauses which meet the criteria and are categorised as instances of signed Greek, and consequently are excluded from the present analysis (a.1, a.2).

5.3.1.1.2.2-a.1 (174) INTEREST | INDEX3 SHIVER | INDEX1 **NOTG** SHIVER

(That was) interesting. He shivers but I don't shiver.

a.2 (46) FATHER **NOTB** FAULT-BE

It is not my father's fault.

In (a.1) the signer uses Modern Greek syntax in order to form the negative clause. The following clause (a.3) presents the negative clause in Modern Greek.

5.3.1.1.2.2-a.3 Εγώ δεν ανατριχιάζω

I not shiver

I don't shiver.

ENG: INDEX1 **NOTG** SHIVER

ΕΓΩ ΔΕΝ ΑΝΑΤΡΙΧΙΑΖΩ

In clause (a.4) below NegS is placed before the verb and a NegInc follows. The word order is: NegS (verb) NegInc, which is unusual at first glance. The use of non-manual features suggests that EXIST-NOT is part of the preceding clause. Eye gaze does not change during the signing of NegS (verb) NegInc. A closer examination of the clause showed that EXIST-NOT is used emphatically. The signer wants to emphasise that he has never visited the island of Santorini.

_____**eye-gaze**

5.3.1.1.2.2-a.4 (205) THINK | ME **NEVER** GO **EXIST-NOT**

(So), I thought that I have never been (to Santorini) at all (never in my life).

The subgroup contains also an example of NO-As negation. Clauses with NO-As have specific characteristics as is shown by (b).

5.3.1.1.2.2-b (370) WAIT NIGHT-MORNING | WAKE-UP | SEE3 YES-As **NO-As** RIGHT NERVOUS

(It is better) to wait for the next morning. I will wake up and then I will see if I am right to get nervous or not.

The above set of utterances (b) includes an example of an indirect question. In this type of indirect question, YES-As and NO-As are always signed one after the other. The structure

of the clause seems to be well-formed. However, these constructions constitute a different type of clause in ENG which is beyond the scope of this study.

The remaining 7 clauses of the subgroup were examples of three different clause types. The first type is a case of contrastive negation (c.1), the second is a negative imperative (c.2) and the third a negative question (c.3).

5.3.1.1.2.2-c.1 (335) SECOND IDENTITY STRONG | **NOTG** STRESS

Secondly, (you) should have strong identity and not be stressed.

c.2 (488) UNDERSTAND | INDEX2 **NOTG** SELFISH

Have you understood? You shouldn't be selfish.

_____**question**

c.3 (462) GIRL **NOTG** STUPID | GIRL STUPID

The girl wasn't stupid, was she? (or she was?)

Based on the above examples we assume that the negative particle is allowed to have a pre-verbal position in the particular types of clauses. We will return to these issues (contrastive negation and negative imperatives) in the current and the following chapter. To conclude, this subgroup contains 2 clauses which meet the set criteria and hence are considered as instances of signed Greek.

The second group discussed in this section includes 9 clauses of NegS – NegInc structure. NegInc is the only verb in the clause. Additionally, no other sign intervenes between NegS and NegInc and no other sign follows NegInc (the only exception is 479 which is detailed below). Five of the clauses are examples of role shifting where the signer responds 'no, I don't know' as in the next example (d.1). Clearly, this indicates that these are two separate clauses.

5.3.1.1.2.2-d.1 (444) TIME TELL ME TRUE ME TRUE | **NOTBshk** | **BELIEVE-NOT BELIEVE-NOT**

(He said) this time I am telling (you) the truth but no, they didn't believe him.

In these clauses NegS are used as responses in role shifting discourse and form clauses which express rejection.

Three of the clauses of this group make use of both NegS and NegInc in order to indicate emphatic negation (d.2).

5.3.1.1.2.2-d.2 (193) HOUSE IN HOUSE ALL **NOTHING EXIST-NOT** | NOTB FINISH

In and all over the house nothing existed. Nothing at all.

Clause (d.2) indicates that the presence of NegInc allows a NegS to have a different position than the post-verbal position. It should be noted that NegS is the object of the NegInc. For all examples this position is the immediately pre-verbal position, with NegS adjacent to NegInc. The spreading of the non-manual features was also examined. In 7 clauses there is at least one feature of non-manual negation co-occurring over both NegS and NegInc (d.2), and in 4 clauses this feature is a negation head movement.

The last clause of this group is a negative clause whose structure involves NegS-NegInc followed by a lexical item. In this case, (479) (d.3), NegInc is followed by the sign FINISH.

5.3.1.1.2.2-d.3 (479) INDEX SHOE | INDEX SHOE **NOTHING-NOTHING EXIST-NOT** FINISH | HAVE 5 CHILDREN

As far as the shoes were concerned there were no shoes at all. (She) also had 5 children.

Despite the sign that follows NegS-NegInc, this example (d.3) is well-formed. FINISH is often found in clause-final position which is not surprising since its concept is inherently telic. It is therefore reasonable to occupy the clause-final position. The clause (d.3) suggests that FINISH is one of the items allowed to appear after a manual negation marker.

To conclude we assume that in plain verb clauses the occurrence of NegS before the verb is possible to indicate influence from Modern Greek syntax. However, analysis shows that NegS is allowed to occupy a pre-verbal position in specific types of clauses:

- Questions using NO-As.
- Direct questions.
- Imperatives.
- Contrastive clauses.
- Clauses of emphatic negation.

- Clauses with a NegInc.

In these clauses the NegS is adjacent to the verb occupying the immediate pre-verbal position of the clause.

5.3.1.1.2.3 WORD ORDER: NEGS – LEXICAL ITEM

This subgroup comprises clauses where the verb is missing and NegS is followed by one or more signs. Nine clauses are included in this subgroup. In 5 of these NegS is followed by FINISH (a).

5.3.1.1.2.3-a (541) CUT-STOMACH | OPEN-STOMACH | **NOTHING-NOTHING** FINISH

(He) cut the stomach and opened it (but he didn't find) anything at all.

In the remaining 4 clauses the situation is not as clear. A noun follows NegS in three of the clauses and a pronoun in the remaining clause. Although the syntax of the clause resembles at some point Modern Greek syntax, the clauses do not meet the criteria for signed Greek clauses and were not considered as such. The clauses have the following syntax (b, c).

5.3.1.1.2.3-b.1 (217) INDEX1 GO-ON-BUS | **NOTHING** TICKET

I went on the bus but without a ticket.

b.2 (551) WRONG | INDEX3 MAN NOTG | OTHER | MAN **NOTG** INDEX1 | OTHER

(I) was wrong. He wasn't (my) man (he was) another man. He wasn't the husband of mine. (He was) another man.

The meaning of (b.1) and (b.2) is clear. In clause (c) the signer wants to emphasize that this was not the man they were looking for. It is this emphasis which allows NegS to take a position other than clause-final. Clause (b) is elliptic and has two constituents: the negator and a noun. It expresses constituent negation but this is not the reason why the negator is allowed to precede the negated constituent. It is suggested that clause (b.1) does not raise any questions, although NegS is clause initial because of the dual structure of the clause. It seems that this 'type' of negation applies to both constituent (b.1) and clausal negation (c).

5.3.1.1.2.3-c CHOCOLATE | **NOTB** EAT

Chocolate, I don't eat (it).

5.3.1.1.2.4 SUMMARY OF NEGS IN CLAUSE NON-FINAL POSITION

Examination of clauses with non-final NegS reveals some very interesting issues concerning the structure of a negation and the position of NegS within a negation clause. First of all, from the subgroup of NegS non-final clauses there are only four clauses which were positively categorised as instances of signed Greek, and consequently not well-formed in ENG. These clauses exhibit some basic syntactic characteristics related to the syntax of Modern Greek (see ex. 5.3.1.1.2.1-b.1, 5.3.1.1.2.1-b.2 and 5.3.1.1.2.2-a.1).

Not all clauses with NegS non-final are instances of signed Greek. On the contrary, the analysis reveals that the majority of these clauses with non-final NegS do not meet the criteria for signed Greek as set out in section 3.6.1.1.2. The clauses exemplify some specific syntactic structures and clause categories which allow a NegS to occupy a different position than post-predicate/clause-final. In the clauses included in Table 5-2, NegS is in the immediate pre-predicate position.

Clause category	Negative particle	NegS
Questions using NO-As.	X	
Direct questions	X	x
Imperatives	X	x
Contrastive clauses	X	
Clauses of emphatic negation	X	x
Clauses with a NegInc	X	x

Table 5-2. Negation clauses with negative particle or NegS in pre-predicate position

The data examination suggests that the post-predicate position of the negative particles and NegS is also clause-final. However, this is not entirely true. Clause-final position is the result of the majority of clauses having no other constituent after the negative particle or the NegS. The analysis of clauses with non-final NegS revealed that there are indeed some items that are allowed to follow a NegS. These are wh-signs, pronouns in pronoun copy, temporal adverbs and FINISH as marker of telic aspect. There is some question as to whether temporal adverbs can follow a negative particle or not, as the database does not provide sufficient evidence to support either case. Thus, it is not clear if a clause like (c) is acceptable in ENG.

5.3.1.1.2.4-c INDEX1 EAT MEAT **NOTG** MANY-YEARS.

I don't eat meat for many years.

5.3.1.2 NegS fragment clauses (type b)

At the beginning of this section (5.3.1), it was mentioned that the database contains 106 sets of utterances with NegS fragment. Ten sets of utterances contain two clauses with NegS fragment and 1 set of utterances contains three clauses with NegS fragment. Thus, the total number of NegS fragment clauses is 118. As was explained above, NegS is the only element in this group of clauses. The negated constituent or phrase is only retrievable from the context. The following example (a) is characteristic of the majority of NegS fragment clauses.

5.3.1.2-a (184) OPEN-BOX | THROW-TOY-BACK | SEARCH | **NOTHING**

(The boy) opened the box and threw all the toys out of it; he searched around (but) there was nothing.

In (a) there is no surface verb or noun phrase to which NOTHING can refer. The reference of NOTHING can only be retrieved from the context. The boy is searching all over the place but he is not able to find what he is looking for.

Some clauses categorised as NegS fragment appear within a specific context: NegS fragment follows role shift. There are 21 examples included in this subgroup of NegS fragment clauses and all are instances of the signer's direct quoting of speech. The following case is a typical example (b).

5.3.1.2-b (385) CAT | **NOTG** | MAN INDEX3 POWER

The cat (said): No, the man there (is the one who has) the power.

5.3.1.3 NegInc clauses

We have already presented the database as containing 193 sets of utterances with NegInc. There are 23 sets of utterances within this group containing two clauses with NegInc, 8 sets of utterances containing three clauses with NegInc, and 2 sets of utterances that have four clauses with NegInc. The total number of NegInc clauses is therefore 238. The clauses are divided into two subgroups: NegInc with constituent 177 clauses; 74%) and NegInc without constituent (61 clauses; 26%). For convenience we will label the first group of clauses as NegInc clauses of type-a; and the second group as NegInc clauses of

type-b. NegS are negation markers and NegInc are verbs of negation and their grammatical features differ.

Type-a clauses where NegInc occurs together with constituents like noun, verb, adverb, etc., are like the following negation clause in (a).

5.3.1.3-a (41) KNOW | TOOTH MONEY EXPENSIVE | MONEY PAY **CANNOT**

You know, dentures are expensive and they couldn't pay (the amount) of money.

Type-b clauses have the following structure (b).

5.3.1.3-b (524) HIMSELF WRITE | **KNOW-NOT** | HERE GREECE **NOTG** | FOREIGN

He (is) a writer himself. I don't know (where he is from), but (I think he) was not from Greece; he is from a foreign country.

A characteristic pattern of NegInc position is observed in NegInc type-a clauses. NegInc tends to occupy clause-final position. Hence, NegInc clauses of type-a have been further subdivided in relation to the position of NegInc within the negative clause. In the first subgroup NegInc is located in clause-final position (NegInc final=141, 80%) and in the second subgroup NegInc is not clause-final (NegInc non-final=36, 20%).

An instance of NegInc in final position is provided in example (a) above while example (c) illustrates negative clauses with NegInc non-final.

5.3.1.3-c (291) WHAT-FOR | SAME-EACH-OTHER | HEADPHONES **EXIST-NOT** INDEX3^INDEX1

The reason is that us two should be the same. He doesn't wear headphones, I don't wear headphones.

Clausal analysis of negative particles and NegS has shown that a negator usually is the last manual item in a negative clause but it does not always occupy the most final position in the clause. The same is also true for NegInc. In addition, this position is not a fixed syntactic position for NegInc.

5.3.1.3.1 NegInc in clause non-final position

In clauses where NegInc does not appear in the final position, no underlying pattern concerning the position of NegInc was observed. This group of negative clauses includes two cases where the structure of the clause was not well-formed, possibly because the signer was influenced by the syntax of Modern Greek (examples 253 and 254). These

clauses have already been categorised as instances of signed Greek (see section 5.3.1.1.2.1). For the remaining 34 clauses there are no indications that would categorise them as instances of signed Greek. Clauses of this subcategory are examined in detail in order to search for any specific pattern concerning NegInc non-final. To achieve this, clauses are grouped in relation to the word placed in clause-final position.

The first group contains 5 clauses with NegInc non-final where the clause-final position is occupied by a NegS. In one clause, a noun is signed between NegInc and NegS (a.1), and in the remaining four clauses NegS follows immediately after NegInc (a.2).

5.3.1.3.1-a.1 (209) PLEASE SECRET | **TELL-NOT** FATHER **NO-WAY** | SECRET

It is a secret. So, please don't tell it to my father in any way. It's a secret.

a.2 (311) WHERE-FROM DEAF | HEARING | HOW | **KNOW-NOT NOTHING**

For what reason and how it happened and I became deaf (while) I was hearing, I don't know at all.

As was mentioned earlier (section 5.3.1.1.1), NegS has a post-verbal position within a negative clause. Therefore, the clauses above follow the typical pattern of negation where NegS is placed post-verbally. In two of the clauses the pairing of NegS-NegInc expresses emphasis. Moreover, clause (a.1) may be an example of an imperative. If this is so then it is possible that an imperative form of the negative verb is allowed to occupy clause-initial position resembling the position of the negative particle in imperatives. However, there is no additional evidence to support this interpretation, nor has there been any previous research on the formation of imperative mood in ENG.

Another group contains 6 NegInc non-final clauses where FINISH appeared in final position. In five of the clauses FINISH follows NegInc (b.1) and in one clause a non-verbal predicate is signed after NegInc and before FINISH (b.2).

5.3.1.3.1-b.1 (456) STORY ALL SOME FANTASY | TITLE **KNOW-NOT** FINISH

The whole story is a fantastic one. As for the title, I don't know it at all.

b.2 (299) UNDERSTAND | CUT | **WANT-NOT** ORAL FINISH

(Then my mother) understood that I don't want speech and language therapy t all and she stopped (insisting).

There are 4 clauses where another adverb occupied clause-final position following non-final NegInc. In three of these clauses one additional constituent appears between NegInc and the adverb (c).

5.3.1.3.1-c (256) WHO INDEX1?| **KNOW-NOT** INDEX1 NATURAL

Do you know who I am? Of course not, you don't know me.

To summarise, adverbs occupy a post-verbal position but it is not yet clear what the conditions are for the occurrence of signs between NegInc and an adverb.

NegInc is followed by a wh-sign in 3 clauses. Although interrogatives are beyond the research interests of the current work, research data from this study and personal observations indicate that wh-words have a clause-final position within interrogatives (d). Therefore, a NegInc in clause non-final position is considered as a well-formed structure.

5.3.1.3.1-d (15) YOU WAKE-ME-UP **EXIST-NOT** WHAT-FOR

For what reason didn't you wake me up?

NegInc is followed by a pronoun in 3 clauses where a pronoun copy construction is formed (e.1).

5.3.1.3.1-e.1 (219) DOUBT | INDEX1 **BELIEVE-NOT** INDEX1 | LIE INDEX3

I doubt it. I don't believe it. He is lying.

Like wh-signs, pronoun phenomena are beyond the scope of this research, but personal observation and examples in the present data suggest that pronoun copy occurs in ENG. Therefore, we consider that these clause structures are acceptable in ENG.

The NegInc non-final subgroup also contained 3 clauses where a pronoun is signed after NegInc without pronoun copy (e.2).

5.3.1.3.1-e.2 (205) ME NEVER GO EXIST-NOT | SANTORINI **SEE-NOT** INDEX1

I have never been (to Santorini) at all (never in my life). I haven't seen it (Santorini).

These clauses do not follow Modern Greek syntax and there are no other characteristics that could raise questions about the grammar or meaning of the clauses. In general it is not clear which conditions permit constituents to follow NegInc.

The data also included NegInc clauses where clause-final position is occupied by a noun (8 clauses) (f.1) or a verb (2 clauses) (f.2).

5.3.1.3.1-f.1 (57) ME **EXIST-NOT** GIRL

I don't have a girlfriend.

f.2 (23) INDEX1 **CANNOT** THERE SIT

I can't sit there.

To conclude, the non-final position of NegInc in the above clauses seems to be an acceptable syntactic structure, although NegInc occupies a clause-final position in the majority of the clauses. Additionally, non-final position of NegInc is not a source of ambiguity for the examined group of clauses. In general, NegInc signs often take arguments or complements which can occur after the NegInc itself.

5.3.1.4 Summary of clauses with manual negation

Data analysis of NegS suggests that NegS is placed after the verb of the negated clause when this is present in the surface structure. In the majority of cases this position is also clause-final. NegS remains in the same position when the verb of the clause is non-overt. Since the standard location of NegS is post-predicate, the assumption is that in clauses with non-overt verbs, NegS occupies a position after the empty position of the missing verb. In cases of constituent negation, NegS is placed after the negated constituent. Although in most cases (85%) the post-predicate position coincides with clause-final position, the analysis showed that this is not necessarily the most final position of the clause, since specific items are allowed to follow a negative particle or a NegS: wh-signs, pronouns, temporal adverbs and FINISH.

In addition to the standard post-predicate position of a negative particle or a NegS, a pre-predicate position is also allowed in specific constructions (Table 5-3). In all categories this position is the immediate pre-predicate position

NegS in pre-verbal position and non-final NegInc
• Questions using NO-As. • Direct questions. • Imperatives. • Contrastive clauses. • Clauses of emphatic negation. • Clauses with a NegInc.

Table 5-3. Clause categories for pre-verbal NegS and non-final NegInc

NegInc clauses also appear in clause-final position in 80% of the cases. Once again clause analysis showed that this is not a syntactically fixed position. Thus, NegInc in non-final position is possible in ENG.

5.3.2 Non-manual negation clauses

One of the two primary groups of clauses in the initial categorisation of negation is non-manual negation clauses. In these clauses, negation is marked solely by features of non-manual negation and no NegS or NegInc signs occur. The database contains 68 sets of utterances with a single clause of non-manual negation. An additional 4 sets of utterances include 2 clauses with non-manual negation. The total number of non-manual negation clauses is 76[38]. Of these clauses, 23 (30%) have been signed in conversational setting, whereas the remaining 53 clauses (70%) are part of the sign stories signed by the informants.

Non-manual negation clauses are further subdivided into two groups. This categorisation is based on whether non-manual features negate the concurrent sign/clause or not. The first subgroup consists of clauses where non-manual features and manual signs co-occur and are related grammatically. Included in this subgroup are 36 clauses with non-manual negation. An example is given in (a).

_____**h1**
5.3.2-a (7) DAMN | ME ENTERTAIN | STAY-ALONE
Damn I won't have any fun and I will stay (home) alone.

The second subgroup contains non-manual negation clauses where the non-manual features do not negate the concurrent signs. A grammatical meaning cannot be obtained by relating non-manual features to the concurrent signs. In these clauses negation is expressed by non-manual features and there is no immediate relation and connection to the co-occurring signs or to any of the immediately preceding or following signs. In some cases, non-manual negation is related to manual negation expressed within the set utterances (b.1). In some other cases there is no other manual negation within the same set of utterances (b.2) or non-manual negation can be a non-manual response reported by the signer (role shift) (b.3). This subgroup comprises 39 clauses.

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[38] The total number of utterances with non-manual negation sentences is 72.

h1
5.3.2-b.1 (417) SEARCH-SEARCH | DIFFICULT | SEARCH | **EXIST-NOT-EXIST-NOT** | HUNGRY | SEE-EYE

He was searching but he couldn't find anything. It was difficult (to find something).

He continued searching but there was nothing around. Then, he saw something.

(less possible) He was not searching because it was difficult. He continued searching but there was nothing around. Then, he saw something.

h2
b.2 (455) SEE-EYE EGG BIG-ROUND | ROUND-THROW-AWAY

(She) saw a very big and round egg. (She didn't accept it) and she threw it away.

h2
b.3 (228) OTHER BOAT TIME TOMORROW

Is there any other boat any other time? No. There is one tomorrow.

Clauses with non-manual negation are examined and analysed in more detail together with the analysis of non-manual features later in this section (see section 5.4.2).

5.4 Negation head movements and negative clauses

The use of different negation head movements in relation to various negation signs is presented in this section. The amplitude and duration of all negation head movements varies due to individual differences and also differences arising from the intensity if negation (stronger or weaker expression). The spread of the head movements also varied. A negation head movement can spread over one or more signs. Negation head movements were also found in combinations. Thus, a signer who has already posed the head in a tilt (h1) position without returning to the initial position can also use a shake for emphatic purposes. In the same way a signer whose head is already in a headturn position can also use a headtilt in order to indicate a stronger negation.

Negation head movements are considered as grammatical non-manual signals in ENG. This is because negation head movements have a specific grammatical function when accompanying particular lexical signs and clause categories, and also because they are directly related to syntactic function. In addition, negation head movements can occur without accompanying manual negation signs and can negate a clause on their own.

Negation head movements can be described as prosodic features which appear at the surface structure of the clause. The use of the negation head movement, especially in non-manual negation clauses, resembles the use of intonation for yes/no questions in

English and Modern Greek. Pfau (2004) notes that the use of intonation as a means of expressing negation is not restricted to sign languages but is also found in spoken languages, describing a number of spoken languages which use intonation in order to express negation. Thus in a language of the Southern Ivory Coast (Ogbru) 'the negative marker... is a discontinuous morpheme characterized by a high tone featural affix and the negative particle 'mu', which is subject to vowel harmony' (Pfau, 2004, p. 18). In both cases negation uses prosodic features in addition to negative particles.

The database has 280 sets of utterances (61%) including at least one clause with a negation head movement. In the remaining 182 sets of utterances (39%) no negation head movement accompanies the negative clauses. The two groups of sets of utterances are presented in Table 5-4.

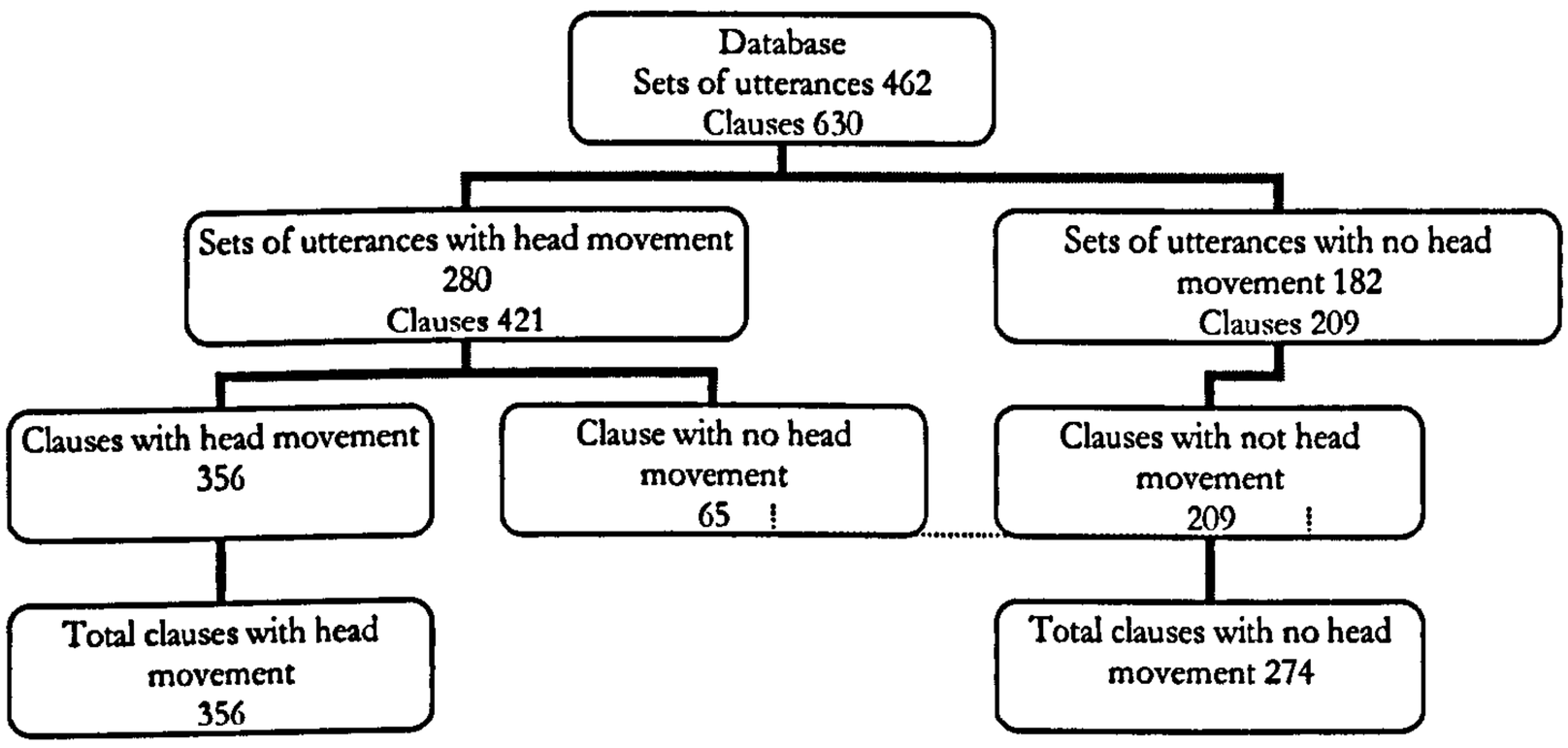

Table 5-4. The distribution of the use of negation head movement in relation to sets of utterances and clauses of negation

The first group of 280 sets of utterances with negation head movements contains 98 sets of utterances with more than one negative clause. The total number of clauses within this subgroup of set of utterances is 421. Of these, 356 are clauses with negation head movement and 65 are clauses with no negation head movement. The second group of 182 sets of utterances with no negation head movement contains 24 sets of utterances with more than one negation clause with no negation head movement. The total number of clauses having no negation head movement within this subgroup of sets of utterances is 209. If we include the 65 clauses with no negation head movement belonging to the first subgroup of 280 sets of utterances then the total number of clauses with no negation head movement increases to 274 clauses. Thus the database contains 356 negative clauses

(57%) with negation head movement and 274 (43%) without negation head movement (Figure 5-1).

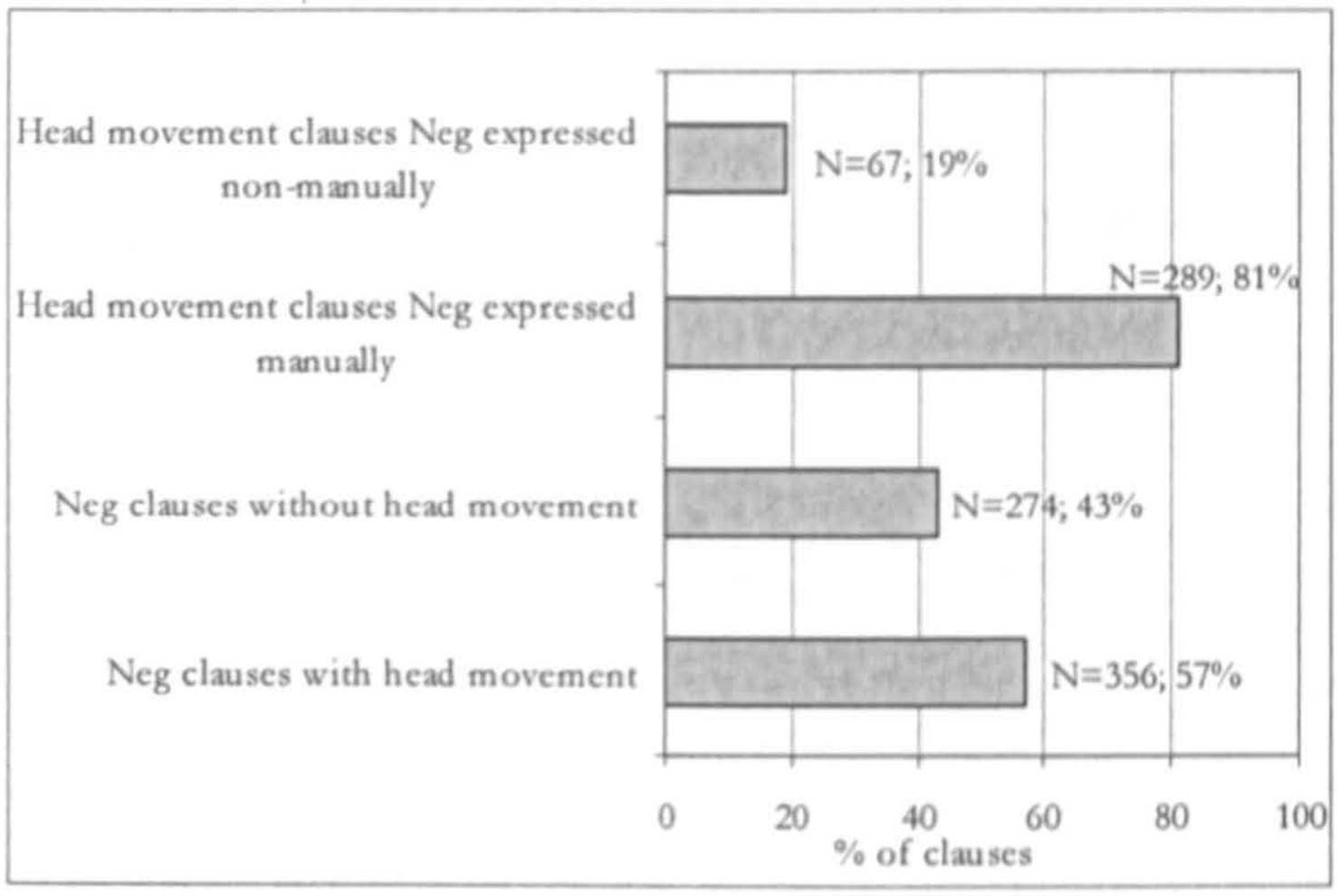

Figure 5-1. The distribution of negation head movements to negative clauses and to manual and non-manual negative clauses

The group of 356 negative clauses with negation head movements contains clauses with manual negation and clauses with non-manual negation. This group of clauses is further subdivided in relation to whether manual negation or non-manual negation is expressed. In 289 clauses (81%) the use of negation head movement is related to the presence of a manual negation sign while in 67 clauses (19%) only non-manual negation was present (the negation head movement was the only negator).

