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MARKEDNESS AND THE ACQUISITION OF PREPOSITION PIED-PIPING AND STRANDING: A LONGITUDINAL PERSPECTIVE

by

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THESIS

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ABSTRACT

This thesis represents an exploratory study of longitudinal performance data of second language acquisition, augmented by sentences from a grammaticality judgement task. The focus is on preposition pied-piping and stranding constructions as documented in a generative framework. The purpose of the study was to investigate these data within in the context of markedness theory associated with Universal Grammar in order to determine whether or not the postulated developmental sequence was reflected in the data.

Preposition pied-piping and stranding have been investigated recently within this framework in cross-sectional studies and have provided researchers with inconclusive results. For the purposes of this thesis it was hypothesized that longitudinal data would provide clarification of the development and use of these constructions in the acquisition of English as a second language by adult learners. It was further assumed that the longitudinal study would permit additional insight into the acquisition of the constructions concerned that would lead to the formulation of hypotheses for future research. In addition to the longitudinal data from the learners, data from native speaker control groups were collected in order to validate the authenticity of the constructions the learners provided and to ensure that preposition stranding is used as anticipated in informal interaction.

The results provide support for the developmental sequence postulated by markedness theory. They show that the learners go through a brief stage during which they accept and produce preposition pied-piping, but explicitly reject stranding. The analysis of the data shows that the five learners use the constructions under investigation less frequently than might be expected. This seems to suggest that transfer from the native languages involved, which have the unmarked but not the marked construction, is not an important factor although it cannot be ruled out. Some learners produced stranded versions but rejected them on the grammaticality task. This combined with the low frequency and the limited syntactic and lexical range of the utterances suggests that the learners produced at least some of the early stranded versions as unanalyzed chunks. Evidence of avoidance of the pied-piping and stranding constructions was also found.

The native speaker control groups, who were given pied-piped and stranded versions of each of the learner utterances in order to decide which one they would likely have chosen, strongly favoured stranded constructions over pied-piped ones in most instances.

In conclusion, the data provide support for the developmental sequence postulated in a theory of markedness. They also suggest a number of potential hypotheses for future research.

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CHAPTER ONE: BACKGROUND AND RESEARCH PROBLEM

1.0. Introduction

Second language (L_2) acquisition studies have traditionally included diverse areas of research with various theoretical perspectives and methodological procedures, often resulting in conflicting or confusing accumulated results. Recent developments in linguistic theory and first language (L_1) acquisition research have stimulated a re-orientation of focus in related fields, particularly in L_2 acquisition research. Flynn (1987) and Gass and Schachter (1989) point out an emerging determination in L_2 acquisition research to base the linguistic aspect of a theory of L_2 acquisition in a well-defined linguistic theory. Consequently, many L_2 researchers have turned to an exploration of L_2 acquisition within a Universal Grammar (UG) framework of generative grammar, especially Government and Binding Theory (Chomsky 1981a, 1986a).

The framework of a generative theory of UG has provided a fruitful framework for new insights into L_1 acquisition. Gass and Schachter (1989:1) point out the significance of the bidirectionality that exists between L_1 acquisition research and linguistic theory in the sense that the latter directs and limits hypotheses in L_1 acquisition research while empirical results from L_1 acquisition research serve to validate and refine theoretical models. Flynn (1987) and Gass and Schachter (1989) observe that L_2 acquisition research and linguistic theory do not enjoy the same type of accepted and mutually propitious relationship. Collections such as Flynn and O'Neil (1988), Gass and Schachter (1989), White

(1989), bear testimony to the surge in recent research into L_2 acquisition, developing a body of knowledge that reflects the role linguistic theory plays in L_2 acquisition.

This thesis explores the general issue of the role of markedness and UG in the acquisition of preposition pied-piping and stranding in L_2 acquisition. It will be developed as follows. This chapter, Chapter One, provides a discussion of the theoretical background of the studies presented. A general presentation of the basic framework is followed by a discussion of specific aspects related to the work as they have been developed and discussed in L_1 research. Finally, their relevance to L_2 acquisition research and the work to follow is explored. The chapter concludes with a discussion of the research problem to be examined. Chapter Two presents a review of previous theoretical research on preposition pied-piping and stranding, and experimental studies on the acquisition of the two constructions. Chapter Three provides a description of the subjects and an account of the methodological procedures adopted for the purposes of data collection and analysis. The results are presented and discussed in Chapter Four, then they are evaluated against insights gained from previous studies and the results from the native speaker control groups selected for each of the learners. Finally, Chapter Five presents a summary of the main points discussed in this thesis and a conclusion which proposes some potential hypotheses for further research into the acquisition of preposition pied-piping and stranding in English as second language.