5.4.1 Negation head movements and manual negation signs

Clauses with manual negation and negation head movement were further examined in relation to the use of NegS or NegInc within the clause. The database contains 192 clauses of NegS with negation head movement (in 162 sets of utterances) and 108 clauses of NegInc with negation head movement (in 93 sets of utterances). The total of both subgroups (300) exceeds the number of clauses with manual negation with negation head movement (289) because NegS and NegInc can appear within the same clause.

Following the analysis made in the previous subsection (see section 5.3.1) an overview of both NegS and NegInc clauses is presented in relation to the presence or absence of negation head movements (Figure 5-2).

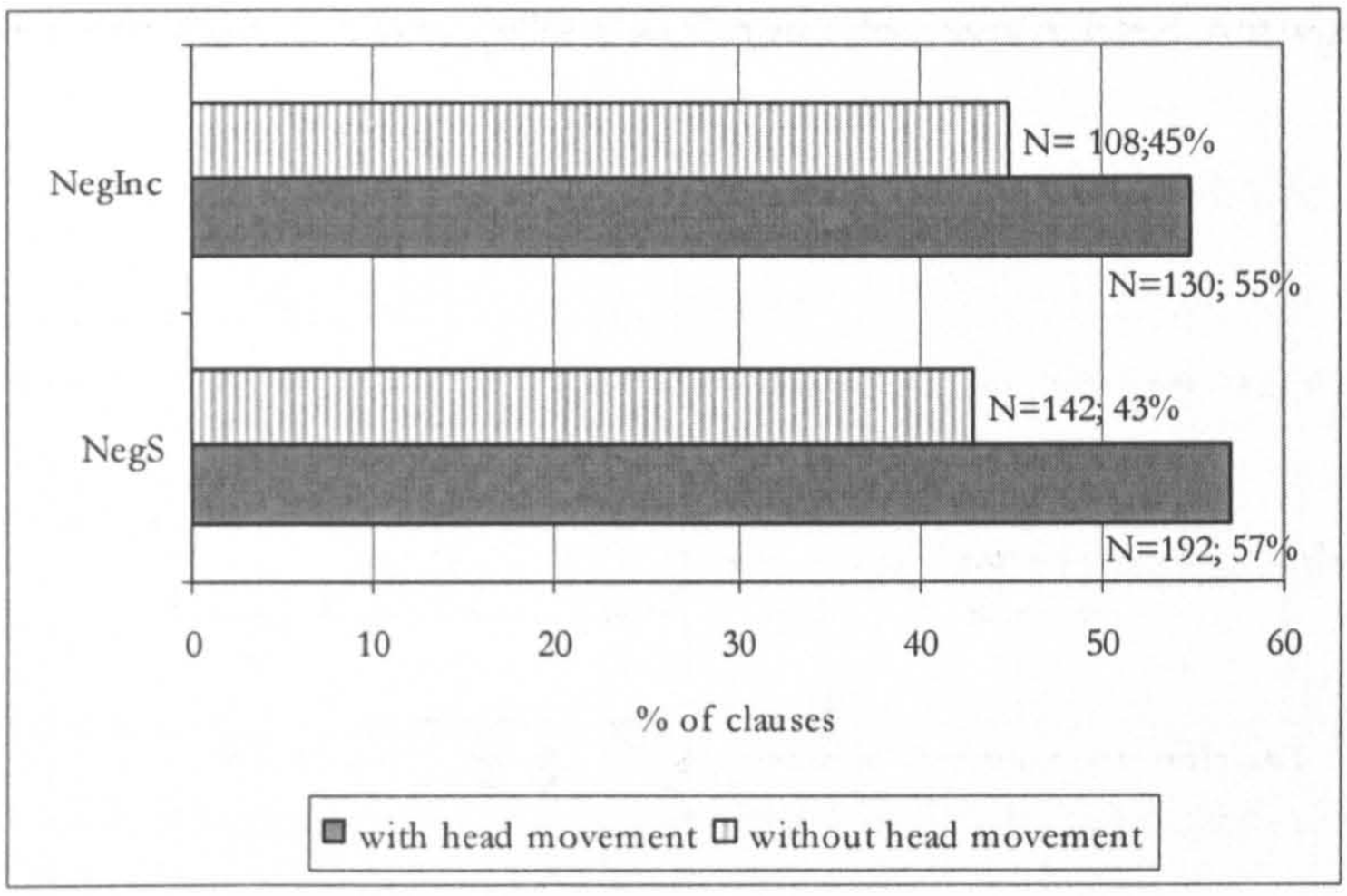

Figure 5-2. The use of negation head movements in relation to NegS and NegInc clauses

The above figure indicates that negation head movements are used in more than half of the clauses in both groups.

5.4.1.1 NegS signs and negation head movement and spreading

This section explores the relation between NegS and negation head movements, and analyses the use of negation head movement in NegS clauses. Each of the seven NegS is presented separately, with information on the number of clauses where a NegS appears, the use of any of the three negation head movements and how the head movement spreads. The NegS signs which are examined in relation to negation head movements are listed in Table 5-5.

NegS	**Number of clauses**
NOTB	61
NOTG	116
NOTBshk	33
NOTHING	107
NEVER	15
NO-WAY	8
NO-As	5

Table 5-5. The number of clauses where each NegS sign occurs

5.4.1.1.1 NOTB

The database contains 53 sets of utterances with NOTB negative clauses. Taking into account sets of utterances with more than one NOTB clause the total number of NOTB negative clauses is 61. In 48 of these clauses (79%) a negation head movement accompanied the NOTB sign whereas in 13 clauses (21%) NOTB was signed without any negation head movement.

Although NOTB is signed with a negation head movement, in the vast majority of cases, NOTB clauses without negation head movement are also grammatical in ENG. NOTB clauses make use of two negation head movements, headtilt (h1) and headturn (h3). The database contains 42 clauses where NOTB is accompanied by a headtilt (88%), 4 clauses where NOTB is accompanied by a headturn (8%) and 2 clauses where NOTB is accompanied by a combination of headtilt and headturn (2%).

The following are examples of a NOTB clause with a headtilt (a.1), with a headturn (a.2), and with a combination of headtilt and headturn (a.3).

5.4.1.1.1-a.1 (95) DIVE-IN-OUT 45 MINUTES | 2-HOURS^3-HOURS **NOTB**
h1

(You have) to dive for a total of 45 minutes, not for 2 or 3 hours.

a.2 (425) LETS-GO BACK | DIVE **NOTB** | WHAT | HAPPY
h3

Let's go back (home). We don't have to dive. There is no reason for it. We are happy now.

a.3 (272) MEN WOMAN HIT | CANNOT | CAT **NOTB** | INDIFFERENT
h1
h3

The man and the woman would hit her and she couldn't do it. So, the cat didn't do it and she didn't care.

The above examples show how a negation head movement can occur over the NOTB sign (a.2) and (a.3) or over the entire negative clauses (a.1).

A more thorough examination of negation head movement spread follows. The total of NOTB clauses of the database accompanied by a negation head movement is 48. Eighteen of these clauses are instances of fragment negation, meaning that NOTB is the only constituent of the clause (b).

_____h1
5.4.1.1.1-b (430) SHEPHERD | **NOTB** | ME FUN | 1MOCK2

The shepherd said, no, I was making fun of you. I wanted to tease you.

In 19 clauses NOTB is the only constituent of the clause under the negation head movement, although these clauses are non-fragment negation clauses with at least one constituent (verb, noun, adverb, etc.) as well as NOTB (c).

_____h1
5.4.1.1.1-c (172) SAME-ALL | USA SIGN SAME-BOTH | OTHER-OTHER **NOTB**

It is the same for everybody. In the USA they sign the same way. There is no variation.

The duration of the negation head movement may also start before or continue after the sign/signs that it spreads over, as can be seen in the following example (d).

_____h1
5.4.1.1.1-d (395) THINK RUN BE-STUPID RUN CONTINUED | **NOTB** | REST SOME SEAT

He thought that it was stupid for him to run continuously. No, not any more. He should have some rest and he sat.

There are also 11 clauses where a negation head movement occurs over NOTB and extends over an additional element of the clause, as in clause (a.1). In the following example we consider that the set of utterances contains two adjacent negative clauses in coordination. Coordination in (e) is indicated by the by non-manual features; a forward movement of the upper torso at the end of the first clause and then return of the upper torso to the initial position[39]. The negation head movement begins over NOTB of the first negative clause and spreads over the entire second negative clause.

_____h1
____torso movement
5.4.1.1.1-e (165) ME STILL ONE-YEAR WAIT | WORK **NOTB** | EMPLOY **NOTB** | WAIT

I have been waiting for the past year. I don't work anywhere and nobody has offered me a job. So, I am waiting.

Negation head movement spreading in (g) resembles what is described as perseveration in ASL (Bahan, 1996; McLaughlin, 1997; Neidle et al., 2000; Neidle et al., 1998). Perseveration concerns both manual signs and non-manual features. According to Bahan

[39] Based on anecdotal observation, coordination is also indicated by a head or a slight shift of the body. Often the forward movement of the torso and the head nod occur together.

(1996, p. 68) 'perseveration occurs in cases where a specific articulation occurs once and then will recur at a later point in the sentence'. The researchers (Bahan, 1996; McLaughlin, 1997; Neidle et al., 2000; Neidle et al., 1998) discuss perseveration in relation to wh-marking. However, in example (g) the clauses are coordinated, which seems to justify perseveration of the negation head movement.

To conclude, all the above clauses indicate that, when a negation head movement appears in a clause, the negative particle NOTB is always under the negation head movement. In most cases the negation head movement does not spread over the whole clause or over additional elements of the clause but it only extends over the negator. Negation head movement spreading is not confined to the negation clause in the sense that it is also possible for a negation head movement to spread beyond the negative clause. The onset of the negation head movement is tied more rigorously to the signs under the spreading of the negation head movement than its offset, which has a loose relation to the end of the clause or signs under the spreading. This onset/offset characteristic of negation head movement in ENG was an unexpected finding of particular interest, since negation head movement has been categorised as a grammatical feature. According to Baker-Shenk (1983), the onset/offset of grammatical non-manual features in ASL is strictly related to the signs or clauses that are under the spreading of this feature (see section 2.3.2.3).

5.4.1.1.2 NOTG

The database contains 104 sets of utterances with NOTG negative clauses. Taking into account sets of utterances with more than one NOTG clause, the total number of NOTG negative clauses is 116. Of these, 67 NOTG clauses are accompanied by a negation head movement, and in 49 no negation head movements accompany the clauses. Two of the former and one of the latter are considered as instances of signed Greek. Therefore, they have been excluded, resulting in a total of 65 NOTG clauses with negation head movement (58%) and 48 NOTG clauses (48%) without negation head movement.

As only around half of NOTG clauses are accompanied by a negation head movement, negation head movement is not an obligatory feature for NOTG clauses. Hence, NOTG clauses with no negation head movement are grammatical in ENG. Where negation head movements occur, NOTG clauses primarily use headshake (h2) and headturn (h3). Of the NOTG clauses contained in the database: 30 clause are accompanied by a headshake (h2)

(45%), 29 clauses are accompanied by a headturn (h3) (45%), 5 clauses are accompanied by a headtilt (h1) (8%) and 1 clause is accompanied by a combination of headtilt and headturn (h1 and h3).

The following examples illustrate the use of different negation head movements with NOTG: headshake (a.1), headturn (a.2), headtilt (a.3) and a combination of headtilt and headturn (a.4).

_____h2 _____h2
5.4.1.1.2-a.1 (248) AIRPLANE-FLY NOTG NOTBshk | ME AIRPLANE-FLY **NOTG**

I don't (go) to the airport. I am not going to fly by airplane.

_____h3
a.2 (481) ME STOMACH-FULL | FULL-CHEEK FINISH | FOOD **NOTG**

My stomach is full. I have eaten well. I don't want to eat.

_____h1
a.3 (438) HERE HAVE WOLF | LIE **NOTG**

There is a wolf here, I am not lying.

____h1
_____h3
a.4 (236) MUST 1PHONE3 MOTHER | ANXIETY **NOTG** | ME GO

I had to phone my mother so that she would not worry. So, I went there.

As with NOTB clauses, the spread of negation head movements over a NOTG clause can vary. The above clauses exhibit the two primary variants in negation head movement: the head movement is co-extensive with NOTG as in (a.3) or it can spread over the whole negative clause as in (a.1) and (a.2). The database contains 48 clauses where the negation head movement is only co-extensive with NOTG. Twenty of these clauses are instances of fragment negation where NOTG was the only constituent of the clause (b).

_____h3
5.4.1.1.2-b (314) RELATIVES ASK-ASK | **NOTG** | INDEX2 SAD NOTBshk

The relatives told them, no. You mustn't be sad.

The spreading of the negation head movement does not always coincide with signs of the negated clause. However, NOTG is always under the negation head movement whenever this movement accompanies a clause. The following clauses present examples of a negation head movement which extends either before or after NOTG (c.1) and (c.2).

h3
5.4.1.1.2-c.1 (51) THEY LOVE OK | INDEX3 INTEREST NOTG | DEAF

They loved me and this was ok but they were not interested in me because I was deaf.

h3
c.2 (315) RELATIVES ASK-ASK | NOTG | CALM | NOTG | WAIT

The relatives told them, not (to worry), be calm, not (to worry), and wait.

In clause (c.1), negation head movement begins after the initial frame of NOTG and it spreads over the initial part of the clause following NOTG. In clause (c.2), the negation head movement spreads over two negative fragment clauses which have an affirmative verb positioned between them. Once again this seems like a case of perseveration of the negation head movement. It is possible that perseveration of the negation head movement over the two negative particles forces the negation head movement to spread over the intervening verb without changing its polarity. In 17 clauses negation head movements spread over the entire clause, as in clause (a.1), or over NOTG and at least one constituent of the clause as in (d).

h2
5.4.1.1.2-d (208) FATHER FORBID | INDEX1 ENTERTAINMENT FREE NOTG

(My) father forbade it. I was not free to have fun.

The spreading of negation head movements in clauses with NOTG has the same characteristics already observed for spreading in clauses with NOTB. Although negation head movement is considered as a grammatical non-manual feature, relation to the clause or specific negation signs is not rigid in terms of onset/offset of the movement and the clause or signs.

5.4.1.1.3 NOTBshk

The database contains 30 sets of utterances with NOTBshk negative clauses. Three of these include 2 NOTBshk clauses, resulting in a total of 33 NOTBshk clauses. In 28 of these (85%), NOTBshk is accompanied by a negation head movement, whereas in 5 cases (15%), no negation head movement accompanies the clause.

There are 15 NOTBshk clauses accompanied by a headshake (h2) (54%), 11 NOTBshk clauses accompanied by a headturn (h3) (39%), and 2 NOTBshk clauses accompanied by a headtilt (h1) (7%). Examples of the use of different negation head movements with

NOTBshk clauses are presented below: with a headshake (a.1), with a headturn (a.2) and with a headtilt (a.3).

_____**h2**

5.4.1.1.3-a.1 (348) MICHALIS GET-DOWN-HORSE | GO TAVERN **NOTBshk** | STAY

Michael got down from the horse. (He) didn't go to the tavern (with the others). He stayed (there).

_____**h3**

a.2 (341) BE-ASKED ASK-OTHERS **NOTBshk** | INDEX2 BLINKERS

Don't let anyone ask you anything and don't you ask anything. Remain focused on your aim.

_____**h1**

a.3 (451) WALK | THINK | NOTB **NOTBshk** | AGAIN WANT FLY

(She) was walking and thinking about it but no, she wanted to fly again.

Once again the spread of the negation head movement in NOTBshk clauses varied. In 22 clauses the negation head movement is co-extensive with NOTBshk only. Twelve of these clauses are instances of fragment negation as in clause (b) where the negation head movement extends over NOTBshk and extends over part of the next clause. In the remaining 10 clauses NOTBshk is the only element under the negation head movement, as in clause (a.2). In both cases head movement duration and sign duration do not always coincide. In (a.2) the negation head movement spreads over the initial part of the first sign of the next clause.

_____**h3**

5.4.1.1.3-b (360) MAN MICHALIS | **NOTBshk** | ME STAY WAIT UNDER-TREE-SEAT

This man Michael replied that no, I will stay here and wait under the tree.

In 6 clauses negation head movement spreads to at least one additional constituent of the clause other than NOTBshk, or over the entire negative clause. An example of a negation head movement occurring over both NOTBshk and an additional constituent is presented in (c); an example where the spread of the negation head movement is over the whole clause is given in (a) and repeated in (d).

_____**h3**

5.4.1.1.3-c (507) SEE-OUT-WINDOW | SAME SEED-SMALL GROW-HIGH **NOTBshk**

(He) looked out of the window and it was the same small seed-plant which did not grow high.

h2
d (348) MICHALIS GET-DOWN-HORSE | GO TAVERN NOTBshk | STAY

Michael got down from the horse. (He) didn't go to the tavern (with the others). He stayed (there).

The distribution of onset/offset of the negation head movements has the same profile as in NOTB and NOTG clauses.

5.4.1.1.4 NOTHING

The database contains 96 sets of utterances with NOTHING negative clauses. Eleven of these included 2 clauses with NOTHING, resulting in a total of 107 NOTHING clauses. In 43 NOTHING clauses (40%) a negation head movement accompanies the clause whereas in 64 clauses (60%) no negation head movement occurs.

The distribution of negation head movement is as follows: 19 clauses (44%) are accompanied by a headtilt (h1), 17 clauses (40%) are accompanied by a headturn (h3), 5 clauses (12%) are accompanied by a headshake (h2), 1 clause (2%) is accompanied by a combination of a headtilt and a headshake (h1 and h2), and 1 clause (2%) is accompanied by a combination of a headtilt and a headturn (h1 and h3).

Examples of various negation head movements with NOTHING clauses are presented below: a clause with a headtilt (a.1), with a headturn (a.2) and with a headshake (a.3). NOTHING clauses which combine a headtilt with a headshake, and those which combine a headtilt with a headturn are presented in (a.4) and (a.5) respectively.

h1
5.4.1.1.4-a.1 (258) SEARCH-SEARCH | FIND NOTHING

I searched everywhere but I didn't find anything.

h3
a.2 (349) PEOPLE PULL | SAVE 5 SAVE | DIE NOTHING NOTHING

(He) pulled out all the people. (All) five of them were saved, nobody had died.

h2
a.3 (266) CAR DOOR-OPEN-CLOSE | LOOK-AROUND | NOTHING

(He) opened the door of the car, he looked around but there was nothing there.

h1
h2
a.4 (193) HOUSE IN HOUSE ALL NOTHING EXIST-NOT | NOTB FINISH

There was nothing at all within the house. Absolutely nothing.

h1
h3
a.5 (413) FOOD FEW NATURAL | AFRAID **NOTHING** | INDEX2 RICH …

Of course there is only little food but we are not afraid of anything. You are rich but….

The above examples not only present the use of negation head movement and head movement combinations with NOTHING clauses but also demonstrate the variety in spreading of the negation head movements. As in most examples of NegS, a negation head movement extends over NOTHING in all clauses. Sixteen of the clauses are fragment clauses as in (a.3) above. In 14 clauses NOTHING is the only constituent under the negation head movement as in clause (b).

h1
5.4.1.1.4-b (300) CHRISTINE WANT-NOT | ORAL HEADPHONES **NOTHING**

(But) Christine didn't want it. (She didn't want) the whole oral and headphone (training) at all.

In the remaining 13 clauses, the negation head movement spread over the whole clause as in (a.1) and (a.5) or over NOTHING and an additional constituent of the clause as in the example of the headshake (h2) in (a.4).

The relation of a negation head movement and the signs or clause over which the head movement spreads is not strict in terms of onset/offset co-occurrences of the manual signs and the movement.

5.4.1.1.5 NEVER

There are 12 sets of utterances containing clauses with NEVER. Taking into account sets of utterances including 2 NEVER clauses, there is a total of 15 clauses. A negation head movement accompanies 7 of these clauses while in 8 clauses no negation head movement occurs with the negative clause. Negation head movements also occur in combinations. In all clauses NEVER is under the negation head movement. In 4 clauses a headshake (h2) is present (a.1), 1 has a headtilt (h1) (a.2), 1 has a headturn (h3) (a.3) and 1 has a combination of headshake (h2) and headtilt (h1) (a.4).

h2
5.4.1.1.5-a.1 (202) INDEX1 PAST CHILD WOW |FORGET **NEVER**

This (happened) when I was child and wow, I will never forget it.

_____h1
a.2 (301) DEAF ALL GROW-UP | ORAL VOICE CLEAR? | NEVER FINISH

You think that deaf children can speak clearly with oral education when they grow up, no that is something that never happens.

_____h3
a.3 (351) YEARS FAMILY YEAR | VILLAGE GO NEVER

He stayed for many years with his family and he never left his village.

_____h1
_____h2
a.4 (499) ME NEED NOTB | AVOID | NEVER-NEVER

I don't need it, I will avoid it. (I) never (do it).

The above examples also demonstrate variation in the spread of negation head movements. In 6 clauses NEVER is the only constituent under the negation head movement (a.2) and (a.3). In 3 clauses NEVER is in a fragment negation clause as in (a.4). In clause (a.1) the negation head movement also accompanies the whole clause. As with previous examples, the start and the end point of the negation head movement do not coincide exactly with the negative clause. In (a.1) the negation head movement begins in the middle of the last sign of the previous clause. Observations already made in relation to the onset/offset of the negation head movements with other NegS signs are also valid for clauses with NEVER.

5.4.1.1.6 NO-WAY

The database contains 7 sets of utterances with NO-WAY, one of which has 2 NO-WAY clauses resulting in a total of 8 clauses. In 6 clauses a negation head movement is present; in 2 clauses there is no negation head movement. Of these 6 clauses, 2 involve a headtilt; (h1) (a.1, a.3) and the other 4 involve a headturn (h3) (a.2).

_____h1
5.4.1.1.6-a.1 (424) SUICIDE | DROWN NOTB NO-WAY | LETS-GO

We don't have to commit suicide and drown ourselves by no means at all. We can go home.

_____h3
a.2 (88) TALKER INDEX3 TEACH | ME TEACH NO-WAY

A hearing (person) can teach you. I can't teach you at all.

____h3
a.3 (284) AUNT | NOTG | HEAR SHE | NO-WAY

Aunt said no, she can hear. There is no way (that she does not hear).

In all clauses the negation head movement spreads over NO-WAY. As with other NegS the spread of the negation head movement does not coincide only with the duration of the sign or signs that the head movement applies to.

It was suggested earlier that the sign is under grammaticalisation process and that it seems that it operates like a NegS. Evidence to support this suggestion comes from two different facts. First the sign is found in clausal structures in post-verbal position (a.1, a.2) in all instances. Second, similar to other NegS signs, the sign is also in fragment negation constructions where the negated constituent or phrase is retrievable from the context (a.3).

5.4.1.1.7 NO-As

The database includes 3 sets of utterances with NO-As clauses. The negation head movement is not found in any of these (a). Lack of negation head movement with the particular sign supports our initial suggestion that the sign is under grammaticalisation process.

5.4.1.1.7-a (66) GIRL GOOD YES-As **NO-As** |KNOW-NOT
If the girl is good or not, I don't know.

5.4.1.2 NegInc signs and negation head movement use and spreading

In the next part of the analysis the relation of NegInc and negation head movement is investigated. Specifically, the use of negation head movement is examined for each of the 10 NegInc separately. The NegInc signs are shown in Table 5-6.

NegInc	Number of clauses
CANNOT	73
EXIST-NOT	52
KNOW-NOT	28
EMPTY	27
WANT-NOT	10
GOOD-NOT	8
UNDERSTANT-NOT-Y	6
AGREE-NOT	4
LIKE-NOT	4
BELIEVE NOT	3

Table 5-6. The number of clauses where each NegInc sign occurs

5.4.1.2.1 CANNOT

The SignStream database includes 59 sets of utterances with CANNOT clauses, 10 of which contain more than one CANNOT clause, totalling 73 clauses with CANNOT. Forty four of these clauses are accompanied by a negation head movement. Two clauses have been removed from the database as instances of signed Greek (see section 5.3.1.1.2.1), resulting in a total of 42 CANNOT clauses (58%) with a negation head movement.

Thirty-three of these clauses (81%) have a headtilt (h1), 2 clauses (5%) have a headshake (h2), 3 clauses (7%) have a headturn (h3) and 3 clauses (7%) have a combination of headtilt and headturn (h1 and h3). The following clauses are examples of CANNOT clauses with a headtilt (h1) (a.1), with a headshake (h2) (a.2), with a headturn (h3) (a.3) and with a combination of a headtilt and a headturn (h1 and h3) (a.4).

5.4.1.2.1-a.1 (352) INDEX3 WORK YEARS | GIVE-FOOD | GROW-UP CANNOT
h1

He was working for years but he couldn't provide them with food and he couldn't raise his children.

a.2 (421) WANT VACATION | REST | BUT CANNOT
h2

I want to have a vacation and rest but I can't (do it).

_____h3

a.3 (177) BUT **CANNOT** ONE-ALONE | ONE THERE HUGE MANY-PEOPLE

But it can't be done by one man alone. There is only one man for a huge place with many people.

_____h1

___h3

a.4 (410) PLEASE | STOP | INDEX1 **CANNOT**

Please stop it. I can't (continue).

In all clauses a negation head movement extends over CANNOT as in (a.1), (a.2), (a.3) and (a.4). Thirteen clauses are CANNOT clauses of type-b. Negation head movement spreading varies as with NegS clauses. The onset or the offset of a negation head movement does not always coincide with the onset or the offset of the sign (a.5). However, negation head movement spreading is related to the scope of negation as seen in (b.1).

_____h1

5.4.1.2.1-b.1 (422) SUICIDE | DEAD | WHAT | **CANNOT**

We have to commit suicide and die. What can we do? We can't do anything.

_____h1 **_____h1**

b.2 (339) MONEY **CANNOT** | VILLAGE AREA JOB WORK **CANNOT**

He couldn't earn any money and he couldn't work in any job around the whole village area.

In clause (b.2) the negation head movement spreads over the verb phrase. The relationship between negation head movement and scope of negation will be presented in more detail in the next chapter.

5.4.1.2.2 EXIST-NOT

Forty-nine sets of utterances include EXIST-NOT clauses, 3 these contain 2 clauses, resulting in a total of 52 clauses. In the majority of these clauses (63%) are not accompanied by any negation head movement (33 clauses) whereas 33 percent of the clauses (N=19) are accompanied by a negation head movement.

All three negation head movements are found with EXIST-NOT clauses. A headtilt (h1) is used in 13 clauses (68%); a headshake (h2) is used in 2 clauses (11%), and a headturn in 4 clauses (21%). NegInc EXIST-NOT is always under a negation head movement whenever this movement accompanies a negative clause. Examples of each are presented below: a headtilt in (a.1), a headshake in (a.2) and a headturn in (a.3).

_____h1
5.4.1.2.2-a.1 (171) HOW PLAN HOW | CAR EXIST-NOT | SPORT INDEX3 WALK

You can plan how (to do it) and if you don't have a car you can walk using your sports shoes.

_____h2
a.2 (479) INDEX SHOE NOTHING-NOTHING EXIST-NOT FINISH | HAVE 5 CHILDREN

There were no shoes at all and (she) had five children.

_____h3
a.3 (491) POOR | ALL EMPTY | MONEY HOUSE MONEY EXIST-NOT

They were poor and did not have anything. They did not have any money or any kind of housing.

As was noted for CANNOT clauses, onset/offset of the negation head movements does not always match the onset/offset of the signs or clauses.

5.4.1.2.3 KNOW-NOT

There are 26 sets of utterances with KNOW-NOT. Two sets of utterances contain two clauses with KNOW-NOT, increasing the total number of clauses with KNOW-NOT to 28. The majority (71%) of the clauses (N=20) are not accompanied by any negation head movement and only 8 clauses (29%) are accompanied by a negation head movement.

A headtilt (h1) (a.1) is found in 6 clauses; both a headshake (h2) (a.2) and a headturn (h3) (a.3) are found in 1 clause respectively. As in clauses with other NegInc, the negation head movements always spread over KNOW-NOT. Examples are given below.

_____h2
5.4.1.2.3-a.1 (456) STORY ALL SOME FANTASY | TITLE KNOW-NOT FINISH

The whole story is pure fantasy. As for the title, I don't know it at all.

_____h1
a.2 (303) DOCTOR ONE CHOOSE | LUCK TRUE | OTHER KNOW-NOT

It was pure luck that the doctor we chose told the truth; I don't know (if) anyone else (would had given the same answer).

_____h3
a.3 (294) INDEX1 KNOW-NOT | MYSELF IDENTITY EXIST-NOT

I didn't know and I didn't identify myself as Deaf.

The above clauses illustrate that spreading of the negation head movements may vary. The next clause is an example of a negation head movement spreading over two adjacent negative clauses (b).

_____h2
5.4.1.2.3-b (524) HIMSELF WRITE | **KNOW-NOT** | HERE GREECE **NOTG**

He was a writer. I don't know (where he was from), but (I thing he) was not from Greece.

Spreading of the negation head movement is not related just to the KNOW-NOT clause but may be triggered by the appearance of two negative clauses signed one after the other.

5.4.1.2.4 EMPTY

Clauses with EMPTY are found in 25 sets of utterances, with 2 sets of utterances containing more than one EMPTY clause (total of 27 clauses). None of these clauses is signed with a negation head movement. It is quite striking that EMPTY is the only NegInc which is never found with a negation head movement in this database.

5.4.1.2.4-a.1 (210) 300 MONEY ONLY POCKET | CHEAP | MIND **EMPTY**

I had only 300 (drachmas) in my pocket, too little (money). I had nothing in mind (at the time).

It was suggested earlier that the sign is undergoing a grammaticalisation process which has not yet been completed. Strong evidence to support this suggestion comes from the fact that negation head movement does not accompany the sign. On the contrary, a negation head movement would possibly change the polarity of the sign which would possibly create meaning ambiguities (a.2).

_____h2
5.4.1.2.4-a.2 (210x) MIND **EMPTY**

I had nothing in mind (at the time).

My mind was not empty (at the time).

5.4.1.2.5 WANT-NOT

This group is comprised of 7 sets of utterances, of which 3 contain 2 WANT-NOT clauses, resulting in a total of 10 clauses. A negation head movement is found in 8 clauses: a headtilt in 7 clauses (a.1) and a headturn in 1 clause (a.2).

h1
5.4.1.2.5-a.1 (298) UNDERSTAND | CHRISTINE WANT-NOT | HEADPHONES
h1
WANT-NOT

Her mother understood that Christine didn't want it, she didn't want headphones.

h3
a.2 (299) UNDERSTAND | CUT | WANT-NOT ORAL FINISH

(Then my mother) understood and stopped (insisting), because I didn't want speech and language therapy at all.

5.4.1.2.6 GOOD-NOT

There are 8 sets of utterances with GOOD-NOT. All 8 contain a single clause, 4 of which are signed with a negation head movement spreading over GOOD-NOT. Only headtilt (h1) is used (a).

h1
5.4.1.2.6-a (370) IMMEDIATELY NERVOUS ANIMAL GOOD-NOT

(I thought that) it is not good to get nervous following my instinct immediately.

In all four clauses the headtilt is co-extensive with the negation sign only and no other constituent of the clause is under the negation head movement.

5.4.1.2.7 Y-UNDERSTAND-NOT

The database contains 6 sets of utterances with Y-UNDERSTAND-NOT clauses, including one set of utterances with 2 clauses (total of 7 clauses). In 6 of these clauses no negation head movement is used. In 1 clause a headtilt (h1) is found (a).

h1
5.4.1.2.7-a (552) SHAKE | MAN SLEEPY STUPID | Y-UNDERSTAND-NOT

She shook him, but the man was drowsy from having slept. He couldn't understand anything.

5.4.1.2.8 AGREE-NOT

AGREE-NOT is a rare sign in this data set, it occurs in only 5 sets of utterances, including 3 utterances with 2 clauses (total of 8 clauses). In 6 of these a negation head movement co-occurs with the AGREE-NOT clause. Different negation head movements

are found in each clause: a headtilt (h1) as in (a.1), a headturn (h3) see (a.2) and both a headshake (h2) and a headtilt (h1) (a.3) are found in 1 clause.

h1
5.4.1.2.8-a.1 (296) ORAL-ORAL | INDEX1 **AGREE-NOT**

(All children) were educated orally. I disagreed.

h3
a.2 (295) INDEX1 THINK MYSELF HEARING | **AGREE-NOT AGREE-NOT**

I considered myself as hearing so I disagreed.

h2
a.3 (75) ASK-ME | COPY ME TOGETHER | INDEX1 **AGREE-NOT** INDEX1
h1
AGREE-NOT

If they ask me to work with him at the copy machine, I will disagree, yes I will disagree.

Clause (a.3) is of specific interest. The signer wants to indicate clearly his disagreement and emphasises this by repeating the phrase. A different negation head movement is used for each verb phrase, a headshake the first time and a headtilt the second time. The spread of the negation head movement is different in each of these. The headshake spreads over the pronoun and NegInc whereas the headtilt spreads over NegInc only, which seems to be done for emphasis. During the first negation (headshake) the signer is looking downwards and his head follows his eye gaze by bending a little downwards. Our impression is that at that point he wants to indicate explicitly his disagreement he looks at his interlocutor and uses a headtilt for express negation more emphatic.

5.4.1.2.9 LIKE-NOT

Clauses with LIKE-NOT are rare, there are only 4 examples. A negation head movement is used in 3 of these clauses: a headtilt (h1) is used in 2 clauses (a.1), and a headturn (h3) in 1 clause (h3).

h1
5.4.1.2.9-a.1 (5) INDEX1 **LIKE-NOT** MAN THERE

I don't like that man there.

h1
a.2 (127) IS-LIKE | GO-IN | TEASE ME **LIKE-NOT** | UNDERSTAND

It is like.... (well) I go in; I don't like to tease. Do you understand?

h3
a.3 (292) WHERE-FROM | INDEX1 **LIKE-NOT** | HATE

Where did it come from? I didn't like it. I hated it.

The negation head movement in LIKE-NOT clauses has the same characteristics already described above for other NegInc clauses.

5.4.1.2.10 BELIEVE-NOT

The database contains three clauses with BELIEVE-NOT. All are accompanied by a negation head movement: 2 have a headturn (h3) as in (a) and (b), and 1 has a headshake (h2) as in (c).

h3
5.4.1.2.10-a (444) ME TRUE | NOTBshk **BELIEVE-NOT BELIEVE-NOT**

(He said) I am telling the truth but no, they didn't believe him.

h3
b (443) ALL-THEY KNOW HIMSELF LIE | **BELIEVE-NOT**

Everybody knew him as a liar and did not believe him.

h2
c (219) DOUBT | INDEX1 **BELIEVE-NOT** INDEX1 | LIE INDEX3

I doubt it. I don't believe it. He is lying.

5.4.2 Negation head movement use and spreading in non-manual negation

As was mentioned earlier in this chapter (see section 5.3.2), the database contains 76 non-manual negation clauses. Figure 5-1 (p. 165) indicates that a negation head movement is used in 67 clauses with non-manual negation. For the remaining 9 clauses, negation is realised by negation facial expressions. In these clauses the most prominent element for the realisation of negation is negation mouthings (f6-m). This is quite exceptional since negation facial expressions have been considered in the current study as affective features in ENG. This issue is analysed in more detail during the analysis of negation mouthings.

During the categorisation of non-manual negation clauses, some clauses were grouped separately because the use of non-manual features is gestural. In these clauses, although the overall meaning of non-manual features possibly expresses negation, the use appeared to be drawn from gestures rather than ENG elements and the combination of these features with the manual parts can be misinterpreted resulting in meaning ambiguities. In most of the examples, signers use features (facial gestures, body movements, movements

of the head, etc.) which are also found among hearing people to express lack of concern, ignorance or sometimes something akin to negation. In all cases the physical characteristics (duration, trajectory, etc.) of the features are different to the description of the non-manual features of negation given in section 4.2.2. Movements of the head in these clauses have not been categorised as negation head movements. In addition, the combination of those head movements with the manual signs created clauses with enigmatic meaning. Non-manual features have been characterised as gestural clauses of which there are 10 instances, as they have been excluded the total number of clauses with non-manual negation has been readjusted to 66 clauses. In 58 of these, negation head movement was found (some with negation facial expression); in 8 clauses non-manual negation was realised only with negation facial expression and no negation head movement occurred (these clauses are analysed during the analysis of mouth actions).

As discussed above (section 5.3.2), clauses with only non-manual negation only are divided into two subgroups. The first subgroup consists of clauses where non-manual features are grammatically related to the concurrent manual elements. Non-manual features are used to negate part of the clause or the entire clause. The second subgroup consists of clauses where non-manual features were not related to the manual part of the clause. There are 58 clauses with non-manual negation, of which half belong to each subgroup.

5.4.2.1 Negation head movements related to sign clauses

The database contains 29 clauses with non-manual negation where negation head movements are related to the signs in the clause. The next table presents the distribution of the use of negation head movements in this subgroup. All three different negation head movements are used in this group of clauses: 12 clauses (42%) with headtilt (h1), 10 clauses (34%) with headshake (h2) and 7 clauses (24%) with headturn (h3) (Figure 5-3).

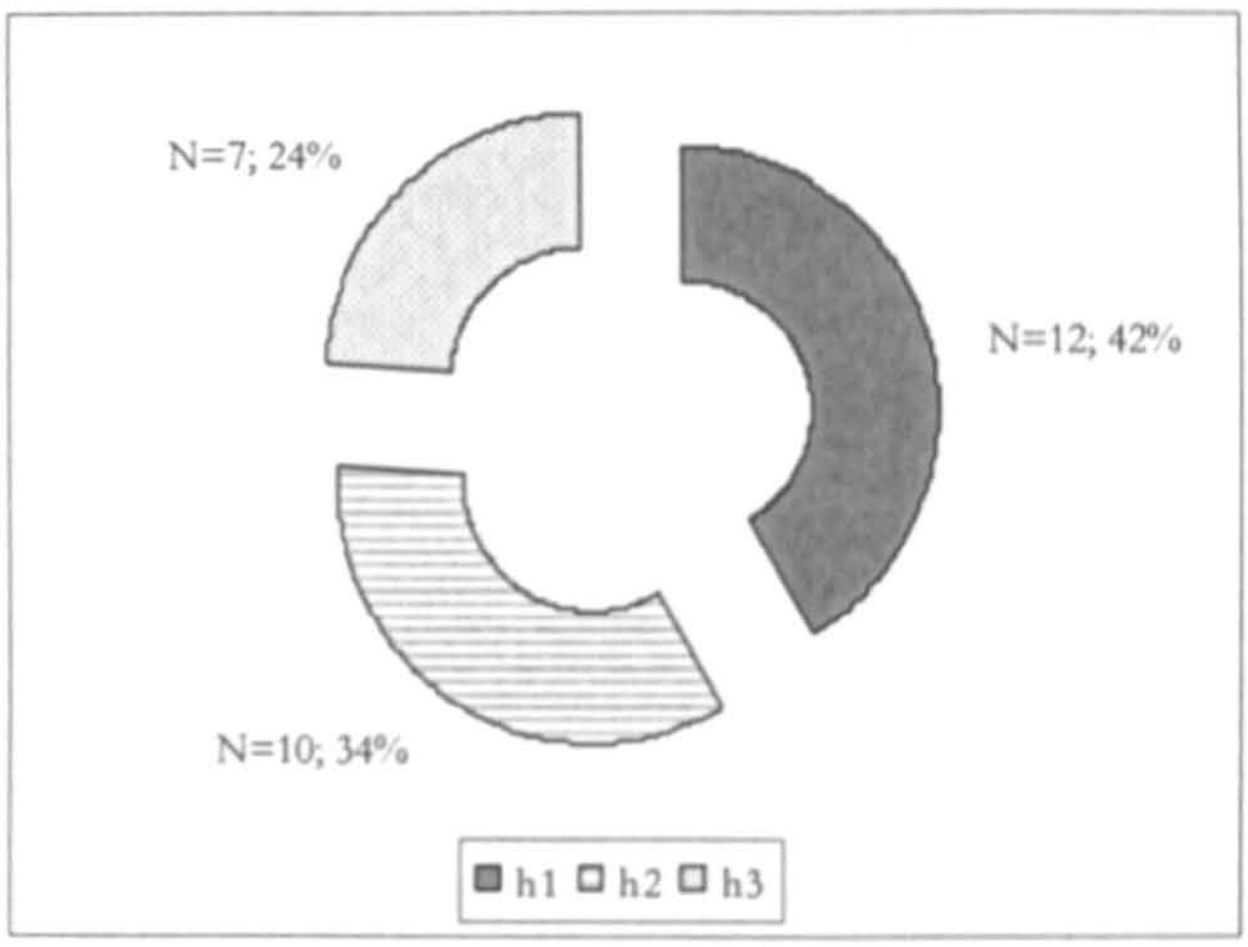

Figure 5-3. The distribution of negation head movement to related non-manual negation clauses

In one clause (287) a headtilt and a headshake are used in succession (a).

_____h1
_____h2
5.4.2.1-a (287) YES-As YES-As DEAF | INDEX3 HEAR FINISH

Yes she is deaf. She does not hear anything at all.

In the majority of cases (25 clauses), negation head movements co-occur with the signs of the clause which is negated.

_____h1
5.4.2.1-b.1 (80) INDEX2 WANT CHILD | INDEX2 HURRY

If you want a child you should not be in hurry.

_____h3
b.2 (44) BUT FATHER HIM FAULT-BE FINISH

But it was not at all my father's fault.

_____h2
b.3 (170) FIRST SPORT WALK | UNDERSTAND INDEX2 | SOFT WALK

Try first to walk with sport shoes. You won't realise (you're wearing them) because they are so soft (when you walk).

The spread of the negation head movement can vary in clauses with non-manual negation. A negation head movement can spread over the whole clause as in (b.1), or it can co-occur with the verb and one or more additional constituents of the clause (subject, object, verb complement, etc.) related to the negated verb as in (b.2), or it can co-occur with only the verb and no other constituent as in (b.3). In these examples negation head movement spreading always includes the verb of the clause. The database includes a single

exception, where the negation head movement is signed after the verb and co-occurs with the adverb FINISH (c).

_____h2
_____f2-bl
_____f6-m
5.4.2.1-c (302) INDEX3 HEAR FINISH

She does not hear (anything) at all.

Negation head movement in clause (c) resembles the post-verbal position of a manual negator. Furthermore, negation head movement is not the only non-manual feature of negation for the particular clause. Lowered brows (f2-bl) and mouthings (f6-m) also co-occur with the verb phrase.

The database contains three more clauses similar to (c) where the negation head movement occurs after the clause. In clauses (d.1) and (d.2) the negation head movement spreads over the next signed clause. The head movement in these clauses starts after the end of the clause over which it has scope (d.1, d.2).

5.4.2.1-d.1 (168) TWO-THREE-DAY FORGET PAST UNTIL-NOW | AGAIN GO |
_____h3
_____f1-br
BORE

Two or three days after it happened I forgot it and this is so until now. But I won't go there again. It is boring for me.

(less possible) Two or three days after it happened I forgot it and this is so until now. I will go again. It is not boring for me.

_____h1
_____f3-ec
_____ f4-md
d.2 (342) GO-STRAIGHT-WAY | LOOK-AT NEW GOOD LOOK-AT |
_____h1
__f3-ec
_____f4-md
INDIFFERENT

Follow your way and stick to it. Don't be distracted by new attractive things. Be indifferent.

(less possible) Follow your way and stick to it. You can be distracted by new attractive things. Do not be indifferent.

In these examples negation head movement does not co-occur with the clause which is negated, but instead with the one that follows it. The negation head movement in clause (d.1) and (d.2) co-occurs with a verb which is not negated. With the less possible reading, the meaning of the entire utterance is not consistent. The clauses are not meaningful if the verb which co-occurs with the negation head movement is negated. It should also be

noted that in both clauses the signers stress the negated clauses with negation facial expressions. In contrast, the negation head movement in (d.2) does not co-occur with any manual signs, and therefore there is no risk that the addressee will understand the negation to apply to the wrong clause. Furthermore, a similar structure is expressed in the following clause (d.3).

_____h1
_____f4-md
5.4.2.1-d.3 (288) BACK NOISE | TEST | CHEMISTRY ALL |

(They checked her) by producing sounds from the back, making tests. They did all the analyses but none of these had any result.

The main difference between (d.3) and the other two clauses is that in (d.3) the negation head movement does not negate the preceding verbs. This clause is elliptical with the non-manual negator being the only overt element. It is a case of contrastive negation. The contrast ('They did all the analyses but none...') is stressed non-manually by the signer through turning down the corners of the mouth.

There is one more interesting example of a clause with non-manual negation (e.1). In this clause the negation head movement co-occurs with the negated clause, but the negation applies to the preceding subject of the clause and not to the verb. The most surprising thing about (e.1) is that the most logical interpretation is where the sign under the head movement of negation is negated (interpretation 3) however this is not in accordance with what was said (the signer was not accepted in a residential school because there was no vacancy). The clause may have been incorrectly signed (performance error), and for this reason the clause has more than one possible reading. The clause is considered as an exceptional example of non-manual constituent negation.

____h2
5.4.2.1-e.1 (306) ME LAST LIST-DOWN | ROOM-ROOM THINGS FULL FINISH

(1) My name was last on the list. Thus, there was no room or other things left and everything was completely full.

(2) My name was last on the list. Thus, all rooms and other facilities were completely full and there was nothing.

(less possible) (3) My name was last on the list. Thus, none of the rooms or other facilities was full.

There are two alternative ways for this clause to be well-formed. The first would be to have the negation head movement co-occur with one or both subject nouns (e.2). The second would be to produce the negation head movement on its own after the nouns

with no manual element (e.3). In both cases the verb FULL is considered as belonging to a separate clause.

_____h2
5.4.2.1-e.2 (306x) ROOM-ROOM THINGS | FULL FINISH

_____h2
e.3 (306x) ROOM-ROOM THINGS | FULL FINISH

There was no room or other things (left). Everything was completely full.

All the clauses with only non-manual negation presented so far in the current section indicate that the spread of the negation head movements can vary, but there are limits. In general in most of the clauses of the particular subgroup when the verb of the clause is present it co-occurs with negation head movement. Furthermore, a negation head movement can spread over the whole clause (see b.1) or some constituents of the verb phrase of the clause (see b.2 and b.3). In all cases the duration of negation head movement does not coincide only with the duration of the sign or signs, but can precede or exceed the initial or final frame of the sign respectively.

5.4.2.2 Negation head movements not unrelated to sign clauses

The database contains 29 clauses with non-manual negation where negative head movements are not related to the signs in the clause. All three types of negation head movement were used in this group of clauses on their own or in combination (Figure 5-4).

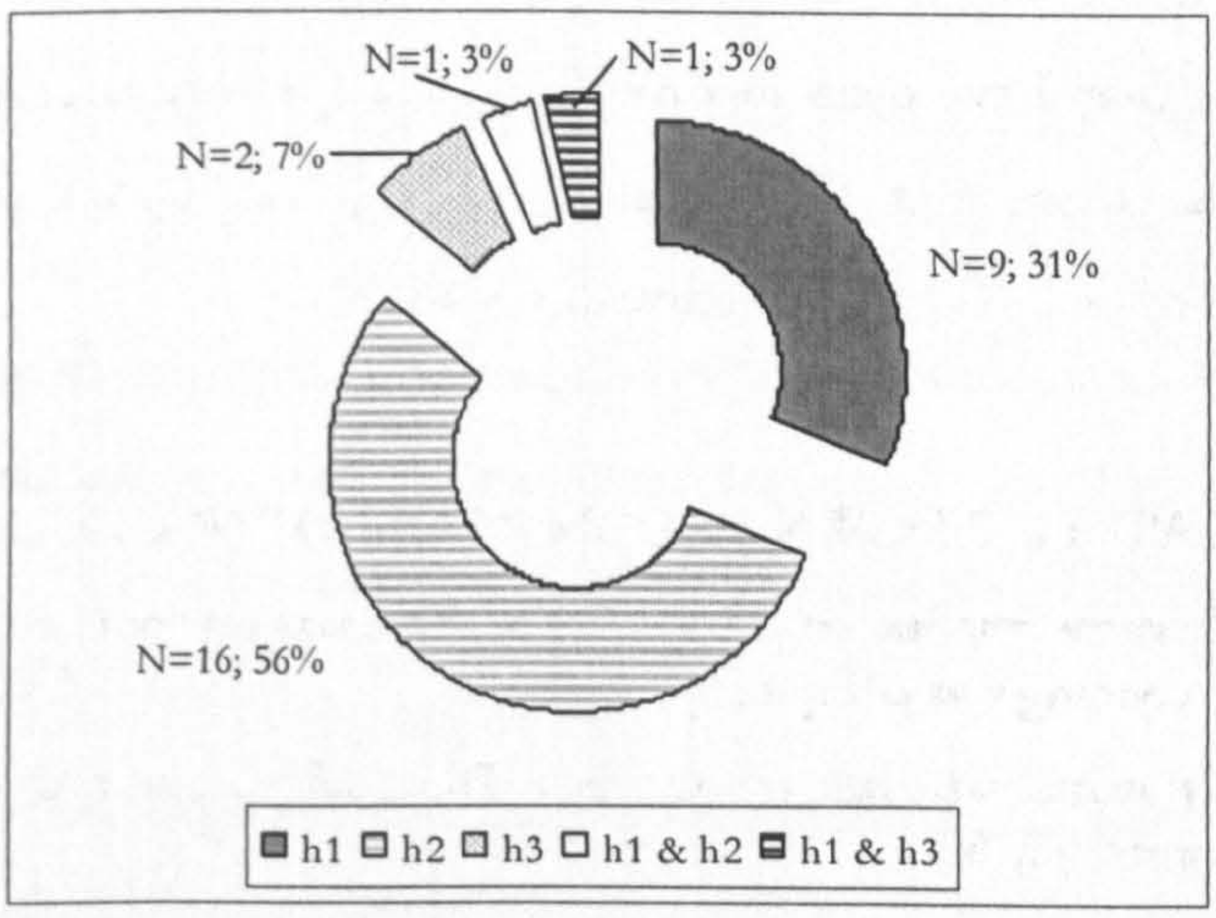

Figure 5-4. The distribution of negation head movements to non-related non-manual negation clauses

The use of different negation head movements is not equally distributed in this group. The use of headtilt and headshake represents 87 percent of the clauses (N=25) whereas, only 2 clauses use a headturn (7%). In addition, there are 2 clauses that use combined

negation head movements. Negation head movements in these clauses do not negate the co-occurring manual constituents (a.1, a.2). As a result, a reading of the clauses where the head movement will change the polarity of the co-occurring sign/signs will be incorrect.

h1
5.4.2.2-a.1 (417) SEARCH-SEARCH | DIFFICULT | SEARCH | EXIST-NOT

He was searching (but he couldn't find anything). It was difficult (to find something). He continued searching but there was nothing around.

(less possible) He was not searching because it was difficult. He continued searching but there was nothing around.

h2
a.2 (455) SEE-EYE EGG BIG-ROUND | ROUND-THROW-AWAY

(She) saw a very big and round egg. (She didn't accept it) and she threw it away.

(less possible) She saw an egg which was not big and round. She threw away the big, round egg.

In some cases negation head movements do not co-occur with any manual elements. In these cases the head movement is usually part of a non-manual response of a participant in a conversation being reported by the signer (b.1). The same pattern can also occur without role shift (b.2). The difference between the two examples is that in (b.1) the signers uses role shift in order to indicate the response of another person whereas, in (b.1) it is the same person who continues to sign after the first clause.

h2
5.4.2.2-b.1 (228) OTHER BOAT TIME TOMORROW

Is there any other boat any other time? No. There is one tomorrow.

h1
b.2 (400) YOUNG VOICE YOUNG | LEAVE | INDEX1 POWER

I do have a fresh voice. No, you should leave the place. I have the power to do it.

In this subgroup of clauses with only non-manual negation, the timing of the negation head movement has not been examined because the head movement is not immediately related to the signs of the co-occurring clause.

5.4.3 Summary of the negation head movement use and spreading in manual and non-manual negation

Negation head movement spreading is not analysed for each head movement separately because all negation head movements spread in a similar way. The evidence does not justify a separate analysis of the different negation head movements at clausal level

because there seem to be no syntactic rules which regulate the choice of a negation head movement. This section summarises all characteristics concerning the spread of negation head movements which have already been presented. Most features of negation head movement spreading can easily be identified in the analysis. The use of negation head movements is analysed in relation to all negative particles, NegS and NegInc clauses and also in relation to clauses with only non-manual negation. The above examination of the spread of the negation head movement indicates that spreading characteristics are common not only for all clauses with manual negation but also for clauses with non-manual negation where a head movement is the only negator of the clause.

Starting with manual negation clauses, the analysis indicates that manual negation signs are within the spreading area of the negation head movement in the vast majority of cases whenever a negation head movement is present in a clause. This observation is valid for all negative particles, NegS and NegInc clauses. The database contains 290 manual negation clauses accompanied by a negation head movement. In all these clauses, with two exceptions which are explained later in this section (see below examples 5.4.3-b.3 and 5.4.3-b.4), the negation head movement co-occurs with the manual negator. The analysis has already provided examples of the use of negation head movements in relation to different NegS and NegInc signs (see sections 5.4.1.1 and 5.4.1.2).

A negative clause with manual negation where the NegS or NegInc is not under the spreading area of the negation head movement seems to be problematic in terms of structure of the negation head movement and its relation to a NegS or a NegInc (a.1, a.2). This assumption is also supported by anecdotal observation. It would be possible for someone to argue that this is an emphatic structure. However, from the researcher's point of view this structure cannot be interpreted as emphatic because of the absence of any pause before NegS/NegInc.

_____**h2**

5.4.3- a.1 (348x) ? GO TAVERN **NOTBshk**

(He) didn't go to the tavern (with the others).

(He) didn't go to the tavern (with the others); (he) didn't (for sure).

_____**h1**

a.2 (399x) ? VILLAGE AREA JOB WORK **CANNOT**

(He) couldn't work in any job around the village area.

(He) didn't work in any job around the village area; (he) couldn't.

The database does not provide any example like (a.1) or (a.2). Instead two examples of clauses where the negation head movement spreads rightwards after the NegS are provided. In both cases this happens for emphatic purposes (a.3, a.4).

5.4.3- a.3 (508) DOOR OPEN-DOOR INDEX1 **NOTG** ____h1

I should not open the door.

a.4 (211) COAT NOTHING FINISH | MIND EMPTY ____h3

(I had) none of my ID cards (with me). None at all. I had no money and I didn't even have a coat. My mind was blank, I was in my own world.

It is noticeable that the negation head movement on the above examples occurs after the negation clause in (a.3), and does not co-occur with any manual part of the clause. In (a.4) the negation head movement co-occurs with FINISH. In both cases the negation head movement appears right after the NegS and it seems that the signer emphasises the negative meaning.

We should also re-emphasize here that appearance of a negation head movement is not obligatory. This observation is also true for clauses with negative particles although the majority of these clauses are accompanied by a negation head movement (a.5).

5.4.3- a.5 (348x) GO TAVERN **NOTBshk**

(He) didn't go to the tavern (with the others).

This data is contrary to findings reported for other sign languages, such as ASL (Neidle et al., 2000), German Sign Language (Pfau, 2002; Pfau and Quer, 2003a and 2003b) and Catalan Sign Language (Pfau and Quer, 2003a and 2003b; Quer, 2002), where the co-occurrence of the negation head movement with the negative particle in the clause is not optional.

Furthermore, it has been noted in the data presented here that some clauses make use of two signs of negation for emphatic reasons. In these clauses it might be expected that the negation head movement, when it occurs, would spread over both negation signs, but this is not always the case. In these clauses two options are available for the spread of the head movements. The first option is that the negation head movement spreads over both negation signs (see ex. 5.3.1.1.2.1-a.1), as in the vast majority of cases, and the second option is that the negation head movement spreads over one of the signs (see ex.

5.4.1.1.2-a), either the first or the second. The first of the two negation signs can be found marked by a negation head movement even if the second negation sign is at the end of the clause. These examples indicate that when two manual negation signs are present in a clause then it is sufficient for one of them to co-occur with a negation head movement. The analysis also shows that additional elements of the clause, as well as NegS or a NegInc, can be within the spreading area of the negation head movement (b.1, b.2). In these clauses the presence of a non-manual topic marker constitutes an obstacle for the spreading of the negation head movement over the whole clause. Empirical observation of the data set shows that topic markers (such b.1 and b.2) or other grammatical markers (question, conditionals, etc.) often occur in negation clauses.

_____topic _____**h3**
5.4.3- b.1 (507) SEE-OUT-WINDOW | SAME SEED-SMALL GROW-HIGH **NOTBshk**
(He) looked out of the window and this same small seed-plant did not grow high.

_____topic_____**h1**
b.2 (339) VILLAGE AREA JOB WORK **CANNOT**
(He) couldn't work in any job around the village area.

There are also negative clauses where the negation head movement spreads over the entire clause (see ex. 5.4.1.1.3-a and 5.4.1.2.1-a). Spreading of the negation head movement over additional constituents of the clause doesn't seem to be random. To illustrate, in clausal negation, the first sign after the manual negation sign which falls under the negation head movement is the negated verb. If an argument or complement is signed between the verb and the manual negator then it seems that the negation head movement has to spread over the verb phrase. When a negation head movement spreads over the negator and the verb of the clause it is not obligatory for it to spread over the arguments of the verb phrase (b.3).

_____**h3**
5.4.3- b.3 (88) TALKER INDEX3 TEACH | ME TEACH **NO-WAY**
The hearing (person) can teach you. I can't teach you anything at all.

Taking into account the occurrences of a negation head movement and its spreading over a negation clause it seems that there is a pattern of negation head movement spreading over a clause. The next table summarises this pattern.

Negation head movement spreading
1. NegS or NegInc
2. Neg –V/VP
3. Neg-Clause

Table 5-7. Expansion of negation head movement spreading over a clause

As we have seen a negation head movement spreading expands over the negator (NegS or NegInc) in all cases where these elements occur in a clause. This evidence supports our suggestion about the relation of the spreading area of negation head movements to NegS-NegInc. According to this suggestion, structures where a NegS or NegInc is not under the spreading area of the negation head movement may be problematic (see examples a.1, a.2). A negation head movement often spreads over the verb of the clause or over the verb phrase and somewhat less often it expands over the whole clause. However, additional grammatical markers (topic, question, etc.) affect the spreading of negation head movements. This holds true for manual and non-manual negation clauses. In cases of clausal negation, and independent of sign order, spreading of a negation head movement over the object or complement of the verb and not over the verb itself, if it is overt, will in fact raise problems in meaning. It will result in the negation being interpreted as clausal and therefore create problems with the overall meaning. For example if the negation head movement is spread as in (c.1) then clausal interpretation of negation will be problematic.

h2
5.4.3-c.1 (348x) GO TAVERN NOTBshk

(He) went not to the tavern (but....).

? (He) didn't go to the tavern (with the others).

In clause (c.1) the clausal reading is under question since the negation head movement spreads over the complement of the verb but not over the verb itself. The clause becomes acceptable if it is considered as constituent contrastive negation. Certain clauses from the database do support this analysis (c.1).

h1
5.4.3- c.2 (58) FIRST GO-OUT ME NOTB

(You) should go out first, not me.

These constructions in general become unambiguous when accompanied by additional grammatical markers (topic marker, etc.). Absence of additional non-manual features creates ambiguity as in the next example (c.3).

5.4.3- c.3 (530) INDEX1-2 ENGAGED MARRIAGE **INDEX1 NOTG** | BLACK | AWFUL
_____h2

I don't want us to get engaged and then get married. You have black skin and you are awful.

? We should get engaged and then get married, (but) not me. You have.....

In the above clause the NegInc WANT-NOT is not present in the surface structure of the clause. As a result the clause might be mistakenly considered to be an instance of constituent negation since the negation head movement spreads over a pronoun and a negative particle whereas the verb of the complement phrase is not under the negation head movement. Even in this interpretation, the meaning remains uncertain because the contrast is not clear. This issue will be examined again in the next chapter where the analysis of scope of negation is presented (see section 6.4).

Furthermore, negation head movement spread can vary as we have already seen in sections 5.4.1.1 and 5.4.1.2. In all cases the head movement spreads over manual negators in both clauses, however there are two exceptions. The database shows that a single negation head movement can spread over more than one negative clause. In these cases the negative clauses are adjacent. The data show that a negation head movement can spread over two adjacent clauses with manual negation (see ex.5.4.1.1.1-e and 5.4.1.2.3-b). This pattern strongly resembles perseveration of non-manual features as described in ASL (see section 5.4.1.1). A common feature in the above clauses is that both refer to the same core topic in the discourse. In addition, the clauses are coordinated. Example (5.4.1.1.1-e) resembles a *neither-nor* structure. In this case the two clauses are related and the negation head movement can spread over both. Hence, it can be assumed that a negation head movement is allowed to spread over two adjacent negation clauses in 'neither-nor' and coordinated negation clauses. This seems to be a perseveration pattern similar to perseveration described in ASL (Bahan, 1996; McLaughlin, 1997; Neidle et al., 2000; Neidle et al., 1998).