1.1. Theoretical Framework

The linguistic framework that underlies the conception of the Theory of Markedness discussed in this thesis is that of generative grammar, as developed in Government Binding (GB), with its associated theory of Universal Grammar (UG). The remainder of this section characterizes the concept of UG and its principles and parameters and outlines the features of an associated Theory of Markedness. A brief review of different frameworks for the study of adult L_2 acquisition shows how the concept has been applied within and outside of UG.

1.1.1. Universal Grammar, Principles and Parameters

The primary goal of generative grammar has evolved to provide a description of what an ideal native speaker knows about his/her language. Varied attempts at explaining how children acquire that knowledge indicate that their complex knowledge could not be accounted for on the basis of input alone due to the relative poverty of the input children receive (Chomsky 1977:66). UG is hypothesized to contain those aspects of language that are too abstract to be accessible to most speakers. It has thus become the "characterization of the child's pre-linguistic state" (Chomsky 1981a:7), or the innate pre-disposition for acquiring language.

The focus of much current research in linguistic theory has been to specify the content of UG. Within a GB theory, it is hypothesized that UG holds the principles and parameters that

underlie linguistic competence. UG is expected to have a double function in that it is intended to represent a theory of the basic properties of grammars of human languages as well as of a particular area of human cognition (Chomsky 1986b). By postulating a theory of UG with its associated parameters it becomes, for example, possible to account for typological differences among all natural languages without limiting the theory to surface phenomena. Differences between languages are expected to be due to a number of options presumed to be available in UG. The biological basis of a theory of UG allows an explanation of the fact that all natural languages can be acquired with comparative ease despite the relatively poor and incomplete set of data available to language learners. Thus, UG seeks to explain the "richness and complexity of the system of grammar for human language" (Chomsky 1981a:234) and the swift and homogeneous development of language despite limitations in the input.

UG is hypothesized to be in the form of a set of principles, conditions and rules "that are elements of properties of all human languages" (Chomsky 1975:29). The set of principles limits the class of possible grammars language learners may entertain and constrains their form. Associated with some of these principles is a finite set of conditions, referred to as parameters, which represent strictly defined possibilities of variation across languages. Parameters are expected to become fixed in L_1 language acquisition when the language learner is exposed to the target language. They are broadly defined as general organizing

principles for grammars of all languages. Their more detailed definitions, as far as they have been articulated in the literature, are often still controversial and not clearly delimited (Flynn & O'Neil 1988). For example, the precise formulation of the head-direction parameter depends on the detailed description of X-bar theory. However, neither the theoretical nor the empirical problems associated with these formulations have been settled (Jackendoff 1977, van Riemsdijk and Williams 1986). A similar problem related to the position of the head concerns word order in German, where conflicting analyses in theoretical linguistics result in different interpretations of L_1 (Thiersch 1982, Travis 1984).

Each parameter is associated with a cluster of linguistic properties; the values of the parameters are set by interaction with the input to which the learner is exposed, thus allowing the learner to arrive at the core grammar of the target language. Various properties are associated with a given parameter, resulting in a number of consequences in different areas of grammar. As Flynn and O'Neil (1988:8) point out "...setting the value in one way or another will have deductive consequences for the rest of the grammar". In L_1, exposure to data will set a given parameter in one way for one language, another way for another language. The head-direction parameter, for example, assumes that children exposed to Japanese or Japanese-like languages as their L_1 will notice that phrases precede the head, while children exposed to English as their L_1 are assumed to notice that phrases follow the

head. The head-direction parameter is set one way or the other, depending on the information available in the input (Travis 1984, Chomsky 1986b). Another example is the pro-drop parameter, probably the most widely discussed parameter in the literature, whose domain involves a) omission of subject pronouns, b) inversion of subject-verb in declarative sentences, and c) that-trace effect (White 1985).

UG is assumed to contain a number of subsystems which include X-bar Theory, which specifies hierarchical structures between heads of phrases and their specifiers and complements, and constrains phrase structure; Theta Theory, which concerns itself with the theta roles of a verb to the relevant NPs; the Projection Principle, which constrains the mappings between the different syntactic levels; the Subjacency Principle, which constrains how far individual categories may be moved by the rule *Move Alpha*; Case Theory, which determines that all lexical NPs require abstract Case; C-command and Government, two concepts which specifiy where various subsystems apply; Binding Theory, which limits the relationships that can hold between different types of NPs; the Empty Category Principle (ECP), which deals with traces, e.g. wh-trace left behind after a wh-word has been moved.

As pointed out above, the postulation of UG is prompted by the need to explain the subtle knowledge children have of their L_1, knowledge that does not seem to be available on the basis of the input. Most researchers agree that negative evidence is rarely available to children learning their L_1, and when such evidence is

available it may not be in a format useful for acquisition. The properties of UG are argued to be such that exposure to data, i.e. positive evidence, will trigger parameter settings (Baker 1979, Wexler and Culicover 1980). Positive evidence provides L_1 learners with information to form hypotheses about the target language (Pinker 1984), while negative evidence may play a role in providing information that indicates forms that are inappropriate according to the rules of the target language.