It is also possible for a negation head movement to spread over negative clauses which do not follow one another. In these cases a short clause, usually consisting of a single verb, intervenes between the two negative clauses (see ex. 5.4.1.1.2-e). In this construction, a

verb having positive polarity can occur between two negations within the spreading area of the negation head movement. Although the sign is under a negation head movement, it is not negated. This structure seems to be a case of perseveration of the negation head movement.

In relation to negation head movement spreading patterns, the data provide a few examples where the head movement occurs before the 'target' negation part like anticipating negation marking (d).

5.4.3-d (452) OLD-MAN NET BAD SEARCH-SEARCH |CANNOT-CANNOT
____h1 _____h1
The old man with the net who was bad was searching and (he) could not (find anything).

Data examination did not reveal any pattern that could help us to understand when anticipation occurs.

In some cases it is possible for a head movement that negates a single negative clause to be repeated over two different parts of the clause. In this case the negation head movement does not spread over the intermediate constituents (e).

5.4.3-e (337) AS LEARN ME | NOTG FAMILY THIS NOTG | OTHER SCHOOL NOTBshk
_____h2 __h2
_____eye gaze agreement
Take the way I have learnt. It was not the family environment (which helped me to learn). It wasn't the school either.

The above example looks similar to an example from Argentinean Sign Language (see ex. 2.3.3.1-i.3). In (e) we can see that eye gaze of agreement intervenes between the two negation head movements. The eye gaze of the signer in (d) is directed to the location in space associated with THIS in FAMILY THIS. Similar constructions are discussed in ASL (Neidle et al., 2000). It seems that in our case, the eye gaze does not allow perseveration of the negation head movement over the whole clause.

On the other hand, the spread of negation head movement in clauses with only non-manual negation does not exhibit the same range of possibilities. A negation head movement usually spreads over the negated clause or over a part of the clause (see ex. 5.4.2.1-a.3 and 5.4.2.1-a.3). In these cases where the negation head movement spreads over the manual part of the clause, the verb of the clause has to be under the spreading of the

negation head movement in order to be within its scope. If this requirement is not fulfilled then the clause will have problems in terms of structure of clausal negation (relation of head movement and the verb) which are also reflected in the ambiguity of the meaning (f).

_____h1

5.4.3-f (80x) ? INDEX2 WANT CHILD | INDEX2 HURRY

If you want a child it is not you who should be in a hurry.

If you want a child you should not be in a hurry.

As was noted for manual negation clauses, non-manual negation clauses are often accompanied by other grammatical non-manual features (which have not been transcribed in SignStream database). In these cases the negation head movement spreads over the verb or verb phrase but does not co-occur with the other marker.

We showed earlier in this chapter (see section 5.4.2.1) that a negation head movement can occur after the non-manual negation clause (the target clause). In some cases the negation head movement co-occurs with part of the next clause (see. 5.4.2.1-d.2). The 'paradox' in this construction is that the negation head movement has scope over the preceding clause and not over the phrase that it co-occurs with.

In these cases the negation head movement follows the typical ENG negation pattern where the negator has a post-predicate position. It seems here that the negation head movement functions here like a negative particle. It can negate the clause by occurring after the manual part of the clause. This clausal structure is further analysed in the next chapter (section 6.4). Finally, it was observed that often the duration of a negation head movement does not always coincide with the duration of the sign or signs over which it spreads in terms of onset/offset. There are cases where onset/offset between negation head movement and manual signs coincide but this is not a consistent pattern. Negation head movement can precede or exceed the duration of sign/signs. In some cases the negation head movement can spread over the first sign of the clause that follows the negative clause (h.1) or the negation head movement can start with the last sign of the clause that precedes the negative clause (see ex 5.4.1.2.9-a.3 and 5.4.3-d). In these clauses the spreading is not linked to the scope of the negation head movement. Anecdotal observation suggests that in informal registers, the intensity or the rhythm of the negation head movement changes. Furthermore, the data provides examples in which it appears

that the signer is anticipating the negative clause by starting non-manual activity earlier. This variation in spreading of negation head movement does not fit with the general claims made for the timing of non-manual grammatical features (Bahan, 1996; Baker-Shenk, 1985, 1983; Baker and Cokely, 1980; Baker and Padden, 1978; Liddell, 1980). An anticipation movement of the negation headshake (Bahan, 1996) described in ASL is still closely related to the manual onset and is not sufficient to explain variation spreading found in ENG. Despite this, there is no reason to consider 'downgrading' negation head movements as affective features at this point. The grammatical nature of the negation head movement in ENG is strongly supported by its use as a negator in clauses where no other manual sign of negation occurs.

To conclude the discussion of spreading of the negation head movement, it should be noted that there is a strong affiliation between the negation head movement and the manual negator. After this, negation head movement spreading varies from extending over the whole clause to extending over part of the clause with limitations posed by various other non-manual markers. Spreading characteristics do not vary in relation to different negation head movements.

5.5 Facial expression and body movements of negation and negative clauses

Negation facial expressions and negation body movements are part of the non-manual negation features of ENG in manual and non-manual negative clauses. The facial expressions and the body movements of negation which were already introduced in the previous chapter are briefly presented here.

a) The signer raises the brows (f1-br).

b) The signer lowers the brows with a frown and also narrows the eyes (f2-bl).

c) The eyes of the signer are closed or almost closed (f3-ec).

d) The corners of the mouth are turned down (f4-md).

e) The signer raises the upper lip and pushes the lower lip outwards (f5-lo).

f) The signer uses his/her mouth.

- The signer uses mouth actions. Mouthings (f6-m).

- The signer uses mouth actions. Word picture (f6-wp).
- The signer uses mouth actions. Mouth gestures (f6-mg).

g) The signer uses body movements.

- The body moves back (b-back).
- The shoulders move upwards (sh-up).

All these features are categorised as facial/body expressions of negation. Negation is not the only function for these facial expressions and body movements; they can also have a variety of grammatical, semantic or pragmatic functions. Thus, the same facial expressions or body movements can be used for wh-questions and interrogatives, for topic marking, for adverbial marking, for expressing the mood or the feelings of the signer, for emphatic purposes, etc. This indicates that facial expressions and body movements are multifunctional, and their examination is a complicated task. A complete analysis of facial expressions and body movements would include areas which are beyond the interests of the present analysis. For this reason the analysis is restricted to observations concerning the use of negation facial expressions and body movements in negative clauses.

Following proposals of other researchers (see section 2.3.2.3) and based on initial examination of negation facial expression/body movements (see sections 4.3.5 and 4.3.6), it is suggested that these features operate as affective non-manual elements of ENG. This is because negative facial expressions and body movements are not directly related to the syntax of negation. These features are also insufficient to negate a clause on their own (although there are some exceptions). Absence of negation facial expressions or negation body movements does not result in obscure meaning, problematic structure or ungrammatical clauses, although in most clauses negation facial expressions accompany NegS/NegInc signs. Facial expressions and body movements of negation can co-occur with a negation head movement but they do not constitute part of a negation head movement. In no cases are facial expressions or body movements of negation obligatory accompaniments to a manual sign of negation or a negation head movement. The following subsections present the relationship of negation facial expression and negation body movement to negation head movements and NegS/NegInc signs in the clauses in which they occur.

5.5.1 Raising of the brows (f1-br)

Raising of the brows (f1-br) is found in 87 negative clauses. For the majority of the clauses brow raising (f1-br) co-occurs with a negation head movement (N=76; 87%) whereas, in 13% of the clauses (N=11) no negation head movement co-occurs. The next two clauses illustrate examples of the use of brow raising with (a.1) or without a headtilt (a.2).

h1
f1-br
5.5.1-a.1 (121) TELL TALKER | HURRY PAY NOTB

The hearing person told me that I should not be in a hurry to pay.

f1-br
a.2 (55) SAY | HEARING NOTG | DEAF

He said that she is not a hearing person, she is deaf.

The above examples also indicate that the spread of brow raising varies. It can spread over the whole clause (a.1) or over the negator (a.2). In the database, brow raising (f1-br) always spreads over NegS/NegInc in clauses with manual negation. There is only one exception where brow raising does not spread over NegS (b).

f1-br
f2-bl
f6-m
5.5.1-b (251) TALK-EACH-OTHER NOTHING | ONE-WEEK ENEMY FATHER

We did not talk to each other at all. For one week my father was like an enemy.

In the above clause brow raising spreads over the verb of the clause and does not include NegS. The reason for this is that the negation facial expression of the signer changes from brow raising (f1-br) to a lowering of the brows with a frown (f2-bl). These two negation facial expressions are mutually exclusive. (f1-br) co-occurs with (f6-m) where the signer's mouthing 'not talk' negates the verb. For this reason (f1-br) has been considered as facial expression of negation rather than as a topic marker. The signer emphasises negation by changing the facial expression over the manual negator. The data also show that there is no obligatory onset/offset timing relation between the (f1-br) and the sign/phrase. Spreading of the negation facial expression may or may not exceed the onset/offset point of a sign/phrase.

5.5.2 The brows are lowered with a frown and the eyes are narrowed (f2-bl)

The negation facial expression where the signer lowers the brows into a frown and narrows the eyes (f2-bl) occurs in 75 clauses. In most of these (N=49; 65%) the negation facial expression co-occurs with a negation head movement whereas in 35 percent of the cases (N=26) the feature does not co-occur with a negation head movement.

Below are examples of f2-bl clauses with and without a negation head movement (a.1, a.2).

_____h3
_____f2-bl
5.5.2-a.1 (211) EMPTY-POCKET | COAT **NOTHING** FINISH | MIND **EMPTY** | AIR

(I had) none of my ID cards (with me). None at all. I had no money and I didn't even have a coat. My mind was blank, I was up in the clouds.

_____f2-bl
a.2 (390) ME STRONG MIND | BODY **NOTB** | INDEX1 MIND STRONG

I have got a strong mind. It is not the body (which is important). I think it is a strong mind (which is important).

The clauses also demonstrate variation in the spread of the negation facial expression. Thus, lowered brows with a frown and narrowed eyes (f2-bl) can spread over the whole clause (refer to the third clause in a.1), or over some constituents of the clause (a.1, second clause) or only over the negator NegS/NegInc (a.2). Additionally, negation facial expression (f2-bl) can spread over two negative clauses, which are signed one after the other (a.1) resembling the perseveration pattern observed for negation head movements. In general the duration of lowered brows with a frown and narrowed eyes does not coincide with the duration of the signs that are under the negation facial expression. Facial expression of negation (f2-bl) can exceed or be briefer than the duration of the sign or signs. Thus, the onset/offset of the (f2-bl) is not strictly related to the signs that the negation facial expression co-occurs with. Lowered brows with a frown and narrowed eyes (f2-bl) always co-occurs with the NegS or NegInc sign in clauses with manual negation, as is the case for negation raised brows (f1-br). The only exception is the following clause (b).

_____h2
_____f2-bl
_____f3-ec
5.5.2-b (229) TOMORROW | NOW NIGHT **NOTBshk**

There is a ship tomorrow. There is nothing now during the night.

In the above clause lowered brows with a frown and narrowed eyes (f2-bl) do not occur with NegS. This is because the signer alters his negation facial expression from (f2-bl) (lowered brows with a frown) to (f3-ec) (closed eyes). As a result NegS in (b) is not under f2-bl because of the change of negation facial expression.

5.5.3 The eyes are closed or almost closed (f3-ec)

The database contains 96 negative clauses where the signer uses a negation facial expression with his/her eyes closed or almost closed (f3-ec). In the majority of the clauses (N=85; 89%) the negation facial expression co-occurs with a negation head movement. In 11 clauses (11%) no negation head movement accompanies this feature.

Facial expression of negation with eyes almost closed co-occurs with a negation head movement in 85 clauses (a.1), whereas in 11 of the (f2-bl) clauses no negation head movement co-occurs with the negation facial expression in the negative clause (a.2).

_____h2
_____f3-ec
5.5.3-a.1 (348) MICHALIS GET-DOWN-HORSE | GO TAVERN NOTBshk | STAY

Michael got down from the horse. (He) didn't go to the tavern (with the others). He stayed (there).

_____f3-ec
a.2 (355) WHAT TWO-ALONE | INDEX1 GIVE-MONEY CANNOT

What could these two do alone? I was not able to give them money.

As with the examples of negation facial expression already presented, the spread of the closed or almost closed eyes (f3-ec) varies. Spreading can occur over the actual negation sign NegS/NegInc as in (a.2), or over some other constituent of the clause, or over the whole clause as in (a.1). The database also contains examples where closed or almost closed eyes can spread over two adjacent clauses (b). In order for this to occur, the negation facial expression has to occur with a negation head movement and its spreading has to extend over the same material over which the head movement spreads. In this clause f3-ec follows the perseveration pattern of the negation head movement.

_____h3
_____f3-ec
5.5.3-b (315) RELATIVES ASK-ASK | NOTG | CALM | NOTG | WAIT

The relatives asked them, not (to worry), to be calm, not (to worry), and to wait.

In terms of onset and offset of (f3-ec) in relation to the signs over which it spreads, (f3-ec) demonstrates the same characteristics as (f1-br) and (f2-bl). The duration of the negation facial expression does not coincide with the duration of the signs which are under this facial expression. In addition, (f2-bl) negation facial expression always spreads over the manual negation sign when it is present in the clause. The database contains a single exception (c) below.

_____h1
_____h2-bl
_____f3-ec

5.5.3-c (508) DOOR OPEN-DOOR INDEX1 **NOTG**

I should not open the door.

In clause (c) negation facial expression does not co-occur with NegS. The eyes close after the NegS sign. Once again it is the appearance of the negation head movements which allows (f3-ec) to occur after the manual part of the negative clause. As was noted earlier, this is an exceptional occurrence of non-manual features after the NegS (see section 5.4.3).

5.5.4 The corners of the mouth are turned down (f4-md)

The facial expression of negation where the signer turns the sides of the mouth down (f4-md) occurs in 109 clauses. In the majority of the clauses, (f4-md) negation facial expression co-occurs with a negation head movement. In 83 clauses (76%) with turned down corners of the mouth (f4-md) the negation facial expression co-occurs with a negation head movement (a.1). In the remaining 26 clauses (24%) no negation head movement co-occurs with the facial expression of negation (a.2).

_____h1 **_____h1**
_____f4-md **_____f4-md**

5.5.4-a.1 (352) GROW-UP CANNOT | HOUSE IMPROVEMENT **CANNOT** | HOUSE OLD

He was not able to raise them. He could not improve the house. The house was old.

_____f4-md

a 2 (390) ME STRONG MIND | BODY **NOTB** | INDEX1 MIND STRONG

I have got a strong mind. It is not the body (which is important). I think it is a strong mind (which is important).

The above clauses not only exemplify the relationship between the negation facial expression with turned-down corners of the mouth and negation head movements but also indicate variation in the spread of this facial expression. It is possible to spread over the whole negative clause, as is seen in (a.2) and also in the first clause (a.1), or it is possible to spread over one or more constituents of the negative clause. Negation facial expression f4-md spreads over NegS/NegInc signs following the pattern already presented with f1-br, f2-bl and f3-ec negation facial expressions. However, there are three database examples of clauses where this facial expression does not spread over NegS/NegInc (b.1, b.2, b.3).

_____h2
___f4-md
___f6-mg
5.5.4-b.1 (206) ME SEE-NOT | AND WANT SEE ACTOR

I haven't seen it (the island) and furthermore I wanted to see the actor.

_____h2
___f4-md
_____f5-lo
___mouthings (night)[40]
b.2 (229) TOMORROW | NOW NIGHT NOTBshk | CRETE ARRIVE

There is one tomorrow. There is nothing now during the night. There will be one arriving (tomorrow) from Crete.

_____h3
_____f4-md
b.3 (211) COAT NOTHING FINISH | MIND EMPTY

I didn't (even) have a coat. My mind was blank, I was on the clouds.

In (b.1) the turned down corners of the mouth do not spread over NegInc. This is for the reason that the negation facial expression is interrupted by the mouth gesture that accompanies NegInc. It is apparent that these two negation facial expressions cannot occur simultaneously. In a similar case the NegS sign is not under negation facial expression f4-md (b.2). In this case the mouthing of the word 'night' blocks the turned-down corners of the mouth from spreading over NegS. Furthermore, an additional negation facial expression (f5-lo) spreads over NegS. Finally, in (b.3), turned-down corners of the mouth (f4-md) follow NegS and spread over the adverb, together with the negation head movement (headturn) which also does not spread over NegS. As explained earlier this construction is exceptional in ENG (see section 5.4.3).

[40] This low line indicates spreading of the mouthing of the word 'night'.

The duration of turned-down corners of the mouth does not coincide with the duration of the sign/signs over which it spreads and it can vary in duration. In the case of two adjacent negative clauses, a perseveration pattern for f4-md can be observed and the feature is spreads over both clauses (c).

_____h1
_____f4-md
5.5.4-c (204) ME WHERE **KNOW-NOT** | ME **CANNOT**

I didn't know where (she) was and I couldn't find (her).

5.5.5 The upper lip is raised and the lower lip is pushed outwards (f5-lo)

The database contains 34 clauses with facial expression of negation where the signer raises the upper lip and pushes the lower lip outwards (f5-lo). Once again f5-lo facial expression of negation co-occurs with a negation head movement in the majority of the clauses. Negation facial expression with the upper lip raised and the lower lip pushed outwards co-occurs with a negation head movement (a.1) in 29 clauses (85%), while in 5 clauses (15%) no negation head movement co-occurs with this facial expression (a.2).

_____h2
_____f5-lo
5.5.5-a.1 (348) MICHALIS GET-DOWN-HORSE | GO TAVERN **NOTBshk** | STAY

Michael got down from the horse. (He) didn't go to the tavern (with the others). He stayed (there).

_____f5-lo
a.2 (26) MAN | INDIFFERENT | 3GIVE3 **NOTG**

The man (refused). He was indifferent so he didn't give him anything.

The raised upper lip and pushed outwards lower lip co-occurs with NegS/NegInc signs in all clauses with manual negation. There is no exception in the database. Spreading of the negation facial expression varies as described for the other features ot facial expression of negation. In all cases, the duration of the negation facial expression is not limited to the duration of the sign/signs under this facial expression.

5.5.6 Mouth actions (f6)

We have already seen (see 4.2.2.4, 4.3.5 and 4.3.8) that negation mouth actions are directly related to the signs that they accompany. Their appearance is related to these signs specifically and not to other facial expressions or head movements of negation. The three

mouth actions have different characteristics. Negation mouth gestures are bound to specific negation signs. In contrast, mouthings and word pictures of negation are not always related to specific signs of negation. In general their absence does not affect the meaning of the sign or the meaning of the clause with the exception of non-manual negation clauses (see below). The following examples present clauses with mouthings (f6-m), word picture (f6-wp) and mouth gesture (f6-mg) respectively (a.1, a.2, a.3).

_____f4-md
_____f6-m
5.5.6-a.1 (198) TOILET GO-IN | SEE-SEARCH | NOTHING

I went to the toilet and I searched around but I didn't find anything.

_____h1
____f6-wp
a.2 (438) HERE HAVE WOLF | LIE NOTG

There is a wolf here. I am not lying.

_____h1
_____f6-mg
a.3 (35) ONE LIGHT EXIST-NOT | LIGHT-OFF

One light had not been (on). It was off.

The database shows that negation mouthings are used in 168 clauses, negation word pictures in 70 clauses and negation mouth gestures in 20 clauses. Negation mouth actions can co-occur with other non-manual features (negation facial expressions and negation head movements) although their appearance depends on manual signs and not on these non-manual features. It is common for negation mouth actions to co-occur with other features of non-manual negation, at least in clauses with manual negation, since the appearance of a manual sign of negation triggers the appearance of mouth actions. Mouthings and word pictures of negation can also accompany clauses with only non-manual negation (b.1, b.2).

_____h1
_____f6-m
5.5.6-b.1 (80) INDEX2 WANT CHILD | INDEX2 HURRY

If you want a child you should not be in a hurry.

_____h2
_____f6-wp
b.2 (247) LOOK-ROAD | WAY | TURN-OTHER ROAD OTHER

I was looking at the road (and I realised) that this was not the right way. We turned down another road (the wrong way).

Negation mouthings become important for negation meaning in one case only; in clauses with non-manual negation where negation head movements are absent. In these clauses negation mouthings are the only non-manual features which can mark negation. This occurs when the signer mouths one of the negative particles which express negation in Modern Greek (*δεν*-(den) or *μην*-(min)) with or without a manual verb. In the previous section (see section 5.4), we saw that the database contains 8 clauses of non-manual negation where negation is realised by negation facial expression features and no other negation manual sign or negation head movement. The common feature of these clauses is that all of them contain mouthings (f6-m) as the only feature marking negation. Three of these clauses have an additional feature combined with the mouthings (f6-m): a raising of the brows (f1-br), a lowering of the brows with a frown and narrowed eyes (f2-bl) or an upward movement of the shoulders (sh up) as in (c.1), (c.2) and (c.3) respectively. Please note the brackets next to negation mouthings (f6-m) show what actually has been mouthed in the particular clauses.

_____f1-br
f6-m (den endiaferi–not interest)

5.5.6-c.1 (47) ME INTEREST FINISH

I am not interested at all.

_____f2-bl
f6-m(den-not)

c.2 (465) INDEX2 NOTG INTEREST | STRONG FAST-RUN INTEREST

You should not be interested (in these). You must not be interested in being strong or running fast.

f6-m (den echi simasia-not have importance)

_____sh up

c.3 (308) GOOD IMPROVEMENT | WRITE | SATISFY | IMPORTANT

(Mother) was satisfied with this improvement and that I was able to write so it was not important (any more that I was deaf).

In the remaining clauses with only non-manual negation, where negation is marked by features of negation facial expression, no non-manual features occur other than mouthings (f6-m).

5.5.7 Body movements

Negation body movements are used as non-manual features of negation in negative clauses. They occur with (a.1, a.2) or without (a.3, a.4) other features of non-manual negation.

5.5.7-a.1 (6)
_____f5-lo
_____sh up
NEXT-DAY-DAY-AFTER LUCK | GOOD-NOT WEATHER

After two days it so happened that the weather was not good.

_____h1
_____fl-br
_____b-back
a-2 (171) HOW PLAN HOW | CAR EXIST-NOT | SPORT INDEX3 WALK

You can plan how to do it and if you don't have a car you can walk in your sport shoes.

_____b-back
a.3 (289) GO-IN | ORAL | INDEX1 LIKE-NOT

I went in and (I saw) they were using the oral method. I didn't like it.

_____sh up
a.4 (299) MOTHER ANXIETY | UNTIL NOON NOTHING | CHRISTINE COME-BACK

Mother was anxious. There was no news until noon. Then, Christine came back.

The presence of negation body movements in a negative clause is not related to negation head movements in the same way that negation facial expressions are not related to negation head movements. Facial expressions of negation accompany a negation head movement in the majority of the clauses that contain a negation facial expression. In contrast, in the majority of the clauses that contain a negation body movement, this body movement does not co-occur with a negation head movement (N=21; 66%) while in 11 cases (34%) no negation head movement co-occurs with the clause.

In addition, in the majority of the cases negation body movement duration coincides with NegS/NegInc (28 and 30 clauses respectively) (a.1, a.2, a.3 and a.4). The following two clauses (b.1, b.2) are the only two where negation body movement does not coincide with a manual negation sign.

_____h1
_____f6-wp
___sh up
5.5.7-b.1 (415) ALL AFRAID | LIFE EXIST-NOT NOTHING

All of them were afraid. There was no value at all in life.

_____h3
_____sh up
b.2 (480) GOOD ALL MONTH | WHO **GOOD-NOT** WHAT
All months are good. I wonder which month is not good.

In the first clause (b.1) the negation body movement occurs before the manual part of the negative clause. No manual elements co-occur with the body movement. The negation body movement expresses the signer's ignorance of what possibly follows in life. In the second clause (b.2), negation body movement co-occurs with a wh-word. The clause is a case of wh-copy although the signer changes the wh-sign and replaces WHO with WHAT. He mouths 'who' both times. In this case the negation body movement follows the negation head movement and both non-manual features express the signer's inability to specify a bad month. The backward movement of the body has been part of a body lean analysis in ASL and in the Sign Language of the Netherlands (van der Kooij et al., 2006; Wilbur and Patschke, 1998) (see section 2.3.2.2). In both languages researchers argue that this body movement in different settings conveys the notion of non-involvement, of exclusion and of negation/denial. In ASL (Wilbur and Patschke, 1998) the upward movement of the shoulder (shrug) is considered as a variant of the backward movement of the body.

To conclude, body movements that appeared in the database are related to negation. However, their occurrence is not systematic and there is no specific pattern relating them to specific manual or non-manual elements of negation. It seems that negation body movements do not have the same status as the rest negation facial expressions. It is possible that negation body movements are in a 'linguisticisation' process where gestures or gestural features become linguistic elements.

5.5.8 Summary of negation facial expressions

The analysis regarding facial expression and body movement in negation aimed to examine the relationship of negation facial expressions/body movements to negation head movements and manual negation signs. For this summary negation facial expressions/body movements are organised in two groups. The first group includes all negation facial expressions with the exception of mouth actions and also excludes body movements (f1-br, f2-bl, f3-ec, f4-md and f5-lo). The second group therefore comprises negation mouth actions and negation body movements.

Negation facial expressions (the first group) co-occur with a negation head movement in the majority of the clauses. What is common in both subgroups is that when a negation head movement appears in a clause where negation facial expressions also appear, then the facial expressions of negation co-occur with the negation head movement. If they do not co-occur, the structure of the clause seems to be problematic. Evidence for this comes from anecdotal observations and the fact that the database does not provide us with examples having a structure similar to (a.1).

h2
ß cc
5.5.8-a.1 (348x) ? GO TAVERN NOTBshk

(He) didn't go to the tavern (with the others).

Negation head movements have to co-occur with negation facial expressions but this does not imply that their spread is identical. The duration of non-manual features varies. Clause (a.1) has already been presented in various sections earlier in this chapter. The full representation of (348) is (a.2).

h2
ß-cc
f5-lo
5.5.8-a.2 (348) MICHALIS GET-DOWN-HORSE | GO TAVERN NOTBshk | STAY

Michael got down from the horse. (He) didn't go to the tavern (with the others). He stayed (there).

In (a.2) the duration of each non-manual feature differs. None of the onsets or offsets of the non-manual features coincide. Furthermore, the (f5-lo) negation facial expression (upper lip is raised and lower lip is pushed upwards) also spreads over the clause following the negation. The reason for this non-matching is not that these non-manual features are unrelated to each other. There is an element that unifies these features, and this element is the manual negator of the clause. Negation facial expressions and negation body movements occur with the manual negation signs in the vast majority of the cases. The emergence of non-manual features is triggered by manual negation signs.

The second group consists of mouth actions and body movements. According to the above analysis, the mouth gestures of negation comprise a separate group because they constitute part of the articulation of the negation sign. Mouthings (f6-m) and word pictures (f6-wp) are distinct from the other negation facial expressions because of their use in clauses with only non-manual negation. This characteristic is similar to a pattern

described by Boyes-Braem (2001) (see section 2.3.2.2). No negation facial expressions, except mouthings and word pictures of negation, are found to mark non-manual negation unless they are accompanied by a negation head movement.

5.6 Summary of the structure of negation clauses

This analysis has shed light on the structure of manual and non-manual negation at clausal level. First of all, negative particles and NegS occupy a post-predicate position in ENG. This position is usually the first position adjacent to and following the verb and coincides with the end of the clause. This is also true even if the verb is not overt at the surface structure. The post-predicate position of the negative particle is also reported in other sign languages (see section 2.3.3). A pre-predicate position for negative particles and the NegS in ENG is also found in specific types of clauses. These exceptions were presented in Table 5-3. The database shows that when the negative particle or the negation sign does occupy a pre-predicate position, then this is immediately before the verb. In imperatives and in contrastive clauses, this pre-verbal position is likely to coincide with clause-initial position. It should be noted here that these clauses are often constructions with two constituents containing a negative particle and a verb. NO-As constitutes a distinct additional category. As was mentioned in the previous section, NO-As appears to be undergoing a process of grammaticalisation and will become a negator. As such it does not have the status that other NegS have. NO-As is often used as an initial response, or in yes/no direct or indirect questions. Because of these properties, NO-As does not obey the NegS post-predicate rule.

The analysis demonstrated that the post-predicate position of a negation sign coincides with clause-final position for the vast majority of clauses with negative particles or NegS. However, specific grammatical classes of signs can follow the negative particle or the NegS. These are: wh-signs, pronouns, temporal adverbs and FINISH. Statistical analysis of the database shows that NegInc generally occupies a clause-final position. Nevertheless, NegInc can occasionally appear in non-final position.

The data indicates that the post-verbal position of the negative particle strongly resembles the morphophonology of a NegInc. It is suggested that signs with negative incorporation have affixed the negative particle and that the 'trace' of the negative particle can be seen in the sharp pronation movement of the forearm. As was noted earlier (see section 4.5.3)

signers of ENG often affix a negative particle to a verb in connected signing, creating forms like GO-NOTB, TELL-NOTB, etc.

The examination of non-manual features in relation to manual negation signs has yielded important findings. First of all clausal analysis confirms the results of the morphological analysis, and shows that negation head movements, as well as other non-manual features of negation, are not obligatory elements in the construction of a negative clause. This is true for all categories of manual negation signs: negative particles, NegS and NegInc. It is of specific interest that negation head movements do not obligatorily accompany negative particles in ENG, since there are reports from other sign languages with different findings (Neidle et al., 2000 for ASL; Pfau and Quer, 2003a and 2003b; Pfau, 2002 for German Sign Language; and Pfau and Quer, 2003a and 2003b; Quer, 2002 for Catalan Sign Language). A second major finding of the analysis is that negation head movements and negation facial expressions co-occur with manual negation signs in manual negation clauses in the vast majority of the cases. There are only two exceptions where negation head movement occurs immediately after the negator for emphatic purposes. The data analysis indicates that negation head movements which spread over parts of a clause but not over the manual negator create problems with structure and semantic ambiguity. When a negation facial expression spreads over parts of a clause but not over the manual negator, it seems that is not well-formed. In both cases of negation head movements and negation facial expression, non-manual features can spread immediately after the manual negator for emphatic purposes.

Spreading of non-manual features ranges from a part of the clause to the entire clause. Spreading over the whole clause is not always indicative of emphasis. In clauses with only non-manual negation, head movements and negation facial expressions which spread over the 'target' clause have to include the negator within the spreading area. If negation head movements do not spread over the negator, the clause becomes odd. The only case where a negation head movement is allowed not to spread over the verb is when the head movement occurs after the negated clause. This structure strongly resembles the post-verbal position of a negative particle.

Clausal negation can be expressed by manual negation signs and by non-manual features of negation. Negation head movements are the most prominent negators in non-manual negation clauses in ENG. All negation head movements exhibit similar properties although they have a different distribution. Furthermore, our analysis also shows that the

use of negation head movement is not the only option; non-manual negation can be expressed by mouthings/word picture of negation and additional negation facial expression without the presence of any negation head movement. Based on anecdotal observation it seems that features of negation facial expression are used as sole negators mostly in everyday casual signing.

The spreading of non-manual features of negation is not always strictly related to the signs that are under the spreading area in terms of onset and offset of both signs and non-manual elements. This was expected for negation facial expressions but not for negation head movements. Researchers (Bahan, 1996; Baker and Cokely, 1980; Baker and Padden, 1978; Liddell, 1980) have suggested that non-manual grammatical components such as negation head movements are always strictly related to the signs they accompany in terms of input/output of the manual and non-manual element. Examples in sections 5.4.1.1 and 5.4.1.2 show that often there is no close temporal link between them in ENG.

In these examples the spreading does not alter the grammatical scope of negation. In many cases, the intensity or rhythm of non-manual movement changes. In some other cases it looks as if the signer anticipates the articulation of the negative clause by starting non-manual activity earlier. On the other hand, a perseveration pattern of negation head movements and facial expression was observed. Nevertheless, the data analysis indicates that negation head movement spreading is not arbitrary. Negation head movement spreading is closely related to the scope of the negation, but not in terms of absolute onset/offset of the head movement. The 'loose' relation between negation head movement spread and scope is also found in clauses with only non-manual negation where the head movement can occur after the clause over which it has scope. Despite this loose relation of negation head movements to the manual part of the clause, their function as grammatical features remains.

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6 THE STATUS OF THE MANUAL SIGNS AND SCOPE OF NEGATION

6.1 Introduction

To this point the present study has explored aspects of the morphophonology and grammar of negation in ENG. The use of manual negation signs, non-manual features of negation and their interaction has been analysed. In this chapter, issues concerning the status of signs of negation and the scope of negation in ENG are examined.

For reasons of meaning analysis, the NegS group is divided into two subgroups. The first subgroup comprises the negative particles (NOTB, NOTG and NOTBshk) and the second subgroup the remaining NegS signs (NOTHING, NEVER, NO-WAY and NO-As). NOTB, NOTG and NOTBshk are also presented in relation to their role in clausal and constituent negation. NegInc signs are divided into three groups. The first group comprises the negative modal CANNOT; the second group comprises the negative existentials (EXIST-NOT and EMPTY); and the third group comprises the remaining NegInc.

In addition, issues concerning scope of negation are discussed. This analysis determines determine whether negation signs have scope over the whole clause or over just part of the clause. The scope of negation is also examined in relation to negation head movements. The negation head movement scope is analysed in relation to negation signs. Finally, specific negation phenomena such as negative concord (NC) and/or double negation (DN) and the use of negative polarity items (NPIs) in ENG will be examined.

6.2 Negation signs (NegS)

6.2.1 The negative particle in ENG

According to the data, ENG makes use of three different negative particles: NOTG, NOTB and NOTBshk. Grammatical analysis has not revealed any specific semantic or syntactic feature which regulates the appearance of any of these particles in sign clauses. However, based on anecdotal observation it seems that the choice of a negative particle is affected by the phonetic environment (the movement and handshape of the preceding sign) and also the individual differences among signers.

As with spoken languages, negative particles are the most common elements used for negation marking in ENG. They are used for marking clausal as well as constituent negation[41]. Negative particles are also used in rejection/disagreement clauses and in negative interrogatives as well as in imperative forms.

6.2.1.1 Negative particles in clausal negation

In spoken languages like English and Modern Greek, clausal negation is accomplished by the use of a negative particle which negates the verb of the clause (a).

6.2.1.1-a Ο Γιάννης δεν τρώει σοκολάτα.
the John not eat chocolate
John does not eat chocolate.

For ENG the analysis has already shown that negative particles (NOTG, NOTB and NOTBshk) follow the verb in clausal negation (b.1).

6.2.1.1-b.1 (369) GO-UNDER **NOTBshk** | BLINKERS GO-STRAIGHT
Don't go away (from your path). Be focused and go straight ahead (on your way).

For the majority of clauses the negative particle is accompanied by a negation head movement. Apart from the negation head movement, negative facial expressions can accompany a negative particle (b.2).

h3
f4-md
6.2.1.1-b.2 (341) BE-ASKED ASK-OTHERS **NOTBshk** | INDEX2 BLINKERS
Don't let anyone ask you anything and don't ask anything. Remain focused on your aim.

The following clauses are examples of clausal negation where NOTB (c.1, c.2) and NOTG (c.3, c.4) are signed with a negation head movement (c.1 c.3) or without a negation head movement (c.2, c.4).

h1
6.2.1.1-c.1 (527) WATER | AFTER GROW-UP | INDEX2 SEE-EYE **NOTB** | EYES-CLOSE
(You) water it and then it will grow. You should not look at it. (You) should have your eyes closed.

[41] The terms 'clausal' and 'constituent' negation are used at this point as descriptive grammatical categories. The scope of clausal and constituent negation is discussed in the final section.

c.2 (407) CRY **NOTB** | INDEX1 HELP

Do not cry. I will help you.

_____**h1**

c.3 (438) HERE HAVE WOLF | LIE **NOTG**

There is a wolf here, I am not lying.

c.4 (26) MAN | INDIFFERENT | 3GIVE3 **NOTG**

The man (refused). He was indifferent and didn't give him anything.

In all the above clauses, the negative particle immediately follows after the verb of the clause. In (c.4) the verb is inflected and agrees in location with the location assigned to the recipient. A negative particle can also be placed after the complement of the verb in cases where agreement is found (d.1) or in cases where agreement is not found (d.2).

6.2.1.1-d.1 (502) 2GIVE3 MONEY **NOTG**

He didn't give (him) any money.

d.2 (348) GO TAVERN **NOTBshk**

(He) didn't go to the tavern.

In these clauses (d.1, d.2) negative particles negate the verb phrase and construct clausal negation. A clause where the negative particle negates only the object or complement of the verb has to be marked by a head movement (d.3, d.4) otherwise the clause will be considered as expressing clausal negation (d1, d2).

_____**h2**

6.2.1.1-d.3 (502x) 2GIVE3 MONEY **NOTG**

He gave (him) no money.

_____**h2**

d.4 (348x) GO TAVERN **NOTBshk**

(He) went to no tavern.

In ENG a single negative particle is used to negate more than one verb, when these are signed in succession. The negative particle has to be signed after the last verb of the sequence. If we consider that only the last verb of the sequence is negated and the previous verbs do not have a negative meaning, then meaning problems arise (e.1, e.2).

_____body-shift & head nod
6.2.1.1-e.1 (356) INDEX1 LOOK-SILLY | ASK | BE-CURIOUS | LIKE OTHER

____h3
_____f4-md
NOTG

You should not look, you should not ask anything, you should not be curious and you should not like things that are away from your path.

(problematic reading) You should look, you should ask and you should be curious. You should not like things that are away from your path.

_____h3
____f1-bl
____f3-ec
e.2 (545) SELFISH | ARROGANCE NOTG | WRONG

Don't be selfish and don't be arrogant. That is wrong.

(problematic reading) Be selfish and don't be arrogant. That is wrong.

The above examples illustrate that negative particles can operate on and negate two or more verbs. In both examples the verbs follow one another and are signed without complements. What is unusual here is that there is no other manual or non-manual element of negation that could connect the verbs with the negative particle. The examples show that non-manual features of negation do not spread over the whole verb sequence in such structures. In both examples negation head movement and facial features spread over the negative particle only. Other non-manual features, such as a slight nod of the head and a slight body shift, which indicates coordination, may bind this verb sequence (e.1). Thus, the conditions which connect the verbs with the negative particle in 'sequential' negation are the following: the use of non-negative non-manual features, contextual meaning and adjacency of the verbs to the verb that is negated by the particle.

Finally, an additional type of clausal negation found in ENG is contrastive clausal negation as in (f.1) (as opposed to contrastive constituent negation).

6.2.1.1-f.1 (335) SECOND IDENTITY STRONG | NOTG STRESS

Secondly (you) should have strong identity and not be stressed.

In clauses like the above the negative particle is permitted to occupy a clause-initial position in order to stress its contradiction and contrast to the preceding clause.

6.2.1.2 Negative particles in constituent negation

Negation signs (NOTB, NOTG and NOTBshk) are also used for constituent negation. In this case negation is applied to a part of the clause other than the verb. In spoken English

and Modern Greek, a negative particle can negate a noun or adjective to form constituent negation (a.1, a.2, a.3, a.4).

6.2.1.2-a.1 The **non-members** should wait here.

a.2 She is a **non-registered** student.

a.3 Τα μη μέλη πρέπει να περιμένουν εδώ.
the non members must to wait here
The **non-members** must wait here.

a.4 Είναι μία μη εγγεγραμμένη φοιτήτρια.
is a non registered student
(She) is a **non-registered** student.

A negative particle adjacent to a noun or adjective does not form constituent negation in ENG as it does in spoken English and Modern Greek. A word order similar to that of Modern Greek with the negative particle placed next to a noun or adjective is interpreted as clausal negation in ENG. ENG does not form clauses of the structure 'I **am** tall' as there is no copula 'to be'. As a result nouns and adjectives often function as verbs in a clause. This entails that a constituent negation reading is not possible for (b.1) and (b.2).

6.2.1.2-b.1 INDEX3 STUDENT **NOTG**

He/she is not a student.

? He/she is a non student.

b.2 INDEX3 BEAUTIFUL **NOTG**

He/she is not beautiful.

? He/she is non beautiful.

Although constructions like these above do not form constituent negation in ENG, negative particles do form constituent negation in cases of contrastive negation. Meaning contrast in these cases is also indicated by the change or the introduction of new non-manual features. All three negative particles are used to form constituent negation in contrastive clauses. (c.1, c.2, c.3) In all clauses the use of negation head movement is essential to indicate local negation and contrast.

_____h1

6.2.1.2-c.1 (58) FIRST GO-OUT ME **NOTB** | SECOND ME | RIGHT

(You) should go out first, not me. I should go second. That is the right (way).

_____h2

c.2 (249) BOAT LEAVE 7.30 **NOTG** 6.30 **NOTG** | 7.30

The boat leaves at 7.30, not at 6.30, at 7.30.

_____h1
c.3 (95) DIVE-IN-OUT 45 MINUTES 2-HOURS^3-HOURS **NOTB**

(You have) to dive for a total of 45 minutes, not for 2 or 3 hours.

_____h2
c.4 (110) OBLIGATE HIGH-LEVEL AS-HIGH AS-LOW **NOTBshk**

It should be that high, not that low.

The use of affixes is also a very common way to construct constituent negation in spoken languages. ENG does not have a rich affixation system for negation similar to that of spoken languages. However, as was noted in a previous chapter (see section 4.5.3) the negative particle NOTB can used as a suffix to create a sign with a negative meaning. The presence of the suffix can be recognised as the final handshape ('B' or '5') of the sign, independently of its normal handshape is.

6.2.1.3 Negative particles in rejection/disagreement clauses

Negative particles (NOTB, NOTG and NOTBshk) are also used in rejection/disagreement clauses. In these clauses the signer disagrees with something that has been declared or proposed or responds to a yes/no question.

_____question
6.2.1.3-a Signer A: WANT TEA?

Signer B: **NOTB**, THANK

Signer A: Do you want some tea?

Signer B: No, thank you.

The database does not include examples like (a) as the videotape does not include sets of utterances with Deaf people having a conversation. However, constructions like these are common in ENG. Refusal/rejection as a response is expressed by using one of the negative particles. The database also includes examples of rejection/disagreement clauses where role shifting is used to represent direct speech. In such cases the signer represents the person taking part in the narrative by means of small changes in the orientation of the shoulders and/or the head. In this way, a signer is able to represent two signers having a conversation, as in the following examples (b.1, b.2, b.3).

6.2.1.3-b.1 (284) AUNT | **NOTG** | HEAR SHE

Aunt (said) no, she can hear.

b.2 (38) WOMAN SEAT-OPPOSITE | **NOTB** AFTER

The woman sitting opposite to him (said) no, I will do it later.

b.3 (360) MAN MICHALIS | **NOTBshk** ME STAY WAIT UNDER-TREE-SEAT

This man, Michael (said), no, I will stay (here) and wait sitting under the tree.

6.2.1.4 Negative interrogatives

Negative particles (NOTB, NOTG and NOTBshk) are also used to form negative interrogatives (a.1, a.2).

6.2.1.4-a.1 (67) Signer A: WEDDING HERE CRETE?

Is the wedding going to take place here or in Crete?

Signer B: HERE WEDDING HERE

Here, the wedding is going to take place here.

_____question

Signer A: CRETE **NOTB**?

Not in Crete?

The above example indicates that the particle is also found in post-verbal position in negative interrogatives. However, based on anecdotal observation we assume that in clauses like (a.1) where no wh-sign is present, the initial position of the particle (NOTB CRETE) will not be problematic. The data do not provide any example of a negative interrogative with a wh-sign and a negative particle. Based on anecdotal observation a wh-sign in wh-clauses can appear at the beginning of the clause, at the end of the clause or in both positions (wh-copy). In (a.2) the negative particle should appear at the end of the embedded clause otherwise ambiguity will arise concerning the scope of negation (a.3).

6.2.1.4-a.2 INDEX3 SAY GO **NOTB** WHAT-FOR ?

For what reason did he say he won't go?

a.3 INDEX3 SAY GO WHAT-FOR **NOTB** ?

For what reason did he say he won't go?

For what reason did he not say he will go?

In the previous chapter (section 5.3.1.1.2.2), it was mentioned that the post-verbal position of the clause can be changed in yes/no question. The same post-verbal position is also allowed in coordinated questions (a.4).

_____question

6.2.1.4-a.4 (462) GIRL **NOTG** STUPID | GIRL STUPID

Was the girl stupid or wasn't she?

6.2.1.5 Negative particles and imperatives

Imperative mood in both negative and in affirmative clauses is expressed in ENG by altering the movement of the verb (see section 4.5.4). The syntax may change since negative imperatives allow the negative particle to appear in pre- or post-verbal position. In most cases these positions are identical to clause-initial and clause-final positions (a.1, a.2).

6.2.1.5-a.1 GO **NOTB(imperative)**

NOTB(imperative) GO

Don't go.

a.2 SAY **NOTG(imperative)**

NOTG(imperative) SAY

Don't speak.

Negative imperatives are usually accompanied by a variety of non-manual features, depending on the level of emphasis or intensity the signer wants to indicate. In the database headshakes are not found in the database to accompany negative imperatives. The short movement of the verb prevents repeated movements (i.e. the repeated side-to-side head movement of a headshake). A headtilt can be used with its movement echoing that of the verb. To the best of our knowledge there are only limited studies about imperatives in sign languages (see section 2.3.1.3) and none of them examines negation imperatives. However, ENG seems to be similar to ASL which signals imperative by changing the speed, the intensity and the size of execution of the sign (Fischer and Gough, 1978).

6.2.2 NegS: NOTHING, NEVER, NO-WAY and NO-As

6.2.2.1 NOTHING

NOTHING is a negative quantifier. It expresses both clausal and constituent negation. It is versatile in ENG, appearing as pronoun, adjective or adverb. The next clauses show the use of NOTHING as a pronoun in various syntactic positions (a.1, a.2, a.3).

6.2.2.1-a.1 (349) PEOPLE PULL | SAVE 5 SAVE | DIE **NOTHING-NOTHING**

die nobody

(He) pulled out all the people. (All) five of them were saved. Nobody died.

a.2 (265) ME SHOE SEARCH | FIND **NOTHING**

find nothing

I am searching for my shoe but I don't find anything.

a.3 (31) LOOK-BEHIND-DOOR | SEE TEACHER THERE **NOTHING** | SEE

See teacher there none.

I was looking (secretly) behind the door to see that there was no teacher (outside the class). (I kept) looking.

NOTHING is also used as an adverb (b.1), (b.2).

6.2.2.1-b.1 (330) ME INDEX3 INDEX1 TEACH SIGN | SIGN **NOTHING** | ME FALL-DOWN

I can teach him to sign. If he doesn't sign at all I will fail.

b.2 (50) INDEX1 MEET-EACH-OTHER NOTG | ME LOVE **NOTHING**

I didn't have contact with him. I didn't love (him) at all.

NOTHING is often used in fragment negation (c.1), (c.2), or in role shifting (c.3).

6.2.2.1-c.1 (70) THURSDAY INTERPRETER NOTB | ALONE | **NOTHING**

On Thursday there are not any interpreters. I am alone. Nobody is there.

c.2 (282) WOMAN OPPOSITE WALK-IN | VOICE |**NOTHING**

The neighbour woman walked in and shouted, but nothing (happened).

c.3 (459) GIRL WONDER WHO-WHO? **NOTHING-NOTHING** KNOW-NOT

The girl wondered who (sent it), (and the postman replied) nobody. I don't know.

The above examples illustrate the varied use of NOTHING. It can be noted that, in ENG NOTHING does not need the presence of a negative particle, or any other negative sign, in order to be licensed. This is not the case in Modern Greek (d).

6.2.2.1-d Δεν πήρα τίποτα.

* Πήρα τίποτα.

Not take nothing

I didn't take anything.

In ENG, however, NOTHING can appear in the same clause as a negative particle, functioning as an intensifier (e.1), or with a sign taking negative incorporation forming a negative concord structure (e.2).

6.2.2.1-e.1 (52) ME HELP NEVER | LINK ME **NOTG NOTHING**

(He) never helped me. (He) did not connect with me at all.

e.2 (311) WHERE-FROM DEAF | HEARING | HOW | KNOW-NOT NOTHING

For what reason and how I became deaf while I could hear I don't know at all.

6.2.2.2 NEVER

NEVER is a temporal adverb. Like NOTHING it can negate a clause by itself. It is not used for constituent negation.

6.2.2.2-a.1 (42) COMMUNICATION NEVER | FATHER TALK-EACH-OTHER NEVER

(We) never communicated and I never talked to my father.

a.2 (351) YEARS FAMILY YEAR | VILLAGE GO NEVER

He stayed for many years with his family and he never left his village.

6.2.2.3 NO-WAY

NO-WAY functions in a similar way to a negative particle and expresses intense or absolute negation. It is used in clausal negation but it is not found in constituent negation. In terms of meaning, NO-WAY expresses the absolute and explicit belief of the signer that something is impossible, out of the question, does not apply or cannot happen. (a.1, a.2).

6.2.2.3-a.1 (88) TALKER INDEX3 TEACH | ME TEACH NO-WAY

A hearing (person) can teach you. I can't teach you at all.

There is no way I could ever teach you.

a.2 (116) ME MONEY-TAKE |ME GIVE-MONEY NO-WAY

(If) I take (my) money I won't give any money at all.

There is no way I could ever give you any money.

In the database NO-WAY always appears in contexts like (a.1) and (a.2). The parallel expression in spoken Greek *αποκλείεται* (no way, it's out of the question) is an expression which derives from the verb *αποκλείω – αποκλείομαι* (to exclude – to be excluded) and so has a secondary meaning. In contrast, in ENG these two meanings (no way, to exclude) are expressed by two different signs. Indeed the Greek word (to exclude) frequently misleads hearing and Deaf signers into considering the sign as a verb (having the same grammatical status as the Greek word does). This issue also confused the researcher during the morphological analysis. However, this is not in fact the case: NO-WAY is not a verb and is not used to express exclusion, omission, segregation or other similar meaning. In addition NO-WAY may be used for emphasis in a negative clause which is also negated by a negative particle (b).

6.2.2.3-b (424) SUICIDE | DROWN NOTB **NO-WAY** | LETS-GO

> We do not have to commit suicide or drown ourselves, no, not at all. We should go home.

The database does not provide any example of this sign used for constituent negation. However, since the sign functions as a negative particle expressing an absolute and explicit belief, there is no reason why NO-WAY should not be allowed to substitute for the negative particle in constituent negation clauses (c).

h1
6.2.2.3-c (58x) FIRST GO-OUT ME **NO-WAY** | SECOND ME | RIGHT

> (You) should go out first, not me at all. I should go second. That is the right (way).

The data analysis shows that NO-WAY can occur in the same locations as negative particles. To conclude, NO-WAY can be characterised as an emphatic/exhaustive negation marker which carries the meaning of something being 'impossible to happen'. It has been suggested in a previous chapter (see section 4.5.1.2) that the sign has become a negator by means of grammaticalisation. It is possible that the sign has not been fully grammaticalised yet and this could be a reason why the sign is not found in constituent negation.

Using a different line of analysis, Sapountzaki (2005) suggests that the same sign, which in fact she glosses as (CAUSE-TO)-BE-OFF, has both an aspectual function, which has the meaning 'an action that is to happen or is expected to happen, does not take place' (d.1), and a modal function which expresses prohibition (d.2). As we see in both cases the signs are characterised as auxiliaries.

6.2.2.3 d.1 TOMORROW LESSON NOT: 3-BISHOP HOLIDAY **LESSON BE-OFF**

> Tomorrow there is no school: it is the 3-Bishops (school holiday) and **planned lessons are cancelled.**

d.2 FATHER SIGN **CAUSE TO BE-OFF**, BUS CAUSE TO BE-OFF, CAUSE TO BE-OFF+++, UNTIL ME-BORN

> My father would not let himself sign, or get on the bus, he would not let himself do a lot of things, until I was born.

(Sapountzaki, 2005, p. 94, 119).

This is a completely different proposal to our analysis of the sign and its function within negation, as our data does not support Sapountzaki's analysis.

6.2.2.4 NO-As

As has been mentioned, NO-As is a relatively new sign in ENG. NO-As is often bound to its affirmative opposite YES-As, as in the next example (a.).

6.2.2.4-a INDEX1 ASK INDEX2 REPLY YES-As **NO-As**

I will ask you and you should reply with a yes or no.

The database provides examples of YES-As NO-As in indirect questions (b.1), (b.2).

6.2.2.4-b.1 (66) GIRL GOOD YES-As **NO-As** |KNOW-NOT

I do not know if the girl is good or not.

b.2 (73) ADDRESS, CODE, WEDDING DONE YES-As **NO-As** | SIGNATURE

(They have to note) if (he/she) is married or not the address, area code and then have to sign.

It has been observed that NO-As is rarely used as simple response in yes/no interrogatives (c).

6.2.2.4-c Signer A: AGREE^{q}?

Signer B: **NO-As**

Signer A: Do you agree?

Signer B: No.

6.2.3 Fragment negation

Fragment negation clauses are negative elliptical clauses where NegS is the only constituent of the clause. All NegS can be used to form fragment negation clauses except for NO-As. The meaning of a fragment clause can be easily seen when NegS is related to another negative or non-negative clause which precedes or follows the fragment negation (a.1, a.2). The relationship of fragment negation to context can be less clear in some cases, as in clauses (b.1) and (b.2).

6.2.3-a.1 (257) PUT-ON-SHOE | OTHER MISSING | **NOTHING**

(She) put one shoe on but the other one was missing. There was nothing around.

a.2 (395) THINK RUN BE-STUPID| RUN CONTINUED | **NOTB** | REST SOME SEAT

He thought, I am stupid to run. Do I have to run for long? I don't think so. I will have a rest, then he sat down.

a.3 (359) MAN CLOTH-SHINE | LOOK-AT STRANGE | **NOTG** | INDIFFERENT

There was a man with shiny clothes. (He) looked at this strange (man) but (he did not pay any attention). He did not care.

6.2.3-b.1 (203) THIS-LOOK-MAGAZINE | **NOTB** | LEAVE

I was looking at a magazine and I saw it but I didn't believe it and I closed (the magazine).

b.2 (28) WALK-TO | **NOTB** | LEAVE-IT | WALK-AWAY

I walked toward (the fence) but I didn't want to (I changed my mind), and I walked away.

The following clauses are examples of fragment negation for NEVER and NO-WAY.

6.2.3-c.1 (214) LOOK-AT-SILLY | **NEVER** | SHOCK

I looked stupid. I had never seen this. I was shocked.

c.2 (284) AUNT | NOTG | HEAR SHE | **NO-WAY**

Aunt said, no she can hear. There is no way she can't.

6.3 Signs with negative incorporation (NegInc)

NegInc signs are verbs which incorporate negation within their phonological form. As verbs they can only be used for clausal negation. Often a NegS accompanies them within the same negative clause, indicating negative concord structures. For the purposes of our analysis, we will subcategorise signs with negative incorporation as follows:

a) Negative modals: CANNOT.

b) Negative existentials: EXIST-NOT/HAVE-NOT and EMPTY.

c) The remaining NegInc verbs (see section 6.3.3).

6.3.1 Negative modal CANNOT

CANNOT is of particular interest as negative modal. The sign takes a verb phrase as a syntactic complement, which is signed before the negative modal in the majority of the cases. As with other NegInc, this modal regularly appears at the end of the clause (a.1, a.2).

6.3.1-a.1 (41) TOOTH MONEY EXPENSIVE | MONEY PAY **CANNOT**

Dentures are expensive and (they) couldn't pay the money.

a.2 (457) PAIN BODY | FLY **CANNOT**

(Her entire) body was in pain. (She) couldn't fly.

Clause structures where the modal is in another position within the clause also occur (b).

6.3.1-b (237) OTHER SHAME | INDEX1 **CANNOT** THERE SIT

I was ashamed because of the others. I couldn't sit there.

Negative modal is often used in elliptical constructions where the verb complement is missing (c).

6.3.1-c (421) WANT VACATION | REST | BUT **CANNOT**

I want to have some vacation and rest but I can't.

Sapountzaki (2005) also reports the use of CANNOT as a modal that expresses impossibility or physical inability and she observes it both in clause-final position and, less commonly, in non-final position.

6.3.2 Negative existentials EXIST-NOT and EMPTY

6.3.2.1 EXIST-NOT

Both signs are used as negative existentials. EXIST-NOT has the meaning of 'exist not' as well as the meaning 'have not' (a.1, a.2, a.3).

6.3.2-a.1 (63) PAST RELATIONSHIP **EXIST-NOT**

I didn't have any relationship in the past.

a.2 (245) SLEEP FAR-BED-LINE DARK | **EXIST-NOT** BLANKET

(You) could sleep in a row of beds at the far end of the room which was dark. There were no blankets.

a.3 (171) HOW PLAN HOW | CAR **EXIST-NOT** | SPORT INDEX3 WALK

You can plan how (to do it). If you don't have a car (you) can walk in your sport shoes.

As was mentioned earlier in the study (see section 4.5.3), EXIST-NOT also functions as a negative perfective marker. As such, it would be predicted that it would appear in post-verbal clause-final position (b).

6.3.2 b (35) ONE LIGHT **EXIST-NOT** | LIGHT-OFF

One light has not been (on). It was off.

The use of EXIST-NOT (glossed as NOT-BEEN) as a negative perfective marker has been reported by Sapountzaki (2005). According to her analysis, the marker occurs at the end of clauses. In addition to this negative aspectual sign, Sapountzaki (2005) claims that the two-handed version of the same sign is an epistemic modal of impossibility.

6.3.2.2 EMPTY

EMPTY has been described as currently undergoing a grammaticalisation process (see section 4.5.1.1). It has the meaning of the non-existence of something and can also operate as a negative possessor, meaning 'someone does not possess something' (cf. HAVE-NOT) as in the following examples (a.1, a.2).

6.3.2-a.1 (548) CRY CRY | SHOE **EMPTY**

(She) was crying and crying. (She) didn't have any shoes.

a.2 (476) FACE-SAD | TAIL **EMPTY** NOTHING

(The crow) was very sad. It had no tail at all.

6.3.3 NegInc signs

The remaining NegInc signs are straightforward. Below, an example is provided for each NegInc sign. Exceptional signs with negative incorporation are included.

6.3.3-a.1 (350) WALK | GET-ON-HORSE **WANT-NOT**

(He) walked. (He) didn't want to ride the horse.

a.2 (299) UNDERSTAND | CUT | **WANT-NOT** ORAL FINISH

(Then my mother) understood and stopped (insisting), because I didn't want to have speech and language therapy at all.

a.3 (71) STREET NAME **KNOW-NOT**

I don't know the name of the street.

a.4 (27) BE-SAD | HEALTH **GOOD-NOT**

(He) was feeling sad. His health wasn't good.

a.5 (296) ORAL-ORAL | INDEX1 **AGREE-NOT**

(All children) were educated orally. I disagreed (with that).

a.6 (552) SHAKE | MAN SLEEPY STUPID | **Y-UNDERSTAND-NOT**

She shook him, but the man drowsy from being sleeping. He couldn't understand anything.

a.7 (127) IS-LIKE | GO-IN | TEASE ME **LIKE-NOT**

For example, when I go in (this place) I don't like (anyone) to tease me.

a.8 (443) ALL-THEY KNOW HIMSELF LIE | BELIEVE-NOT

Everybody knew him as a liar and did not believe him.

a.9 (25) DOG DEAF | INDEX3 HEAR-NOT

The dog was deaf. It couldn't hear.

a.10 (109) BOTTLE BACK MATCH-NOT MATCH-NOT

These oxygen tanks do not suit (your purpose).

a.11 (206) SANTORINI FAMOUS ALL | ME HAVEN'T-SEEN

Santorini is a famous (island). I haven't seen it.

a.12 (209) PLEASE SECRET | TELL-NOT FATHER NO-WAY

Please keep it a secret. Don't say anything at all to (my) father.

6.4 The scope of negation

The present section will provide an initial examination and analysis of the scope of negation in ENG. The term 'scope of negation' denotes the range of application of negation signs, in other words which parts of a clause are affected by a negation sign. Sign languages are unique in relation to the surface marking of the scope of negation, in that non-manual markers can visibly extend over part or all of a clause. In clausal negation, the negator is considered to have scope over the whole clause by negating the verb of the clause; whereas in constituent negation, the negator has scope over specific constituents of the clause other than the verb. In this section we are going to examine how the scope of negation functions in ENG. Firstly, clausal and constituent scope are presented in relation to the categories of manual negation signs. Then the relation of negation head movement to scope of negation is examined. The analysis does not include signs with negative incorporation due to the fact they always have clausal scope.

An account of the scope of negation in spoken languages is offered within the framework of generative grammar by Haegeman (1995). She states that a negative word can have clausal scope if it fulfils the NEG-criterion. The NEG-criterion states that a negative item must occupy a specifier position of the negation phrase (NegP) – i.e. SpecNegP - or the Head position of the NegP – i.e. Neg°. A negative word must move to this position in order to satisfy the NEG-criterion at the surface structure. This movement is referred to as NEG-movement.

An analysis of the negative particle in ASL is offered by Neidle et al. (2000), and a similar analysis for German and Catalan Sign Languages is offered by Pfau and Quer (Pfau, 2002; Pfau and Quer, 2003a, 2003b; Quer, 2002). The analysis of the scope of negation in ENG

presented in this section is based on the work of the above researchers. Information on the basic word order of a language, which is fundamental for negation analysis, is available in these sign languages but there is no previous research on this topic in ENG. Therefore, we will pursue a syntactic analysis of the negative particles in ENG based on the data of the present study. We assume that the syntax of negation in ENG should be treated as Head-final. The examination of our data provides evidence which support this assumption. In the vast majority of the clauses the negative particle occupies a post-predicate, clause-final position. Furthermore, this position is the immediate position after the verb. Therefore, we assume that in ENG the syntactic structure of negation is Head-final in terms of the X-bar theory. This also entails that this sign language makes use of Head-final structures and that possibly the basic structure of ENG is also Head-final.

6.4.1 Clausal scope

Negation has clausal scope when the verb of the clause is negated. ENG has two different ways of negating a verb, either by using a negation sign (NegS) or by incorporating negation within the verb (NegInc). In both cases the scope of negation is over the whole clause. Horn (2000, p. 6) reports that according to Haegeman, Zannutini and other researchers, 'negation can take scope over the whole clause only if it occurs at s(urface)-structure in a position from which it c-commands the Tense Phrase'. A negative word has to fulfil the NEG-criterion in order to take clausal scope. Based on the analysis of the database, which shows that in 85 percent of the manual negation clauses the negator occupies post-predicate clause-final position, it is assumed that this position of the negator forms a clausal structure which fulfils the NEG-criterion. The clause-final position of NegInc further supports the above suggestion. For NegInc, negative meaning is directly incorporated within the verb and therefore the negation has scope over the whole clause. This position is the same clause-final position that a negative particle and NegS have. The inherent ability of NegInc to have clausal scope does not prevent NegS from also appearing in a NegInc clause. As we have seen, this is a common structure in ENG (see chapter 6). This structure resembles 'Jespersen's Cycle' a linguistic observation first made by Jespersen, a Danish linguist (Horn and Kato, 2000; Horn, 1989). According to Horn (1989, p. 446) 'Jespersen's Cycle' is a 'repeated pattern of successive weakening and re-strengthening of the negative marker'. Horn (1989) also provides clauses from French and English that exemplify the pattern.

Old French:	Jeo ne dis	Old English:	Ic ne secge
Modern French (standard):	Je ne dis pas	Middle English:	Ic ne seye not
Modern French (colloq):	Je dis pas	Early Modern English:	I say not

(Horn, 1989, p. 455).

It is therefore suggested that the 'Jespersen's Cycle' pattern may explain the appearance of a negative particle and a NegInc or a NegS and alternatively a NegInc within a clause in ENG. It is possible that the incorporated negative marker has been weakened and that it is not strong enough to express negation. As a result the appearance of an additional negative marker (negative particle or NegS) is needed in order to strengthen negation as in the case of Modern French and Middle English.

The following sections seek to investigate how the negation scope is achieved in the absence of negation head movements or any other grammatical non-manual negation features. Negation head movements have been excluded from this section of the analysis because they are not obligatory elements for expressing negation in clauses with manual negation.

6.4.1.1 Negative particles

Our data show that in clausal negation the negative particles occupy a post-verbal position within the clause. In the vast majority of cases a negative particle follows immediately after the verb. (a.1, a.2, a.3).

6.4.1.1-a.1 (52) INDEX2 SEE-EYE **NOTB**

You should not look at it.

a.2 (314) INDEX2 SAD **NOTBshk**

Don't be sad.

a.3 (55) INDEX3 HEARING **NOTG**

She is not hearing.

When the negative particle appears in post-predicate position then the negative particle is allowed to take scope over the whole clause. This structure fulfils the NEG-criterion at surface level. The negative particle occupies the specifier (SpecNegP) or the Head position (Neg°) of the negation phrase. Based on Neidle et al. (2000) and Pfau and Quer (2003a,

2003b), we assume that the negative particle in ENG occupies a Head position (Neg°) within the negative phrase[42].

The figure below (Figure 6-1) also assumes that the verb of the clause has to move in to the tense position (Tns) in order to assign a tense. Based on Haegeman's (1995) work on negation in subject-object-verb (SOV) languages and Pfau and Quer's (2003a, 2003b) analysis on German and Catalan sign languages, the negative phrase (NegP) in Figure 6-1 selects the tense phrase (TnsP) as its complement. According to the proposed analysis, the negative particle in ENG seems to occupy the same Neg° position as the negative particle in ASL (Neidle et al., 2000) and in Catalan Sign Language (Pfau and Quer, 2003a; 2003b).

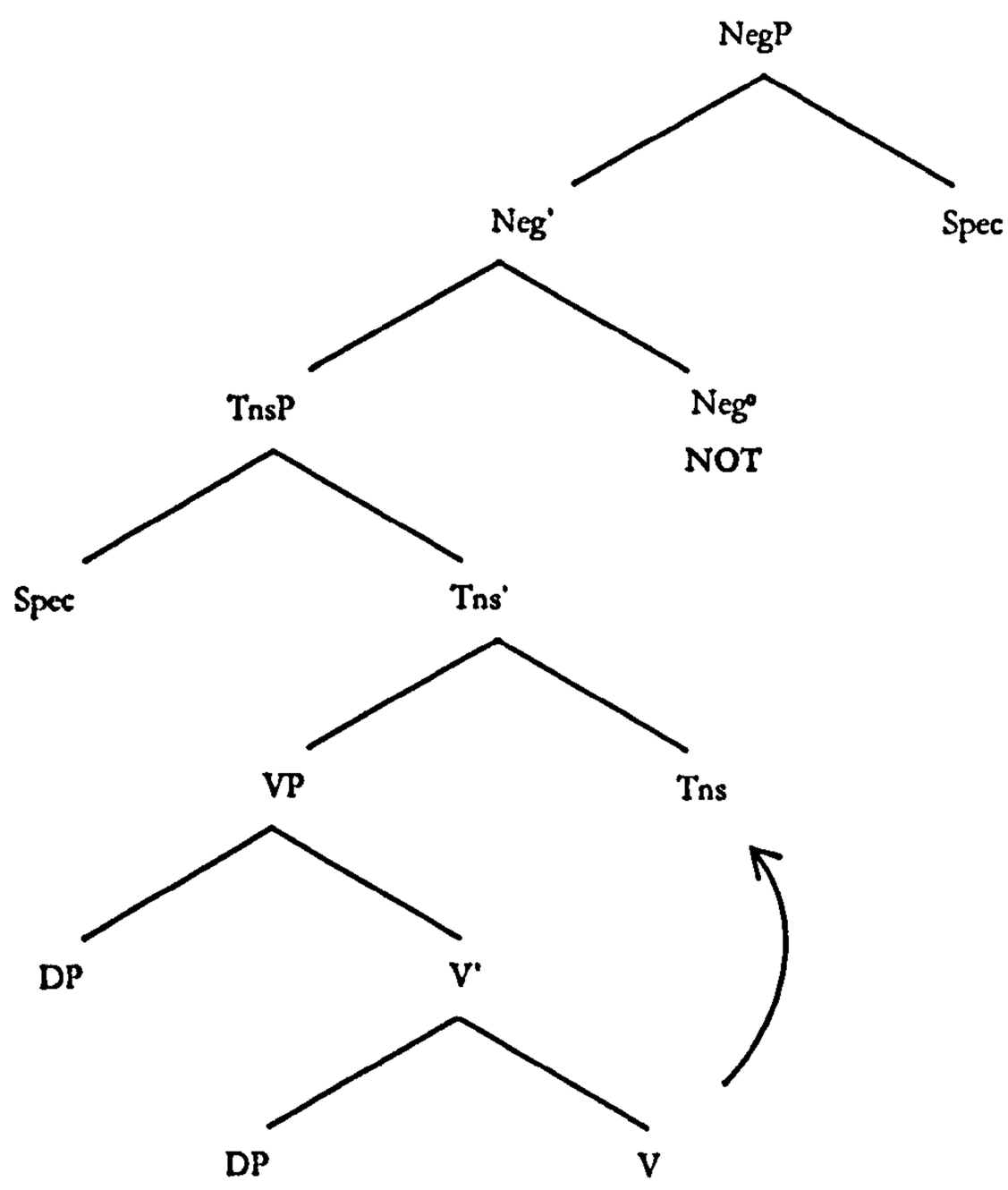

Figure 6-1. The syntax of the negative particle

Moreover, the data provides us with clauses where a negative particle has clausal scope, and an argument or a complement intervenes between the verb and the particle (b.1, b.2).

6.4.1.1-b.1 (43) COMMUNICATE FATHER NOTG

I didn't communicate with my father.

6.4.1.1-b.2 (82) ME FRIEND BOTH NOTG

We are not friends.

---

[42] Negative particles of ENG (NOTB, NOTG and NOTBshk) are represented as NOT in tree diagrams.

It seems that FATHER is a complement of COMMUNICATE and BOTH is a modifier of FRIEND. In both cases the negative particle occurs after the predicate (post-predicate negation). If the structure of the clauses in the examples (b.1 and b.2) is changed and either the negative particle immediately follows the verb as in (b.3) and (b.4) or precedes the verb as in (b.5) and (b.6), then meaning ambiguities would occur.

6.4.1.1-b.3 (43x) COMMUNICATE **NOTG** FATHER

I didn't communicate with my father.

It was the father who didn't communicate.

b.4 (82x) ME FRIEND **NOTG** BOTH

We are not friends.

I am a friend but not with you.

b.5 (43x) **NOTG** COMMUNICATE FATHER

I didn't communicate with my father.

Do not communicate with the father.

b.6 (82x) **NOTG** ME FRIEND BOTH

We are not friends.

It is not me who is friend with you.

It should be noted here that contextual environment can provide readings for (b.5) and (b.6) as contrastive negative clauses (see section 6.2.1.1). Meaning ambiguities on the above examples (b.5, b.6) would be resolved if the negative particle appeared both at the beginning and end as negation copy[43] as in (b.7, b.8).

6.4.1.1-b.7 (43x) **NOTG** COMMUNICATE FATHER **NOTG**

b.8 (82x) **NOTG** ME FRIEND BOTH **NOTG**

It has been seen up to this point that complements or arguments of the verb intervene between the verb and the negative particle without affecting the clausal scope of the negative particle. In addition, in some cases the argument of the verb can be an embedded clause. In these cases problems concerning the clausal scope of negation are raised if the sentence is signed without any non-manuals. In the following example (c.1) SAY takes an embedded clause as object (INDEX3 LIE).

6.4.1.1-c.1 INDEX1 SAY INDEX3 LIE

I say that he lies.

---

[43] The term 'negation copy' is used for this repetition of the negative particle following similar phenomena occurring with pronouns and wh-signs in sign languages ('pronoun-copy', 'wh-copy').

If clause (c.1) is negated, then in order for the negative particle to have clausal scope over the main clause, it must retain its post-verbal (SAY) position and then be followed by the embedded phrase (c.2).

6.4.1.1-c.2 INDEX1 SAY **NOTG** INDEX3 LIE

I didn't say that he is a liar (I didn't say that he lies).

If however the particle is placed at the end of the clause, as in (c.3), its scope becomes localised to the embedded clause. The presence of the embedded clause prevents the negative particle from taking scope over the verb of the main clause. In structures like (c.3) the negative particle will have scope over the embedded clause by default with or without the occurrence of a negation head movement.

_____h2

6.4.1.1-c.3 INDEX1 SAY INDEX3 LIE **NOTG**

I said that he is not a liar / I said that he doesn't lie.

The use of specific non-manual features, which are not related to negation, can be used so that a negative particle signed after the embedded clause can have scope over the matrix clause (c.4).

_____topic

6.4.1.1-c.4 INDEX1 SAY INDEX3 LIE **NOTG**

I didn't say that he is a liar / I didn't say he is lying.

The above examples suggest that in the absence of non-manual markers (negation, topic, etc.) the negative particle can take scope only over the embedded clause. However, the occurrence of non-manual markers can change the scope of the negative particle allowing the particle to have scope over the main clause. The use of non-manual features also 'facilitates' a negator to have scope over more than a single verb in cases as in the following example (d).

_____body-shift & head nod

6.4.1.1-d (356) INDEX1 LOOK-SILLY | ASK | BE-CURIOUS | LIKE OTHER

____h3

_____f4-md

NOTG

You should not look, you should not ask anything, you should not be curious and you should not like things that are away from your path.

A negation head movement may occur over the negator in (d) but this is not sufficient to explain how the negator takes scope over a sequence of verbs. Most importantly, in this example no arguments appear and no complements accompany the verbs. In addition, a slight head nod and body shift by the signer over the verbs is observed. Short pauses between the verbs are optional. It seems that this constitutes an efficient pattern in order for a negator to have scope over more than one verb. Our set of data contains some more examples like (d). In all cases no other arguments or complements are overt at surface structure. As in the case of (c.4) the use of non-manual features affect the scope of the negative particle.

Finally, two more exceptions in relation to the position of the negative particle are to be discussed. In the following two clauses the negative particle occupies clause-initial position without raising questions about the structure of the clauses. Clause (e.1) is an imperative and clause (e.2) is an example of contrastive clausal negation.

6.4.1.1-e.1 NOTB(imperative) GO

Don't go.

e.2 (335) SECOND IDENTITY STRONG | NOTG STRESS

Secondly (you) should have a strong identity and not be stressed.

Earlier in this chapter, during the presentation of imperatives, it was mentioned that in this clause type the negative particle can occupy either pre- or post-verbal positions which are usually identical to clause-initial and clause-final positions, with the clause-initial position used for emphatically stressed imperatives. In the same way, in clauses with contrastive emphasis the negative particle is also allowed to occupy clause-initial position in (e.2). It is not possible at present to provide a sufficient explanation of how the particle takes clausal scope in this position. What is notable in these clauses is that they usually are structures with a negative particle and a single lexical item (verb), and in these circumstances the negative operator can be displaced.

6.4.1.2 NOTHING

NOTHING is a negative quantifier which is also used to form clausal negation. The case of NOTHING is more complex than other negatives; this is due to the fact that NOTHING does not simply apply to the verb of the clause in terms of scope. It also has a variety of other meanings in addition to a grammatical and syntactic role within the clause. As was noted above (see section 6.2.2.1), the quantifier NOTHING can take the

place of an argument of the verb phrase and can be used as the subject (a.1) as well as the object (a.2) of the verb phrase.

6.4.1.2-a.1 (349) DIE **NOTHING-NOTHING**

die nobody

Nobody has died.

a.2 (265) FIND **NOTHING**

find nothing

I find nothing (I can't find anything).

Although the clauses appear to be manifestations of clausal negation, the verb of the clause is not negated directly, as in the case of a negative particle. NOTHING as a negative quantifier has an immediate negative effect on the subject and the object respectively in (a.1) and (a.2). In the above structures it is noticeable that NOTHING occupies the same post-verbal position that also qualifies a negative particle to have scope over a clause (a.3, a.4).

6.4.1.2-a.3 (349x) DIE **NOTG/NOTHING**

a.4 (265x) FIND **NOTG/NOTHING**

The database also shows that NOTHING can have clausal scope when it is used as an adverb (b.1, b.2).

6.4.1.2-b.1 (330) SIGN **NOTHING**

He doesn't sign at all.

b.2 (50) ME LOVE **NOTHING**

I didn't love (him) at all.

Once again NOTHING occupies post-verbal position. Both clauses are examples of post-predicate negation. In clauses where both arguments (subject, object) of the verb are realised with a subject-verb-object word order, the clausal scope is not affected even if non-manual features are absent (c).

6.4.1.2-c INDEX1 EAT MEAT **NOTHING**

I don't eat meat at all.

Concerning structures like the (c) above, NOTHING exhibits the same characteristics as negative particles in clausal negation. In the same way, the status of the scope of negation changes if the verb of the main clause takes an embedded clause as argument. Again, due

to the absence of non-manual features, NOTHING does not take scope over the verb of the matrix clause because it is inhibited by the embedded clause (d).

6.4.1.2-d (31) INDEX1 SEE TEACHER THERE NOTHING

I see teacher there none.

I will see if there is any teacher there.

In this structure (d) the scope of the negation sign takes scope by default over the embedded clause as in the case of the negative particle (see previous section). ENG differs in this aspect from ASL (see section 2.3.3.2).

6.4.1.3 NEVER and NO-WAY

Negation signs NEVER and NO-WAY take clausal scope since both of them occur in post-verbal position.

6.4.1.3-a.1 (42) SMALL-BOY INDEX1 TALK-EACH-OTHER NEVER

We had never spoken to each other since I was a small boy.

a.2 (116) ME GIVE-MONEY NO-WAY

I won't give you any money at all.

Following the same reasoning as for the rest of NegS, the above examples illustrate clausal scope structure for NEVER and NO-WAY.

6.4.1.4 Summary of clausal scope

The above analysis suggests that the NEG-criterion is fulfilled when a negative particle or a negation sign occupies the post-predicate position, and in this position a negator can have scope over the clause. It has been assumed that the negative particle occupies the Head position of the negative phrase. If an embedded clause is present between the verb of the matrix clause and the negator, and no other non-manual features occur then the negator takes scope over the embedded clause.

6.4.2 Constituent/local scope

Analysis of the manual negation signs revealed that ENG uses negative particles and the negative quantifier NOTHING for the construction of constituent/local negation. However, we have not yet discussed the structure of the clause when the negator has

constituent scope, although we have already seen examples where a negator (negative particle or negative quantifier) has constituent scope. NEVER as an adverb always modifies a verb in a clause, hence it takes scope over the whole clause. For NO-WAY the database does not provide any examples where the sign takes scope over a constituent, but based on anecdotal observation, it is suggested that NO-WAY can be used in contrastive negation as negative particles do. The following example presents negative particles in constituent negation (a.1)[44].

6.4.2-a.1 (58) FIRST (YOU-)GO-OUT ME **NOTB**
(You) should go out first, not me.

The above clause is an example of contrastive negation. In contrastive negation, a constituent is negated in order to contrast with some other constituent. A first look at the clause does not suggest that the scope of the particle is local. It might be argued that ME is the subject of the clause. The verb phrase FIRST GO-OUT is articulated as follows. When the movement of the sign starts the hand is extended towards the area where the person referred to in the narrative is located. The trajectory of movement of the verb starts from this position referring to the person in space, and ends in the area to the left of this position. In addition, the signer's eye gaze remains in the direction of where this person is located. Thus, the subject of the verb phrase is a non-overt pronoun. According to the previous analysis of clausal scope, the negative particle can have scope over the clause if it occurs in post-predicate position. If the negator in (a.1) is considered to have clausal scope, it means problems are raised since (ME) is not an argument/complement of the verb. Having established the subject of the clause we cannot suggest that (ME) is subject of the clause because this proposal would violate the theta criterion which states that 'each argument is assigned to one and only one theta role' and that 'each theta role is assigned to one and only one argument' (Haegeman, 1991, p. 63). On the other hand, (ME) cannot be an object because the verb assigns only one thematic role which is the role of the agent. Moreover, it cannot be a complement of the verb either, because no manual sign or non-manual feature suggests so.

An additional option which would permit the negator in (a.1) to have clausal scope would be to consider 'ME NOTB' as elliptical construction with a non-overt verb. The non-overt verb would be the same verb (GO-OUT) as in the previous clause and

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[44] The sentence, as it appears in the database, makes use of non-manual features of negation. Occurrence of non-manual elements does not alter its syntax or meaning.

consequently the scope would be clausal and not local. This option is not available because there are no manual signs or non-manual features (head nod, forward movement of the torso, body shift) that could suggest that the clauses are coordinated. As a result, ME cannot be considered as an argument/complement of the verb or part of an elliptical clause. Its appearance between the negator and the verb prevents the negator from having scope over the whole clause and therefore the scope of the negator remains local over the constituent. In the same way the following clause is also an example of local scope.

6.4.2-a.2 (110) OBLIGATE HIGH-LEVEL AS-HIGH AS-LOW NOTBshk

It should be of a level that high, not low.

Following the same line of reasoning, AS-LOW cannot be considered as an argument or complement of the verb. The above analysis could also apply to clauses where the negative particle is replaced by NO-WAY as in (b).

6.4.2-b (58x) FIRST GO-OUT ME NO-WAY

(You) should go out first, not me at all.

In the previous section (6.2.2.1) we saw that NOTHING takes clausal scope. In these examples the quantifier functions as a negation pronoun or adverb. In both cases it is closely related to the verb, either as an argument or as a modifier of the verb. The following clauses are examples of negative quantifier NOTHING having scope over a specific constituent (c)[45].

6.4.2-c (69) INDEX3 SAY MONEY NOTHING

He said (he will do it) without money.

In clause (c) the clausal scope for NOTHING is blocked by the presence of MONEY. The verb takes an object and/or a complement. The complement (a subordinated clause) is non-overt in this example. Therefore, MONEY is not an object or complement of the verb and therefore does not permit NOTHING to take scope over the clause. The scope remains local to the particular constituent.

[45] Once again the original sentence in the database makes use of non-manual features of negation but these do not alter its syntax or meaning.

6.4.3 Scope of negation and negation head movements

The importance of non-manual features for the scope of negation in ENG has already been highlighted. In addition, during the analysis of the scope of negation signs, it was noted that negation head movements relate closely to the negation being interpreted as having clausal or constituent scope. This section examines how negation head movements can take scope over a negative clause. To begin with, some basic characteristics of negation head movements already reported previously are summarised (see section 4.2.2.3).

- The choice of a particular negation head movement is regulated by phonetic conditions related to the movement of the sign and the movement of the head.

- The spread of the negation head movement varies and it is not strictly related to the scope of negation.

- The use of negation head movement is optional in negative clauses where negation is marked by negation signs.

- Whenever a negation head movement appears in a clause, independent of the length of the spreading, manual negation signs (NegS and NegInc) are under the spreading of the head movement. The data suggests that a head movement can spread after the manual negator (rightwards).

The analysis of the scope of negation head movements will be presented in two parts. The first part will examine the scope of negation head movement in clausal negation; the second part will examine the scope of negation head movement in constituent negation.

6.4.3.1 Negation head movements and clausal scope

The following clause demonstrates that a negation head movement is not an obligatory feature in manual negation clauses (a.2), but that, when it occurs, it spreads over the manual negator (a.1), as data analysis has shown.

____ _____h1
6.4.3.1-a.1 (527x) INDEX2 SEE-EYE **NOTB**
a.2 (527x) INDEX2 SEE-EYE **NOTB**
You should not see this.

As has been previously seen (see section 5.4.3), if the negation head movement spreads only over the verb of the clause when a manual negator is overt, then, from our point of view, the structure of the clause will possibly be not well-formed (a.3).

____h1
6.4.3.1-a.3 (527x) INDEX2 SEE-EYE **NOTB**

In (a.3) we assume that the NEG-criterion is fulfilled because the negator has a post-verbal position. However, what seems to be the problem in this clause is the position of the negation head movement. Spreading of the negation head movement over the manual negator, as in (a.1) will dissolve any complications. Based on this observation, we assume that when a negation head movement appears in manual negation clause, it has to spread over the manual negator in order to fulfil the NEG-criterion. The specific position of the negation head movement within the negative phrase is evidenced in the next examples (b.1, b.2).

_____h1
6.4.3.1-b.1 (342) LOOK-AT NEW GOOD LOOK-AT | INDIFFERENT
Don't be distracted by new attractive things. Be indifferent.

_____h3
b.2 (168) AGAIN GO | BORE
But I won't go there again. It is boring for me.

The above examples (b.1) and (b.2) include negative clauses where negation has clausal scope[46]. Therefore, it is suggested by these examples (b.1, b.2) that the negation head movement occupies the same position in the negative phrase that the manual negator also occupies. This means that the negative head movement occupies the Head position (Neg°) of the negative phrase together with the negative particle. Based on Neidle et al. (2000) and Pfau and Quer (2003a, 2003b), we assume that together with the negative particle a syntactic [+neg] feature occupies the Neg° position. This feature is realised by the head movement. This structure where both the negative particle and the negation head movement occupy the Neg° position explains also why clauses like (a.3) are not found in our database. We have already suggested that the verb raises to (Tns) in order to assign tense (see Figure 6-1). Based on clauses (a.1), (a.2), (b.1) and (b.2) we assume that the verb does not raise to Neg° since the head movement is sufficient to express negation

[46] These sentences were presented in the previous chapter (5.4.2.1) where it was explained why the negation head movement is not related to the co-occurring signs.

without spreading over the verb (Figure 6-2). Furthermore spreading of the head movement over the verb is optional.

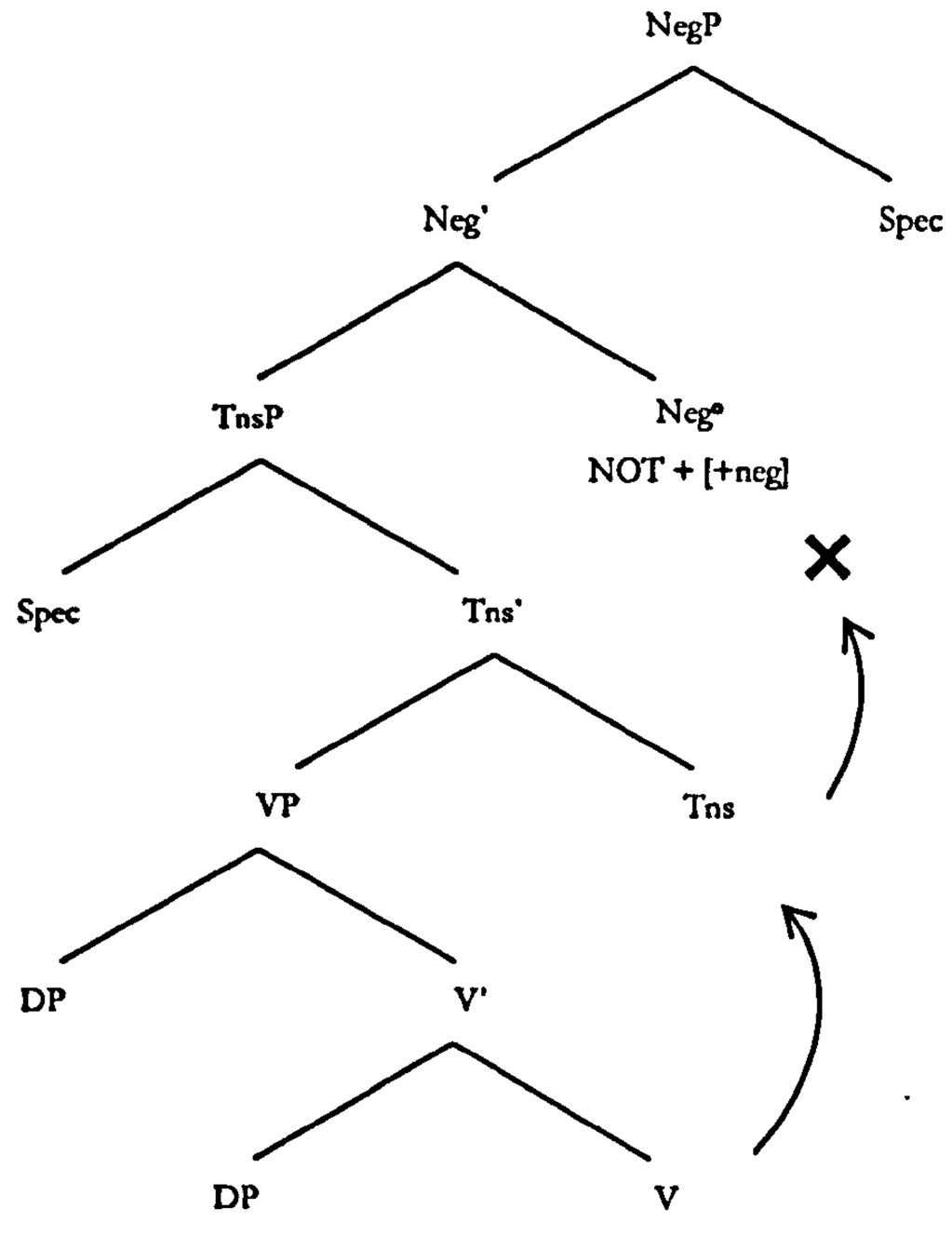

Figure 6-2. The syntax of the negative particle and negative head movement

Based on our assumptions that the [+neg] feature is syntactic and that movement of the verb to the Neg° position is not allowed, the ENG structure looks similar to that of ASL (see section 2.3.3.2). On the contrary, ENG differs from American, German and Catalan sign languages in relation to the obligatory status of the negation head movement in these languages (see section 2.3.3.2). Clauses like (a.2), (b.1) and (b.2) are ungrammatical in American, German and Catalan sign languages whereas in ENG, the negation head movement is permitted to have clausal scope by occupying this Neg° slot together with the negative particle and without spreading over the manual part of the clause (b.1 and b.2). In a similar way, the negation head movement takes clausal scope over a clause with only non-manual negation by spreading over the verb (b.3).

_____h1
6.4.3.1-b.3 (7) ME ENTERTAIN

I won't have any fun.

The examples (b.1, b.2, b.3) demonstrate that in non-manual negation clauses the negation head movement can occur in post-verbal position or it can spread over the verb of the clause in order to have clausal scope. In non-manual negation clauses a negation head movement may also spread over the whole clause (b.4), but our set of data does not provide any examples where the negation head movement spreading does not include the verb under the spreading area (b.5).

_____h1
6.4.3.1-b.4 (80) INDEX2 HURRY

Don't be in a hurry.

_____h1
b.5 (80x) ? INDEX2 HURRY

A clause having the same structure as (b.5) was not found in our database. It is perceived that its structure is not well-formed in terms of clausal negation. It seems that the main reason for this is that negation head movement does not occupy a clausal scope position. The database also provides some clauses of non-manual negation with the following structure (c.1, c.2, c.3).

_____topic _____h3
6.4.3.1-c.1 (44) BUT FATHER HIM FAULT-BE FINISH

But it was not my father's fault at all.

_____topic _____h3
c.2 (507) SEE-OUT-WINDOW | SAME SEED-SMALL GROW-HIGH NOTBshk

(He) looked out of the window and it was the same small seed-plant which did not grow high.

_____topic_____h1
c.3 (339) VILLAGE AREA JOB WORK CANNOT

(He) couldn't work in any job around the village.

In the above clauses the negation head movement spreads over the negator and the verb. 'Partial' spreading does not affect the scope of negation in either clause. In these particular clauses a topic marker occurs in the initial parts of the clauses, which seems to prevent the negation head movement from spreading over the whole clause.

Finally, negation head movement data exemplifies how a head movement perseverates and spreads over two adjacent negative clauses as in (d).

_____h1
6.4.3.1-d (165) WORK **NOTB** | EMPLOY **NOTB**

I don't work anywhere and nobody gives me a job either.

Example (d) includes two clauses with negative clausal scope. The clauses are coordinated and 'conjoined' and refer to the same core topic. Therefore, it would be possible for this particular structure to allow a negation head movement to have scope over two negative clauses by spreading over the two negators. In addition we would expect a similar construction in *neither-nor* sentences.

6.4.3.2 Negation head movements and constituent/ local scope

The use of negation head movement in clauses where the negator has local scope is not obligatory (a.1, a.2). In the previous section we suggested that the manual negator and the negation head movement occupy the same Head position (Neg°) within the negative phrase.

_____h1
6.4.3.2-a.1 (58) FIRST GO-OUT ME **NOTB**
a.2 (58x) FIRST GO-OUT ME **NOTB**

(You) should go out first, not me.

In section 6.4.2 it was explained that (a.2) is an example of constituent negation scope. Clause (a.1) shows how the example appears in the database with the negation head movement. It is noticeable that negation head movement spreads over the area of the scope of the manual negator. If the spreading extends further the clause will be possibly ill-formed (a.3) because the scope will be clausal and constituent at the same time.

_____h1
6.4.3.2-a.3 (58x) ? FIRST GO-OUT ME **NOTB**

(You) should not go out first, not me.

The oddness in the above clause is the result of the negation head movement spreading. The negation head movement co-occurs with the manual negator which is prevented from clausal scope by the presence of (ME). On the other hand, the negation head movement includes the verb of the clause under its spreading area. The scope of the negation head movement and the scope of the manual negator do not coincide and this seems to create the problem in (a.3). An alternative reading of the clause as 'neither-nor'

(Neither should you go out first, nor should I) is not possible since the manual negator is prevented from having scope over the main verb of the clause (GO-OUT).

In a similar way (MONEY) in the next clause, restricts the negator and the negation head movement from having clausal scope and consequently the head movement scope remains local and identical to the scope of the manual negator (a.4).

_____h3
6.4.3.2-a.4 (69) INDEX3 SAY MONEY NOTHING
He said (he will do it) without money.

If the negation head movement occupies the same position as the manual negator within a negative phrase (NegP), it is expected that in the absence of the manual negator the head movement can have constituent negation (b.1). However, it seems that the meaning of (b.1) remains ambiguous.

___h1
6.4.3.2-b.1 (58x) FIRST GO-OUT ME
(You) should go out first, not me.
(You) shouldn't go out first, (It is) me (who should go).
____h1
b.2 (58x) FIRST GO-OUT ME
(You) should go out first, not me.

The above clauses differ only in the spreading of the negation head movement. (The database does not provide any example like b.1 or b.2). However, clause (b.1) seems to be ambiguous because it is not clear whether the negation head movement is functioning as constituent negation or not. It seems that something is missing, probably the manual negator. A possible explanation for this could be that the negation head movement does not have the same status as a manual negator. This status difference is not obvious in clausal scope because scope over the verb forms indisputable negation. However, if the negation head movement occurs only over the position of the non-overt negator (after the negated sign), the constituent negation interpretation becomes clear again (b.2).

In the above clause, if a topic marker occurs over the main clause, the negation head movement can occur over the pronoun without any complications (b.3).

_____topic ____h1
6.4.3.2-b.3 (58x) FIRST GO-OUT *ME*
(You) should go out first, not me.

The topic marker in the above clause is realised by brow raising and an intense eye gaze and resolves any ambiguities concerning the occurrence of the negation head movement over the pronoun. The negation head movement in (b.3) has local scope. Nevertheless, it remains unclear why negation head movement spreading over the constituent results in meaning ambiguities in relation to the scope of negation (b.1). A possible explanation is that negation head movement that extends only over the 'target' constituent does not really indicate the actual scope position (Neg° position within the negative phrase) that the head movement occupies. On the contrary, a negation head movement expanding over the verb sufficiently indicates its scope position at syntactic level in non-manual negation clauses. Absence of any other constituents eliminates any ambiguities that would be raised. ENG makes use of a negation head movement in order to construct 'short' expressions of negation with a constituent and head movement only. Thus, although in clause (b.1) the scope of negation is not clear, it seems that short expressions, such as *not me* (c.1) and *not everyday* (c.2), do not create any scope problems.

6.4.3.2-c.1 ___h2
ME
_____h1
c.2 EVERYDAY

To conclude, analysis suggests that occurrence of a negation head movement over the non-overt position of a manual negator allows the negation head movement to take scope (clausal or constituent).

6.4.4 Scope summary

Scope analysis in this study has been based on the framework provided by generative grammar. According to this framework, a negation sign will have clausal scope if it fulfils the NEG-criterion. Based on the previous analysis of clause negation, it has been suggested that the negative phrase has a Head-final structure. It also appears that the post-predicate position of the negator fulfils the NEG-criterion at the level of surface structure. This means that a negative lexical item in this position can take clausal scope. In terms of syntax, it has been suggested that the Head of a negative phrase (Neg°) is occupied by a negative particle and also a syntactic [+neg] feature which is overtly expressed by the negative head movement. As a result, spreading of the negation head movement over manual parts of the clause and not over the negative particle creates complications related to the scope of negation. Both these elements occupying the Neg°

position are optional. Spreading of the negative head movement over the verb of the clause is also optional.

This proposal is further supported by examples of non-manual negation clauses where the absence of a manual negator does not change the status of the negation head movement which is allowed to take clausal scope. Restrictions and obligations concerning the scope of negation apply equally to both manual and non-manual negators. In cases where a negation head movement is used as the sole negator having constituent scope, some ambiguities arise if the negation head movement spreads over the negated element.

We consider that the post-predicate position is a scope position for clausal negation. In the case of the absence of non-manual markers (negation, topic, etc.), where the complement of the verb is an embedded clause then the scope of the negative particle of the NegS will be over the embedded clause and not over the matrix clause.

6.5 Negative concord, double negation and negative polarity items

6.5.1 Negative concord and double negation

Negative Concord (NC) and Double Negation (DN) are two contrasting linguistic phenomena. In negative concord, negation signs appear in the same clause without cancelling each other out, thus expressing a single negation. In double negation, where more than one negation signs appear in the same clause, they do cancel each other out, and the reading of the clause is positive. Standard English exhibits double negation, whereas Modern Greek exhibits negative concord (NC). Our data analysis up to this point clearly indicates that ENG is a negative concord language. Following Pfau and Quer's (2003a) categorisation, two types of negative concord are distinguished:

a) Negative concord between non-manual components and the manual sign of negation.

b) Negative concord between two different negation signs.

Both types of negative concord are found in ENG. The first type can be seen in the following clauses (a.1, a.2).

h1
6.5.1-a.1 INDEX1 GO NOTB

I won't go.

h1
a.2 INDEX1 GO WANT-NOT

I don't want to go.

The next clauses present negative concord between two different manual signs, a NegS and a NegInc (b.1, b.2, b.3).

6.5.1-b.1 INDEX1 KNOW-NOT NOTHING

I don't know anything at all.

b.2 GOAT MILK MILK-PUMP NOTHING CANNOT

The goat couldn't produce any milk at all.

b.3 AGAIN GO NOTB NOTHING

I won't go again at all.

As clause (b.3) demonstrates, NOTHING often appears in the same clause as a negative particle in order to express absolute negation. Furthermore, clauses negated by two different negation signs can also be accompanied by negation head movements. The negation head movement can spread over the whole clause (c.1), over a single manual (c.2) negator, or over both manual negators (c.3).

h2
6.5.1-c.1 INDEX1 KNOW-NOT NOTHING

h2
c.2 INDEX1 KNOW-NOT NOTHING

I don't now anything at all.

h1
c.3 AGAIN GO NOTB NOTHING

I won't go again at all.

All the examples above, which are examples of negative concord with two different manual negation signs, also demonstrate that the negators occupy post-verbal position. As was indicated in the previous section (see section 5.3.1.4), a NegS that occurs with a NegInc is allowed to move from its post-verbal position to a pre-NegInc position, immediately adjacent to NegInc. If the combination of manual negation signs includes a negative particle and a NegS, the NegS follows the negative particle.

At this point it should be noted that negative concord with two different negation signs is also formed with EMPTY (d).

6.5.1-d (476) FACE-SAD | TAIL EMPTY NOTHING

(The crow) was very sad. It had no tail at all.

It is interesting that although EMPTY (d) forms negative concord of the second type, it is not found in clauses with the first type of negative concord (manual signs and non-manual features of negation) (see section 5.4.1.2.4). This observation further supports our initial suggestion that the sign in question is under grammaticalisation process.

6.5.2 Negative polarity items

Negative polarity items (NPIs) are words or expressions whose use is restricted to a specific syntactic setting, namely a negative clause. Presence of these words in non- negative clauses causes them to be ungrammatical. Analysis of negation has not revealed the use of this category of items in ENG. As far as it can be ascertained there are no reports of the use of negative polarity items in other sign languages. This is an area where further research is needed.

6.6 Summary of the manual signs status and the scope of negation

This chapter has explored aspects of scope and meaning in relation to clausal and constituent/local negation. Three different groups of signs have been examined: negative particles, negation signs and signs with incorporated negation. The function of these signs in different clausal structures has been examined. Negative particles are used to form clausal negation and constituent negation. They are also found in rejection/disagreement clauses, negative interrogatives and negative imperatives. In the last two clause types, the negative particle is found to occupy a pre-predicate position. In negative interrogatives the final position of the clause is occupied by a wh-sign. A negative particle can also negate a sequence of verbs under specific circumstances. In this case no other argument or complement of the verbs can be realised overtly. In general, there is no grammatical distinction between the different forms of the negative particle, and all can be used in different types of clause. Based on anecdotal observation, it seems that the phonetic/phonological environment during signing possibly influences the choice of a negative particle. In other sign languages (Israeli Sign Language and Swedish Sign

Language) with more than one basic negative particle, these particles exhibit specific grammatical functions (see section 2.3.1.3).

The negative quantifier NOTHING is found in both clausal and constituent negation, used as a pronoun and as an adverb. NO-WAY, a negative particle which expresses emphatic negation, is found with a similar distribution in clausal and constituent scope structures. However, the database provides examples of its use only in clausal scope structures. This may be because the sign has not been fully grammaticalised. NEVER also only occurs with clausal scope.

Signs with negative incorporation are subdivided into three groups: negative modals, negative existentials and the remainder of signs with negative incorporation. NegInc is always construed as clausal negation.

In this chapter the scope of negation in ENG was also analysed. The analysis of scope involved the conditions and structures which allow or prevent a negative particle from having clausal scope. Negative particles and the negative quantifier NOTHING are the only signs found in both clausal and local scope environments.

Analysis of the negation head movement indicated that the negation head movement occupies the same Head position (Neg^0) as the negator in the negative phrase (NegP). Therefore, the negation head movement follows the same obligations and restrictions that apply to the manual negator, and it can have negative scope in the same constructions as a manual negator can. This is valid in all cases except in specific examples of constituent negation. A negation head movement used in local negation as a sole negator over a constituent creates ambiguities in interpretation. When a manual negator is present no ambiguities are raised in relation to the scope of negation.

In general, spreading of negation head movement is of specific importance in constituent negation. The negation head movement always spreads over the local domain. If spreading differs, meaning problems are raised because of conflicting interpretations of the scope. As a result, the manual negator is interpreted as having local scope and the negation head movement is interpreted as having clausal scope. In clausal negation, spreading of the negation head movement is not so strict. Spreading includes the manual negator when it is overt. If not, meaning complications arise unless the negation head movement spreads after the manual negator (rightwards). Depending on the presence of

other non-manual features, topic marker, conditional marker, etc., the negation head movement can spread over the whole clause or over the partial clause, expanding from its initial position over the manual negator. Consequently, in clausal negation the scope and the spreading of the negation head movement do not always coincide. In clauses with only non-manual negation, spreading which does not include the verb will raise meaning problems related to the scope of negation (clausal versus constituent) unless the negation head movement spreads after the manual part of the clause. This is the position that a manual negator would take if it were present.

Concerning the status of negation head movements, the above analysis clearly indicates that they are grammatical elements. However, the pattern of their spreading, as presented in the previous chapter, remains unexplained. It is suggested that negation head movements in ENG do not have the same spreading patterns (onset/offset) as the grammatical elements described in ASL. The optionality of negation head movements in ENG negation partially explains these spreading characteristics. Because negation head movements are optional elements, they are also found to be in a loose relation to the manual parts of a clause.

Finally, the data demonstrates that ENG is a negative concord language and structures of double negation are not valid. ENG expresses negative concord either between a non-manual feature and manual negation or between two different negation signs. Possible combinations of manual signs are a sign with negative incorporation and a negation sign or a negative particle and a negation sign. When a negative particle is combined with a negation sign, the latter has to follow the negative particle. In all combinations, manual signs are placed at the end of the clause. When two manual negation signs occur, the use of the negation head movement is optional. Whenever a negation head movement is present, it can occur either over one or both of the manual negation signs, or it can spread over the whole of the clause. No items of negative polarity have been identified in ENG, but this is a topic which needs further investigation.

7 DISCUSSION AND CONCLUSIONS

7.1 Introduction

The present thesis has explored a range of morphophonological and syntactic aspects of negation in ENG. The analysis was based on a single database which was then exploited in two different ways. Here, the discussion proceeds in relation to the findings of these two databases and provides the conclusions drawn by the current study. Discussion of the morphological analysis considers the initial research questions posed about the means and mechanisms of negation available in ENG and their possible combination and interaction. Discussion of the analysis of clauses considers the structure of negative clauses and the scope of negation in relation to different negation constructions. A third issue is the relationship of ENG to spoken Greek and their interaction. The limitations of the study are also referred to. Finally, additional conclusions are presented, although not specifically related to the scope of the current study.

7.2 Morphological analysis

The morphological analysis confirmed the initially hypothesised categorisations of manual and non-manual signs of negation employed in ENG. Manual signs can be classified into three main groups: negative particles, negation signs and signs with negative incorporation. Non-manual negation features are classified into two main groups: negation head movements and negation facial expressions. There are some discrepancies among European sign languages in relation to the above categorisation, but these three sign categories and two groups of non-manual features are found in all sign languages that have been studied to date.

7.2.1 Manual negation signs

As already established manual negation signs are classified into three groups. Negative particles in ENG form one of these three groups. ENG has three negative particles: NOTB, NOTG and NOTBshk. Zeshan's (2004) typological study also reports that all 38 sign languages in her sample use uninflected negative particles. Our data analysis revealed no semantic basis for the distribution of these particles in ENG. This finding differs from

reports in other sign languages like Swedish Sign Language, Indo-Pakistani Sign Language and Israeli Sign Language (see section 2.3.1.3). It is noted by Bergman (1995) and Zeshan (2003b, 2004) that the negative particles in these sign languages differ semantically.

Another classified group of manual negation in ENG is negation signs with meanings like *not yet, nothing, nobody, never.* These along with use of a negative particle *no* have been reported in ASL, BSL, Swedish Sign Language, German Sign Language, Catalan Sign Language, Argentinean Sign Language, Brazilian Sign Language, Jordanian Sign Language, Turkish Sign Language, Chinese Sign Language, Indo-Pakistani Sign Language and Russian Sign Language (see section 2.3.1.1).

The remaining classified group of manual negation markers in ENG is negative incorporation. More than half of the signs with negative incorporation in ENG share a common outward movement of the hand, a characteristic described initially for ASL by Woodward (1974). Signs with negative incorporation are reported in ASL, BSL, ENG, Argentinean Sign Language, Brazilian Sign Language, Chinese Sign Language and Russian Sign Language (see section 2.3.1.2). A common characteristic for all signs with negative incorporation is that they tend to be experiential.

The initially hypothesised categorisation did not include the use of suffixes in ENG. However, during coding it became apparent that suffixes are found in ENG. ENG makes use of two affixation processes (see section 4.5.3). The first process is affixation of a sharp pronation movement of the forearm and here the verb retains its own handshape. Whereas the second process, which is the use of the negative particle NOTB as a bound morpheme, the verb ends with a B or 5 handshape. The first process is similar to Woodward's (1974) description of negative incorporation in ASL and to Zeshan's (2004) description of the affixation of an outward movement in Finnish Sign Language. The second process looks similar to ASL (Beaker and Cokely, 1980), Chinese Sign Language (Yang and Fischer, 2002) and Turkish Sign Language (Zeshan, 2003a). In addition, in Turkish Sign Language both a free morpheme and a bound morpheme are cliticised for the formation of a sign with negation (Zeshan, 2003a). What is described as negation with a bound morpheme in Turkish Sign Language looks morphologically similar to the affixation process in ENG since the final handshape in Turkish Sign Language resembles the particle NOTB.

An additional affixation process is also used in ENG, this is adding the flexing movement of EXIST-NOT/HAVE-NOT) (see section 4.5.3). Thus, for example, SEE can be turned into its negative aspectual form HAVEN'T-SEEN. No evidence was found of other signs patterning in the same way, with an affix forming a negative aspectual sign. It was also impossible to determine from the database if there are any conditions that make some verbs possible candidates for affixation. Signs which can be affixed comprise a separate group because they can appear both in affixed and un-affixed forms. An affixation process for the derivation of negative forms has also been reported in some other sign languages. Baker and Cokely (1980) describe how ASL binds two signs in order to construct negation like NEVER^HEAR, NOT^HERE, WHY^NOT, etc. In Chinese Sign Language (Yang and Fischer, 2002) a negative handshape is affixed to a sign in order to construct a compound sign. According to Zeshan (2004), the same negative handshape is used in Hong Kong Sign Language. She also reports the use of affixation processes in Israeli Sign Language (see section 2.3.1.3). Despite these examples, Zeshan notes that the affixation process is not widespread among sign languages. Our data analysis exhibits that ENG makes use of affixation in order to construct negation.

To conclude, at both levels of the analysis, the study has shown that ENG expresses negation by using both manual negation signs and non-manual features of negation, either independently or in combination. The analysis identified three groups of manual negation signs (negative particles, negation signs and signs with negative incorporation). In addition, it was demonstrated that ENG makes use of two affixation processes for the formation of negative signs.

7.2.2 Non-manual negation signs

7.2.2.1 Negation head movements

Negation head movements form one of the two main groups of non-manual negation features. ENG makes use of three different negation head movements: the headtilt (h1), the headshake (h2) and the headturn (h3). The use of these negation head movements in ENG has already been reported in a study based on the same data (Antzakas and Woll, 2001). These negation head movements have also been reported in other sign languages (see section 2.3.1.1). In particular, the headtilt has been reported in Jordanian Sign Language, in Turkish Sign Language and in the sign language used in Lebanon. A similar negation head movement is reported in Argentinean Sign Language (see section 2.3.2.1).

The headshake is the most commonly reported negation head movement across sign languages. It was initially reported by Stokoe (1960) in his description of ASL. Since then the use of the headshake for negation has been reported in many sign languages around the world (see section 2.3.2.1), while the headtilt seems to be geographically restricted to the area of the East Mediterranean.

The headturn was initially reported by Sutton-Spence and Woll in BSL (1999). This negation head movement has been also been described in Jordanian Sign Language, Chinese Sign Language, Irish Sign Language, Belgian Sign Language, Russian Sign Language, and Quebec Sign Language (see section 2.3.2.1).

7.2.2.2 The distribution of negation head movements

The use of negation head movements in ENG is not obligatory for any group of manual signs, unlike many other sign languages where a negation head movement is an obligatory element of negation (see section 2.3.3.2).

There are important differences in the co-occurrence of the various manual negators in over 80 percent of the tokens with negation head movement. The choice of negation head movement is phonetically consistent with the movement of the sign (see section 4.4) Thus, when the movement of the sign is upward or side-to-side, the choice of the negation head movement is predictable. The signer will choose the negation head movement so that the movement of the head will be similar to the movement of the sign: headtilt for an upward movement and headshake or headturn for a side-to-side movement. Nonetheless, a 'dissonant' negation head movement is also accepted. This is the first report of phonetic influence on the selection of negation head movements when in conjunction with specific manual signs. No similar data from other sign languages is available. This pattern has features which seem to correspond to vowel harmony in spoken languages.

7.2.2.3 Facial expressions of negation in ENG negation

Negation facial expressions are categorised as affective elements and not as grammatical means of expressing negation in ENG. All features of negation facial expression described in ENG have also been reported in other sign languages, this is with the exception of certain mouth actions which are related to specific signs of ENG. As was demonstrated in the second chapter, in which all facial expressions are presented (section 2.3.2.2), raised

brows (f1-br) are also reported in Turkish Sign Language, in the sign language used in Lebanon and in Jordanian Sign Language. Lowered brows with a frown and narrowed eyes (f2-bl) are reported in ASL, Sign Language of the Netherlands, Argentinean Sign Language, Chilean Sign Language and Chinese Sign Language. Closed or almost closed eyes (f3-ec) and corners of the mouth turned down (f4-md) are reported in ASL, BSL, Swedish Sign Language, Sign Language of the Netherlands and Argentinean Sign Language. Raising of the upper lip and pushing the lower lip outwards (f5-lo) is reported in ASL, Swedish Sign Language, Sign Language of the Netherlands, and Argentinean Sign Language. In addition, Chinese Sign Language has been reported to use f3-3ec (closed or almost closed eyes) and Jordanian Sign Language has been reported to use f4-md (corners of the mouth turned down). The use of similar negation facial expressions is widespread among sign languages. The only exception to this is the use of brow raising whose distribution appears to be restricted to the East Mediterranean.

Analysis of ENG revealed no pattern of relationship between negation facial expression and specific signs of negation or negation head movements (see section 4.3.8). Our initial observation about a close relationship between the headtilt and the brow raising was supported by an examination of the co-occurrence of these features. Hence it was found that in more than one third of the occurrences of the headtilt in ENG, brow raising accompanies the negation head movement. However further statistical testing did not reveal any statistically significant relation. Although Zeshan (2004, 2003a) does report that in Turkish Sign Language and in the sign language used in Lebanon, the use of the headtilt may be related to the use of brow raising.

Contrary to our initial categorisation of mouth actions (f6) as affective elements, the data analysis revealed that particular negation facial expressions: brow raising and mouthings/word pictures are the sole negators in a small number of examples in ENG (see sections 4.3.5 and 5.5.6). Although these are rare cases in ENG, there are in fact reports of the use of negation facial expressions as a negative marker in both ASL (Bellugi and Fischer, 1972; Veinberg and Wilbur, 1990) and also in German Swiss Sign Language (Boyes-Braem, 2001). In particular, the use of negation facial expression features in ENG is similar to the use of mouthing *nicht* (not) in German Swiss Sign Language (see section 2.3.2.2). Following Vogt-Svendsen's (2001) analysis of mouthings as free morphemes, it seems that negation mouthings in ENG occasionally occur as free morphemes which

change the polarity of verb of the clause and consequently the polarity of the whole clause.

Despite our initial distinction between mouthing and word pictures in negation, the data analysis does not provide any evidence that these features do in fact differ in relation to ENG negation.

To conclude, ENG analysis exemplified the use of two groups of non-manual negation features which are head movements and facial expressions. The choice of the negation head movement in many cases mirrors the movement of the sign of negation. However, none of the manual negation signs are obligatorily related to any of the negation head movements or the negation facial expressions.

7.3 Grammatical analysis

7.3.1 Word order in negation

Analysis of the ENG data provides strong evidence that negative particles and negation signs occupy a post-predicate position within a clause[47]. In the vast majority of the cases this position coincides with clause-final position. This suggests that negative particles and negation signs retain this post-predicate position even if the verb is non-overt. Therefore if this is the case it would seem that the absence of the verb does not affect the scope of the negator.

Similar to ENG, the post-predicate position of the negative particle has also been reported in German Sign Language as well as in Catalan Sign Language and in Jordanian Sign Language (see section 2.3.3.1). In all these languages the post-predicate position coincides with clause-final position.

Unlike ENG, in ASL the negative particle occupies a pre-verbal position (Neidle et al., 2000), whereas the negative quantifier NOTHING occupies a post-verbal position (Padden, 1981). Baker and Cokely (1980) note that negation signs most often occur in pre-verbal position but can also be found in clause-final position for reasons of emphasis (see section 2.3.3.1).

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[47] This does not apply for sign NO-As since it does not have equal status with the other NegS for reasons already discussed (see chapter 4.5.2).

According to Bergman (1995), in Swedish Sign Language the three negative particles (NOT, FUT-NEG, PERF-NEG) have different syntactic positions within a sentence. The PERF-NEG particle has a standard pre-verbal position, whereas the particles NOT and FUT-NEG occur in both pre-verbal and post-verbal position. The syntax of these two particles is affected by their grammatical use and the type of the verb that is negated. The post-verbal position of FUT-NEG is also sentence-final (see section 2.3.3.1). Negation particles in ENG do not perform this functional variety found in the negation particles of Swedish Sign Language.

In a similar way to the Swedish Sign Language, the negative particle in Brazilian Sign Language is found in pre- and post-verbal positions (Quadros, 2003). In this sign language, the syntax of the negative particle is affected by the class of the negated verb. Once again the post-verbal position coincides with sentence-final position (see section 2.3.3.1). In addition, Zeshan (2004) notes that in 27 of the sign languages she studied, a clause-final position for the negative particle is acceptable. In some of these languages clause-final position is the only grammatical position. In this respect, ENG places the negator in a position attested extensively among sign languages. Functions of the negative particles like those described in Swedish Sign Language or Brazilian Sign Language were not evident for ENG negative particles.

A negator (negative particle and NegS) is also found in ENG in a pre-predicate position in specific types of clauses (see Table 5-3). When a negator occupies a pre-predicate position in such a clause, it takes the position immediately in front of the verb.

Detailed analysis of ENG indicates that the negative particle, NegS and NegInc can occupy a non-final position in a clause. A negative particle or a NegS can be followed by specific grammatical groups of signs: temporal adverbs, FINISH, and wh-signs and pronouns in cases of wh- or pronoun-copy. It is not clear for the moment why these items are permitted to follow the negator. Clause analysis indicates that negative incorporation (NegInc) does not have a fixed syntactic position, unlike the negative particles and the negation signs. The only exception to this is EXIST-NOT when used as a negative aspectual marker. In this case the sign occupies a post-verbal clause-final position. Nevertheless, in the majority of cases, signs with negative incorporation appear at surface structure in a position similar to the position of the negative particles. When they are in such a position, the only the elements which are permitted to follow are those

listed in Table 5-3. No comparable data was found in sign language literature relating to NegInc signs and their position within the clause.

Our analysis also shows that the use of a negative particle or a negation sign in ENG is not obligatory for the construction of a negative clause due to the fact that a negation head movement is sufficient for the expression of negation. ENG is in line with other sign languages in this respect.

A further outcome of the study concerns the use of negation copy in ENG. A copy of the post-predicate negative particle can appear in clause-initial position. This resembles structures where a wh-sign or a pronoun is copied. Examples of negation copy are reported in ASL, Brazilian Sign Language, Argentinean Sign Language and Jordanian Sign Language (see section 2.3.3.1).

Finally, our data analysis shows that ENG, like other sign languages (see section 2.3.3.2), uses structures of two basic types of negation clauses: clauses with manual negation signs and clauses with non-manual negation. In clauses with manual negation, the occurrence of non-manual features is optional. In clauses with only non-manual negation, negation is expressed by negation head movement and no manual sign of negation is present. The use of negation facial expressions is optional for both types of clauses.

7.3.2 The occurrence and spreading of non-manual features

The findings in relation to the use of non-manual features in negation clauses were also of interest. First of all, and most importantly, negation head movements, as well as non-manual features of negation, are not obligatory elements for a well-formed negative clause. This observation is valid for all categories of manual negation signs: negative particles, NegS and NegInc. The optionality of non-manual features was confirmed in both morphological and syntactic analysis. However, negation head movements accompanied more than half of the manual negation clauses. This widespread use of negation head movements suggests that head movements have a momentous function within a negative clause in ENG.

The optionality of negation head movements in ENG is counter to reports of the compulsory nature of negation head movements in other sign languages (see section 2.3.2.1). The absence of a negation head movement over the negative particle, results in

ungrammatical sentences in these sign languages (see section 2.3.3.2). For example, in German Sign Language the negation head movement has to spread over the negative particle and the verb otherwise the structure is ungrammatical. In ASL the headshake has to spread over the negated verb phrase (VP) in sentences with only non-manual negation. Spreading over only the verb renders this type of negation ungrammatical in ASL; whereas it is grammatical in German Sign Language and Catalan Sign Language. Spreading behaviour in the above sign languages is regulated by the syntax of these languages in general e.g. SVO or SOV.

Padden (1981) provides an analysis of the use of NOTHING in ASL. It appears that a negation head movement is an obligatory element for this negative quantifier in ASL. Once again, this is not the case in ENG, since the occurrence of a negation head movement is optional for all negation signs. However, there are similarities between negation head movement in ENG and in other sign languages; when a negation head movement appears in a sentence, it has to occur over the manual negation sign. The only alternative is for it to occur after the negator (rightwards) for reasons of emphasis. If the negation head movement spreads to parts of the sentence and the negator is not included, it seems that the clause is not well-formed and it is possible that meaning ambiguities will arise. This view is also supported by examination of the spreading pattern of the negation head movements. In a similar way, in clauses with only non-manual negation, the negation head movement has to occur over the verb in order to avoid ambiguity. As in the case of a manual negation clause, a post-clausal appearance of the negation head movement is sufficient to negate the preceding clause (Antzakas, 2006). Similar observations have been reported in BSL, Jordanian Sign Language, Chinese Sign Language, Turkish Sign Language and Irish Sign Language (see section 2.3.2.1).

Our analysis has also shown that, although negation head movements do not necessarily have to coincide with a manual negator in terms of onset/offset, negation head movement can spread over either the whole clause or parts of it. In a similar way, in clauses with only non-manual negation, the negation head movement which occurs over the verb can expand to additional parts of the clause or over the whole clause. In both manual and non-manual negation clauses, the spreading appears to have a pattern; starting from the negator, then to the verb, then the verb phrase, and finally over the whole clause. As was noted above, it is not clear how and to what extent syntax regulates the spreading within a clause. The occurrence of other non-manual features can affect the spreading of

the negation head movement. Liddell (2003) notes that co-occurrence of a topic marker with a negative marker results in ungrammatical clauses in ASL. In the present work it was not possible to thoroughly examine these co-occurrences because non-manual features with no relation to negation were not transcribed in the SignStream database. Examination of the database, however, provides examples where other grammatical markers also occur in different parts of the negation clauses (see ex. 6.4.3.1-c). It seems that Liddell's (2003) proposal is also valid in ENG and non-manual grammatical markers do not co-occur. The existence of other grammatical markers may confirm the validity of our observation about the spreading pattern of negation head movements. In this case it is the existence of other non-manual markers that prevent negation head movement from spreading over the whole clause.

The different negation head movements of ENG have equal status in terms of spreading. All negation head movements can be used for all types of clauses and can spread over the negator, part of the clause or also the whole clause. BSL differs in this aspect. The headturn which is used as a negator does not spread over the whole sentence (Sutton-Spence and Woll, 1999).

An additional major finding in ENG concerns the spreading of negation facial expression features in clauses with manual negation. Similarly to negation head movements, negation facial expressions occur over the negator. If not, we consider the meaning of the clause to be unclear. When negation facial expressions appear in a clause with a negation head movement, both non-manuals have to coincide; otherwise the clause becomes only partially acceptable. However, with regard to head movement and facial expression in negation, it is possible for spreading to have a loose relation in terms of onset/offset. No similar data about this onset/offset relation between the negation head movements and the negation facial expressions have been reported in other sign languages.

Negation facial expressions are not grammatical elements and therefore are not sufficient to express negation alone in ENG. Similar observations have been reported in BSL, in Swedish Sign Language and in Swiss German Sign Language (see section 2.3.2.2). Nevertheless, the analysis of non-manual negation clauses in ENG revealed that mouthings (f6-m) and word picture (f6-wp) can be used for expressing negation in the absence of any negation head movements. Thus, signers may mouth (f6-m) the negative particle of spoken Greek *δεν* (den) or *μην* (min) in order to change the polarity of the verb. This expression resembles the findings reported for ASL (see section 2.3.2.2). In these

examples the negative meaning of the clauses was assigned by facial expressions and mouth actions. In general, other facial expressions apart from mouth actions have not been reported to mark negation. Exceptions to this have been reported in Turkish Sign Language (Zeshan, 2003a) where puffed cheeks can mark negation in the absence of negation head movement or any other manual negator (see section 2.3.2.2).

Investigation of non-manual spreading of negation revealed that spreading in ENG is related to the manual negator and to specific manual parts of the clause. However, the onset/offset of the negation head movement and the onset/offset of the manual elements are only loosely related. Spreading often expands to adjacent non-negative clauses without affecting their polarity. The situation is the same for negation facial expressions. As far as negation facial expressions are concerned, this was to be expected because they are regarded as affective features. In the case of negation head movements, which are considered to be grammatical non-manual markers, the above findings contrast with previous discussion of grammatical non-manual markers. Studies of ASL (Bahan, 1996; Baker-Shenk, 1983 and 1985; Baker and Cokely, 1980; Baker and Padden, 1978; Liddell, 1980) note that grammatical non-manual components such as negation head movements are always firmly linked to the signs over which they take scope. Bahan's (1996) analysis of anticipation of the negation headshake in ASL also provides a close relation between the negation headshake and the manual sign. This relation of manual and non-manual components is realised by the firm onset/offset relation between the head movement and the correlated signs. In this respect the findings for ENG negation differ from ASL reports in this respect. This does not indicate that negation head movements in ENG are not grammatical features but it clearly suggests that negation head movements in ENG and ASL differ, and that rapid and close temporal linkage of onset/offset is not essential in ENG in order for a non-manual marker to have grammatical status. It is also possible that this relation between manual and non-manual elements in ASL is not as rigorous as has been proposed by the researchers. To the best of our knowledge, ASL studies do not provide an elaborate examination of non-manual features of negation based on naturalistic data, as has been done in this thesis. It might be possible therefore, that spreading of negation non-manual features in ASL is not as closely tied to the manual signs of negation as is proposed.

To conclude, our data analysis exemplified that the occurrence of non-manual features in negative clauses is related to the manual negation sign in the clause. Both head

movements and facial expressions of negation have to spread over the manual negation sign of the clauses in which they occur. Otherwise, problems concerning the structure of the scope and consequently the meaning of the clause arise. In clauses with only non-manual negation the same restrictions and effects apply in relation to the position of negation head movements and negation facial expressions over the verb of the clause. However, in clauses with only non-manual negation, the negation head movement may not expand over the verb if it occurs immediately after the clause.

7.3.3 The status and clausal position of manual signs of negation

The most common way to construct a negative clause in ENG is to use a negative particle. Negative particles are sufficient to express negation without the co-occurrence of any other non-manual features of negation. In contrast, in ASL, German Sign Language and Catalan Sign Language, a particle which is not accompanied by a negation head movement forms an ungrammatical negative clause (see section 2.3.3.2). ENG make use of three basic negative particles having the meaning of *no/not*. NO-WAY functions in a similar way to the negative particles in syntactic terms, and expresses emphatic negation. Our data analysis leads to the conclusion that NO-WAY has not yet been fully grammaticalised and therefore does not behave in the same way as the other particles.

Both levels of the negation analysis revealed no grammatical distinction among the negative particles. All particles in ENG can be used in different clause types. As noted above, all sign languages researched to date are capable of expressing negation without manual negators by using negation head movements (see section 2.3.2.1).

The use of negative particles with different meanings has been reported in various sign languages (Swedish Sign Language, Indo-Pakistani Sign Language, etc.) (see section 2.3.1.3). However, based on anecdotal observation, it is suggested that the choice of negative particle in ENG may be influenced by the phonetic/phonological environment during signing. It is therefore possible that the phonological structure of the preceding or the following sign may influence the choice of a specific negative particle.

Negative particles in ENG are used in both clausal negation and constituent negation (see section 6.2.1). Furthermore, negative particles are used in negative interrogatives and in negative imperatives. In both types of clauses the particle can be in both pre- and post-predicate position. In wh-questions, the wh-sign is allowed to occupy the

post-negator clause-final position. No data is available in relation to the use of negative particles in other sign languages.

Negative imperatives in ENG use variants of the negative particles. The movement of the negative particles is modified specifically for imperative mood (see section 4.5.4). It should be noted here that in simple interrogatives and imperatives only two constituents are present: the verb and the negative particle. Unfortunately there is no available data relating to these types of negation clauses in other sign languages. Zeshan (2004) reports the use of negative imperatives but no specific information is provided regarding the syntax of those clauses. It is therefore not clear whether a negative particle is used or a specific negation sign, although Zeshan (2004, p. 31) reports that in some sign languages the negative imperative sign 'may be subsumed under or combined with other negative functions'.

Clause analysis in ENG reveals that the negative quantifier NOTHING has multiple grammatical functions (pronoun, adverb). As a negative quantifier NOTHING can be used in clausal and constituent negation. A sign glossed as NOTHING is reported in various sign languages but in most cases there is no further information about the grammatical function of the sign. Zeshan (2004) reports that in Ugandan Sign Language the sign forms clausal negation and functions as an existential and as a negative quantifier. There is also little information available about NOTHING in ASL. Padden (1981) notes that the sign occurs at the end of the clause. In all three sign languages (ENG, ASL and Ugandan Sign Language) the sign is used for clausal negation constructions. NEVER is a negative adverb which always forms clausal negation. No specific data is available for negation signs similar to NEVER in other sign languages.

Negative incorporation signs in ENG are subdivided into three groups: negative modals, negative existentials and signs with negative incorporation. NegInc do not exhibit any meaning variation and always construct clausal negation with the exception of the negative existential EXIST-NOT/HAVE-NOT which functions as a negative perfective marker occupying clause-final position (see section 6.3.2.1). No similar data from other sign languages about signs with negative incorporation is available.

Sapountzaki (2005) also reports the use of NO-WAY, EXIST NOT and CANNOT in ENG. She has also included a negative sign glossed as NOT-YET which was not found in our study. Sapountzaki's analysis of CANNOT and EXIST-NOT is similar to our

analysis of the sign as a negative modal expressing impossibility. However, Sapountzaki reports the use of a two-handed variant of CANNOT which expresses impossibility in general, this is in contrast to the one handed CANNOT which expresses 'physical impossibility' (Sapountzaki, 2005, p. 128). Our analysis does not show any distinction between the one handed and the two handed CANNOT in terms of general or physical impossibility.

As was mentioned in previous chapter (see section 4.5.1.2) Sapountzaki (2005) considers NO-WAY, glossed by her as (CAUSE-TO)-BE-OFF, as having a dual function: the first function is as an 'aspectual negative posterior' marker (Ibid: 99) and the second function is as a 'modal auxiliary for prohibition' (ibid: 156). According to the researcher in the first function the sign is accompanied in some cases by mouthing κλειστό (closed). The meaning here being that an action that is to happen or is expected to happen does not take place. In the second function the sign expresses 'prohibition and/or prevention of an action that would normally take place' (Sapountzaki, 2005, p. 157). In both cases the sign is characterised as an auxiliary (verb). As far as the semantics of the sign (CAUSE-TO)-BE-OFF/NO-WAY are concerned, Sapountzaki claims that two homophonous signs exist, (CAUSE-TO)-BE-OFF and BE-OFF) which have different semantic properties. BE-OFF 'is an aspectual for negative posterior' and (CAUSE-TO)-BE-OFF is a modal of prohibition (Sapountzaki, 2005, p. 99, 119). The three properties that make up the meaning of these expressions are: a) negation, b) an action that would normally take place and c) posteriority/prohibition or prevention. Our data does not provide any evidence for the existence of two homophonous CAUSE-TO-BE-OFF signs or any evidence that could support the claim that the signs function as auxiliaries.

Summarising this section, it is demonstrated that ENG makes use of various signs in order to express negation. As far as the negative particles are concerned, no differences concerning their grammatical use and distribution were evidenced in the data analysis. Furthermore, our data analysis evidenced that ENG does not express meaning variety for the manual signs of negation. NOTHING is an exception as a negation sign. In negative imperatives, specific forms of the negative particles without repeated movement are employed. Another exception comes from signs of negative incorporation. The negative modal is often found with a non-overt verb.

In general, the most common way to negate a clause in ENG is to use a negative particle. Negative particles are used in various clause categories, but are not obligatory elements for expressing negation in ENG.

7.3.4 Negation scope in ENG

Clause analysis clearly establishes that a negative particle or NegS occupies a post-predicate position within a negative clause. Based on the framework of generative grammar it is assumed that the post-predicate position is a scope position and a negator constructs clauses which fulfil the NEG-criterion by occupying a specifier (Spec) or a Head (Neg°) position (see section 6.4).

The preliminary discussion of scope examined the negative particle only. An analysis also based on the NEG-criterion accounts for the syntactic position of the negative particle and the negation head movement in a negative clause. First of all, based on data related to negation clauses, we assumed that the basic syntactic structure of negation in ENG is Head-final in terms of X-bar theory (see section 6.4). Furthermore, it was assumed that ENG in general may be a Head-final language. Secondly, based on the structure of negation clauses with negative particle and negation head movements and on the structure of non-manual negation clauses (see section 6.4.1.1 and 6.4.3.1) and also on the work of Neidle et al. (2000) and Pfau and Quer (2003a, 2003b), we hypothesised the structure of the negative phrase (NegP). It was assumed that a negative particle and a syntactic [+neg] feature, which is overtly expressed by a negation head movement, both occupy the Head position (Neg°) within a NegP. Clauses of non-manual negation, where the head movement spreads after the manual part of the clause, support this assumption. Based on this observation we also assumed that the verb of the clause only moves to tense (Tns) position but never moves to Neg° position. If the verb had to move to Neg° position, spreading of the negation head movement over the verb of the clause would be obligatory; this is not the case in ENG. The position of the negative particle and the negation head movement (Neg°) also explains why spreading of a head movement over the negative particle is obligatory when both elements occur in negation clause and why spreading over parts of clause is optional.

The syntax of negation in ENG and in ASL is similar in relation to the syntactic [+neg] feature and to the banned movement of the verb to Neg° position (see sections 2.3.3.2

and 6.4.3.1). On the contrary, ENG, like ASL, differs from German Sign Language and Catalan Sign Language in relation to [+neg] feature which is considered as affixal in these languages (see section 2.3.3.2). In addition and most importantly, ENG differs from American, German and Catalan sign languages in relation to the status of the negation head movement. Negation head movement is optional and a negative particle is sufficient for expressing negation in ENG, whereas this structure is ungrammatical for the other three languages. Negation head movement is an obligatory element for the syntax of negation in American, German and Catalan sign languages. It should be noted here that the negation head movement occupies the Neg° position in two of these languages (see sections 2.3.3.2 and 6.4.3.1). German sign language is the exception in relation to the negative particle which occupies the specifier (Spec) position within the negative phrase (see section 2.3.3.2).

The occurrence of a negation head movement after the 'target' clause has also been reported in other signs languages (see section 2.2.2.3). The only negator of the clause in these cases is the negation head movement which occurs after the clause. Our suggestion regarding the syntax of the negation head movement does accord well with languages where manual negators are located in clause-final position. However, this is an area which needs further research.

Data analysis suggests the post-predicate position is the scope position for clausal scope. In the case of complex sentences where no non-manual features occur, if the complement of the verb is an embedded clause then the scope of the negative particle or NegS will be over the embedded clause and not over the matrix clause. To the best of our knowledge it is only in ASL that an analysis of negation in complex sentences has been made. According to Padden (1981), NOTHING can take scope over the verb of the main clause even if a subordinated clause intervenes between the negator and the main verb of the clause. Padden also notes that the sign always negates the main verb of the clause, which means that the sign always forms clausal negation (see section 2.3.3.2). On the contrary, a similar structure in ENG would not permit the negator to have scope over the main verb of the clause. The scope of the negator would be restricted to the subordinated clause.

In non-manual negation clauses in ENG, a negation head movement can be found to spread both over or after the 'target' constituent in local negation (see section 6.4.3.2). In the first case, where negation head movement spreads over the local constituent, it means that ambiguities are raised. These ambiguities are eliminated in the second case in which

negation head movement spreads after the local constituent. It is not clear why the first case creates these complications. We assumed that a possible reason could be the different status that a negative particle and a negation head movement have. Another possible reason is that the scope of the negation head movement is unclear in these structures, which therefore entails problems in meaning. These problems are resolved when other non-manual grammatical markers (topic, etc.) appear in the clause (see section 6.4.3.2). To the best of our knowledge, no data is available about constituent negation from other sign languages.

In addition, our data analysis showed that ENG allows a negation head movement to spread and take scope over two negative clauses. In these cases it is noticeable that the clauses are adjacent, both refer to the same topic and the clauses are coordinated. Negation head movement in these examples extends over both manual negators. It has been suggested that this pattern resembles perseveration of non-manual features as is described in ASL. In seems that in ENG when a negation head movement occurs over the manual negators of two adjacent coordinated negation clauses, then the negation head movement tends to spread over the intervening part between the two negators. Contrary to this, it is also possible for a negation head movement to occur in the prior clause of the negated clause anticipating negation marking. However as of yet, no pattern has been found regulating non-manual anticipation of negation in ENG.

To return to the scope of the manual negator, the analysis demonstrates that ENG allows 'multiple' negation structures. In these examples, a single negator takes scope over a stream of verbs which are coordinated. The use of non-manual features indicating coordination is important but not sufficient to explain the scope of the negator. If negation head movement occurs, it occurs over the negator only. It may be the case that the verbs adjoin the position of the verb which is under the scope of negation. To the best of our knowledge this serial structure of negation has not been reported in other sign languages.

In addition, it was revealed that ENG allows clausal structures where the negative particle occurs in pre-predicate position (see Table 5-3). For the moment, it is not clear how the negator is allowed to take scope over a clause when it occurs in pre-predicate position at surface structure level. The most obvious assumption is that a syntactic movement takes place. However, none of the conditions or restrictions relating to such a movement are

known. Once again there is no relevant data from other sign languages about the exceptional construction of clausal negation.

Analysis of the ENG database shows that although the use of negation head movement is common, it is not the only option in non-manual negation clause. Based on personal observation, it seems that in instances of informal or casual ENG, non-manual negation can be expressed by features of negation facial expression (mouthing/word pictures and brow raising) without the presence of any negation head movement. In these cases negation is expressed by the mouthing of the spoken Greek negative particle. As was noted previously, similar findings have been reported for ASL and Swiss German Sign Language (see section 2.3.2.2).

Clausal negation in ENG and other sign languages demonstrates the variety that sign languages exhibit in negation marking, not only in terms of negative particles, but also in terms of the multiplicity of structures and meanings. As far as local negation is concerned, Zeshan (2004) notes that there is insufficient data in her typological survey concerning this issue. However, the variety of ways of creating negative clausal scope in different sign languages clearly suggests that there may also be numerous ways in different sign languages to create local negation scope.

To conclude, it is suggested that scope position within a negative phrase (NegP) in ENG is the same for a manual negator and a negation head movement and it is the Head position (Neg^0) of the NegP. For this reason, a post-clausal negation head movement takes clausal scope in non-manual negation clauses. Negative particles, negative quantifiers and negation head movements can be used for clausal and constituent negation. Negation head movement spreading does not coincide exactly with the scope of negation but it does provide an indication of the scope of negation especially for local negation.

Finally, a further point the data demonstrates is that ENG is a negative concord language rather than a language with double negation. ENG expresses negative concord between a non-manual feature and a manual sign of negation or between two different negation signs. Possible combinations of manual signs include: a sign with negative incorporation plus a negation sign, or a negative particle plus a NegS. In the latter case the negative particle seems to follow the NegS. In all cases, manual negators are placed at the end of the clause. When a negation head movement is present, it can spread over one or both of the manual negation signs, or over the whole of the clause. In relation to NegInc and

NegS coincidences in a clause, a possible account for the structure has been suggested based on 'Jespersen's cycle' pattern (see section 6.4.1).

7.4 Greek Sign Language and the Greek hearing community

Analysis of the non-manual features of negation has shown that there are clear indications that the Greek Deaf community has adopted the backward tilt of the head and possibly brow raising, at least in the cases where it is bound to the headtilt, from the Greek hearing community. Gesture researchers report the use of these gestures in Greece (Eibl-Eibesfeldt, 1970; Morris, 1977, 1979), and other sign language researchers report these gestures in hearing communities in the South East Mediterranean (Hendriks, 2004; Zeshan, 2004). The use of the head tilt is described in ancient Greek literature (in works such as Homer's Odyssey). The gesture has been adopted by Greek Deaf people as a linguistic feature and a prominent marker of non-manual (and related manual) negation in ENG.

To conclude, the above analysis exemplifies the relation and the level of exchange between the Greek Deaf and the Greek hearing communities.

7.5 Conclusions not directly related to negation

This thesis has explored various aspects of negation at different linguistic levels. As a result some observations can be drawn which are not directly related to negation and which extend beyond the scope of the current study. We consider it essential to present these observations here, as they concern core areas for sign linguistic research, and yet no research has been carried out in ENG in these areas to date.

The syntactic analysis of negation shows that, as in other sign languages, adjectives and nouns often function as non-verbal predicates since ENG does have a copula 'to be'.

Analysis of non-manual features was restricted to elements used in negation. However, it is clear that ENG also makes use of other non-manual grammatical markers including topic markers, question markers, conditional markers, etc. In particular, raising of the brows and widening of the eyes with a slight nod of the head is often used as a topic or question marker. Moreover, a slow and slightly backwards tilt of the head is used for marking conditionals.

The use of negation mouthings in negation clauses has also provided some insights in relation to the general use of mouthings in ENG. The analysis showed that mouthings and word pictures of negation are used for expressing negation. Mouthings/word pictures derive from spoken Greek and their use varies among signers. Mouthings/word pictures can be related to a single sign, to a string of signs or to a whole clause. It is interesting that an affective element can have grammatical function.

7.6 Limitations of the study

The present study faced specific limitations concerning the following issues: the collection of data, and the limited research on Greek Sign Language together with the absence of previous research on negation in this sign language. Problems relating to sign language data collection have been reported by researchers of many sign languages (Neidle et al., 2000; Sutton-Spence and Woll, 1999; Valli and Lucas, 2000).

As was mentioned in section 3.1 researchers use two kinds of data for linguistic analysis: elicited and/or naturalistic data. Research analysis of the present study is based on data collected in naturalistic settings. Elicited data from Deaf informants was used as an information platform but not as part of the linguistic sample. The main reason for this being that the elicitation setting did not have a consistently successful outcome. In particular, some of the set tasks were not efficient or failed to achieve the original aim and as a result did not elicit the appropriate material from the informants. This mainly affected information about the morphology and syntax of ENG. Lack of resources and time limitation when the pilot study for data elicitation was conducted, did not allow for the re-design of the elicitation study and a second attempt. A second attempt at organising an elicitation study would base the study on visual material. Comic strips, pictures and pictures series, cartoons, silent movies of the 20s and 30s and signed stories are considered suitable and safe material for elicitation settings.

A major concern for the researcher throughout this process was to make sure that the language sample consists of true expressions of sign language (ENG in our case). The status of ENG as a minority language means that its users are often influenced by the dominant language, Modern Greek. As a result signers often adjust their language to accommodate others by using signed Greek. The use of signed Greek modifies the language output and affects the validity of the research results. Possible influences from

signed Greek were reduced by employing specific methodological strategies concerning data collection (see chapter 3). However, in the current work limited instances of signed Greek were still in existence even after the application of methodological precautions against it. These cases were excluded from the data analysis.

Absence of previous research concerning negation in ENG and the limited research in ENG in general were additional sources of limitations. The study had to establish even basic information like which manual signs and non-manual features are used in negation. Furthermore, there are some fundamental linguistic issues in ENG that have not yet been investigated. For example, no research provides information on the specific position of the Head in a phrase in ENG (Head-initial or Head-final), plus the fact that information about the basic word order has not yet been established. As a result, the outcome of research analysis on negation is not tested against similar or counter evidence deriving from linguistic analysis on other issues of ENG.

7.7 Possibilities for further research

This study of negation in ENG has provided important findings in relation to the initial research questions and a detailed analysis of the morphophonology and syntax of negation. However, during this process, new issues and research questions have arisen.

The first area of interest is related to the syntax of negation. Limited prior research on the syntax of ENG reveals the lack of important tools for a more thorough examination into the syntax of negation. The data analysis of the present study indicates that the structure of negation in ENG is Head-final. This also suggests that basic structure in ENG may be Head-final too. However, more research is needed into the syntax of ENG in order to confirm this proposal. Therefore the exploration of the basic word order in ENG remains a priority research area. Research results in this area could also shed more light on questions about the position and role of a negator within a negative phrase and could also clarify issues related to the syntax of constituent negation. Interestingly, all examples of constituent negation are also cases of contrastive negation indicating an additional research issue.

A detailed account of the syntax of ENG would help us to provide a detailed analysis of the syntax of non-manual negation clauses, especially in clauses where the negation head movement is not immediately related to the co-occurring sign/signs. It would be of great

importance to understand how the negation head movement takes scope over non-overt sign/signs and not over the whole clause over which it spreads.

In relation to negative concord structures where a NegInc and a NegS appear in the same clause an analysis based on 'Jespersen's cycle' pattern has been proposed. However, more research is needed in order to confirm this proposal. Results from this research area would provide an additional tool for the analysis of negative concord in ENG.

Further research on the syntax of ENG would also provide the evidence needed to examine the syntax of negative incorporation signs, especially the syntax of the negative modal in more detail. Signs with negative incorporation can be located in various positions within a clause, but the restrictions on these are not well understood. Exploration of this area would also help our understanding of the syntax of negative modals. A more inclusive picture of ENG syntax would also provide answers about possible restrictions in relation to groups of signs permitted to follow a negative particle or a negative sign in post-predicate position.

Clausal analysis shows that ENG often uses elliptical constructions with a non-overt verb or fragment constructions where the manual negator is the only constituent of the clause. It would be interesting to investigate if elliptical structures also occur in other types of clauses and how they function at discourse level.

In relation to research on negation, the issue of negative polarity items in ENG has remained obscure. The corpus did not reveal the use of any specific lexical items with negative polarity. More research in this area is needed in order to confirm or reject this initial evidence.

The conclusions regarding the loose relation of negation head movements to the manual parts of a negation clause in terms of onset/offset is another area where further research is needed. Since negation head movements are grammatical elements for negation in ENG, the lack of strict co-occurrence of manual signs and negation head movements is an intriguing research area. Results about onset/offset in ENG seem to be contradictory to results from ASL but this is possibly due to different types of data (elicited-naturalistic) that are employed in the present study. An examination of everyday casual signing in ASL could possibly show that input/output of non-manual features is not as strictly related to the co-occurring signs as has been suggested.

Furthermore, investigation of the spreading 'behaviour' of other non-manual grammatical elements (topic markers, question markers, etc.) would be of particular interest. Examination of the onset/offset of non-manual features in interrogatives or conditionals is important. Results on this topic would provide a more complete picture about the use and spreading of non-manual grammatical elements in ENG and would help us to classify non-manual elements of ENG.

The thesis also provided examples of perseveration of the negation head movement over adjacent negation clauses, a pattern initially described in ASL. Further research on this topic is necessary in order to examine perseveration in more detail. Perseveration in ENG negation usually affects more than one clause, whereas the pattern described in ASL occurs within a single clause. Furthermore, it would be interesting to examine perseveration of the negation head movement within the same clause according to the definition proposed for ASL.

An additional pattern found in ENG was the anticipation of negation by non-manual features. Once again more research is needed in order to establish how this pattern applies in ENG. It would be of interest to explore the structure of this pattern. Furthermore, exploration of a possible relationship of anticipation and perseveration would be of great importance for our understanding of the negation head movement and the non-manual features.

In general, more research is needed in ENG in order to establish which of the negation non-manual features of negation are used as affective or grammatical elements in settings other than negation. In this respect it would be of great interest to reveal any additional elements that could signify the interpretation of non-manual features according to different type clauses.

Negation analysis has shown that some of the non-manual features possibly derive from gestures used by the Greek hearing community. It would be of great interest to examine the process under which a gestural feature becomes morphological or grammatical. The investigation of paths of 'linguisticisation' could also extend to mouth gestures. For example the mouth gesture [ðəpa] of EXIST-NOT may be polar to the mouth gesture /pa/ of DONE deriving from mouthing /pai/ having the meaning of 'done' and consequently 'done'.

The analysis of derivational morphology also provides a challenging issue for further research. As was noted, affixation does not apply to ENG negation. It seems that verb of sensation are possible candidates for negative affixation (HEAR-NOT, SEE-NOT). More research is needed to reveal possible affixation conditions which licence a verb or group of verbs for negative suffixation.

In addition, suggestions about the form and function of various signs have been proposed in terms of grammaticalisation processes. It would be interesting to explore the characteristics of signs which appear to have been grammaticalised or which are still undergoing grammaticalisation in ENG. Research on this topic would provide evidence for a more complete analysis of grammaticalised negation signs. In addition, an investigation of similarities and differences in grammaticalisation in other sign languages would help us to more clearly understand the processes of change in ENG.

Another fascinating research area revealed by negation analysis is the structure of pronouns and wh-signs in ENG. A study on this area would provide more evidence for their use within negation clauses. Furthermore, examination of pronouns and wh-signs would also shed more light on the syntax of ENG in general.

The findings regarding the phonetic relation of the negation head movement to specific signs of negation also suggest a challenging area for examination. A more elaborate study of the phonetics of signs of negation and the negation head movements would provide more evidence about the relation between manual signs and non-manual features of negation and would explore the existence of additional patterns of the same kind in ENG negation. For example, it would be interesting to explore if 'assimilation' of negation head movement with specific negation signs also happens in non-manual negation clauses with non-negative signs. Exploration of these patterns of negation would provide a starting point for the examination of phonetic patterns of ENG in general.

Another area for further research was raised by our attempt to set criteria for clause boundaries. Clause boundary justification in this thesis is based on research from other sign languages. It would be interesting to explore the specific prosodic markers that ENG uses in order to indicate prosodic breaks at clausal level.

Another issue which has been indicated as a research area by the study concerns the use of non-manual features of negation. It has been suggested during the present study that

negation head movements and negation facial expressions also function as markers for conditionals, topics, etc. The further uses of non-manual features used in negation is a fascinating research area which would also provide a complete picture of the use of the particular non-manual features in ENG.

The present study does not provide data related to the sociolinguistic aspects of negation. Our examination has not explored variation related to region, sex age, etc. But these are important areas for future research. Although the informants grew up in various regions of Greece, all live permanently in Athens. A study of variation could include the collection of ENG data from signers of different age or from different regions, enabling investigation into any differences in expressions of negation according to these variants. Similarly, the effect of different backgrounds in relation to negation could be studied. It is likely that factors such as educational or family background may affect sign language use and consequently expressions of negation.

The use of negation mouthings in clauses with non-manual negation implies the existence of variation in negation in informal registers. It would be interesting to examine if this difference applies systematically. Other possible register differences should also be explored.

Mouthings are defined as deriving from spoken Greek. The use of mouthings in ENG demonstrates some effect of Greek on ENG. Another influence from the hearing culture is the grammatical use of the headtilt, which is used as a gesture of negation by hearing people. A study of this relationship would be of particular interest as it would illuminate the issue of how gestures in the surrounding hearing community may serve as a source for linguistic material in a sign language.

Finally, during the analysis of negation in ENG, it was often noted that specific expressions or patterns of negation are similar to patterns found with interrogatives. For this reason it would be of great interest to explore the use and function of interrogatives in ENG to reveal the extent to which negatives and interrogatives resemble each other. Examination of the syntax of interrogatives and the use of non-manual features is of special interest. It would also be helpful to explore to what extent interrogatives and negatives function in similar ways.

Sign linguistics is still in its infancy in Greece. The present study can be considered as part of the initial steps in the linguistic analysis of ENG. We hope that this thesis will significantly contribute to developing a better understanding of the grammar and syntax of ENG, and that it will help further our knowledge of specific functions and mechanisms employed by this sign language.

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Number	H1	H2	H3	F1	F2	F3	F4	F5	F6	Tokens of NOTG
24	No	No	No	Yes	No	No	No	No	No	Tourist says: YOU NOTg HERE. Repeated.
25	No	No	No	No	No	No	No	No	No	I HEAR NOTg. Repeated. Articulation as almost 'hear not'.
26	No	No	No	Yes	No	No	No	No	No	AIRPORT. NOTg. Repeated 2hds.
27	No	No	No	No	No	No	No	No	No	ME AIRPORT NOTg. Repeated 2hds
28	No	Yes	No	No	No	No	No	No	Yes	NOTg 6:30. Repeated. F6-wp'ooo'.

Appendix 1. Database layout in Microsoft Access for lexical and morphological analysis

No	Sample	Time	Clauses	Syntax	Comments	Non-manual
276	1	01:34:16	ROAD ALL EARTH | NOTG STRONG STONE ROAD NOTG | EARTH ROAD NARROW-ROAD	[N N] [Neg Prdc NP Neg] [VP]		f2, f6-m, f6-wp
277	1	01:34:48	CAR INDEX3-down-earth | CAR PASS NOTG | WHAT? | EARTH ALL PEOPLE	[NP] [N V Neg] [Wh] [NP]		f6-wp
278	1	01:34:55	CAR PASS | INDEX1 HEAR-NOT | DEAF NATURAL	[VP] [[Pro NegInc] VP]	exceptional incorporation of HEAR-NOT	f6-m
279	1	01:35:17	WHAT-FOR MOTHER EXIST-NOT CHILDREN | INDEX1 ALONE	[[Wh N NegInc N] VP]		f6-m

Appendix 2. Database layout in Microsoft Access for syntactic analysis

Appendix 3. Example of the story used in pilot study (no text)

Appendix 4. Example of the story used in pilot study