The above outlines the general framework assumed in this thesis. The more specific concept of markedness within such a framework is discussed below.

1.1.2. Markedness

Central to the theory of UG are the notions of core grammar and the periphery. Chomsky (1981a:8) contemplates "a core grammar with a periphery of marked elements and constructions", where the core grammar is the result of fixing the parameters on the basis of the input children receive in L_1 acquisition. A theory of markedness facilitates the study of how language systems differ from each other and what the limits of variation across languages are. White (1981) perceives markedness as "a means of establishing the limits of possible grammars and the accessibility of grammars within those limits" (p. 257). It has been defined as being internal to the learner (Chomsky 1981a) and as such a consequence of properties of UG. It has also been defined as an external characteristic of typological approaches to linguistics (Comrie

1981, Greenberg 1966, Hawkins 1983). Markedness, then, has been envisaged in a number of ways by different researchers.

According to Gair (1988:225), the term *markedness* has been a part of linguistic discussions for over half a century, but in different theories and with varying definitions. He shows that in generative syntax it tends to refer to a departure from theory (Gair 1988:228), but it has also been proposed as a hierarchy for binding domains (Wexler and Manzini, 1987) as well as "a set of contrasts within a language" (Gair 1988:227). Koster (1981) states that a theory of markedness serves to mediate between "the optimal theory of core grammar and certain facts of a language" (89-90). When such facts fall outside the domain of the optimal theory, but still represent permissible constructions in a given language, markedness occurs. Gair (1988:235) further notes that markedness should not necessarily be seen as a binary concept, but as an implicational scale, e.g. A > B > C > D > E. Any position in such a sequence implies the presence of the elements to the right of that position, i.e. "E" is hypothesized to be present in all human languages while "A" is assumed to occur in relatively few languages.

Chomsky (1986b) discusses the possibility of three distinct types of markedness:

- "distinction between core and periphery" (Chomsky 1986b:147);
- internal to the core, which is related to the setting of parameters in the absence of evidence; and

- internal to the periphery, which refers to potential irregularities that may occur in items in the periphery. Gair (1988) examines each of these possibilities and some of the questions research will have to deal with in the process of clarifying the specific conditions that hold for each of the three types of markedness. One of the basic problems for linguistic theory is identifying those parameters that bear markedness relations and justifying markedness for others. It is, for example, not clear why one setting of the head-direction parameter should be marked, the other unmarked. For this reason researchers have recently proposed the notion of 'open parameters', where one of two potential settings would be triggerd on exposure to the L_1 (Sharwood Smith 1988).

In addition to a linguistic description of markedness, recent research has also focused on the psycholinguistic correspondences of markedness, which are verified with research results into L_1 acquisition. For example, one of the problems of linguistic theory is to establish the domain of core grammar, i.e. the fixed principles and open parameters of UG which result in core grammar on exposure to data. This domain is distinct from the periphery, which contains less frequent, in some way atypical, phenomena. Core grammar is generally considered to be unmarked as it is thought to require minimal positive evidence to be activated. The periphery, on the other hand, is hypothesized to consist of more language specific and idiosyncratic aspects of language, aspects that do not reflect principles and parameters of UG. The marked

setting of a parameter increases the generative capacity of the grammar in which it applies as it eases the constraints defined in UG. It is expected to require positive evidence in order to be triggered. Empirical evidence from L_1 acquisition is likely to help identify these boundaries and as a result establish a bidirectional relationship between the domains of linguistic theory and L_1 acquisition theory.

In an idealized model of L_1 acquisition, children start the language learning task equipped with UG and an associated theory of markedness. Exposure to data will enable them to fix the parameters and without evidence to the contrary, select the unmarked options. The underlying assumption is that a "less marked grammar is...easier to acquire than a marked one, requiring less elaborate triggering experience" (White 1981:257). Consequently, children acquiring their L_1 will first proceed through unmarked options before progressing to the more complex marked options. This version of the theory of markedness, the Developmental Hypothesis (Phinney 1981, White 1982, French 1984, Hildebrand 1987) predicts that L_1 learners will reach a stage at which they have assimilated the unmarked but not the marked setting of a given construction, despite positive evidence for the marked setting in the language input they receive. It contrasts with the Learnability Hypothesis, which predicts that where input suggests a marked and an unmarked setting, the two structures may be realized simultaneously. A developmental progression is not assumed in this formulation. A third possibility is suggested in

Hyams (1986), who claims that her data from child language acquisition show that L_1 will adopt the preset value of a parameter even if the input from the L_1 does not contain any evidence that it includes this value.

Similarly, a number of approaches to markedness have emerged in L_2 acquisition research. Gair (1988:237) groups them broadly into two types, the "contrastive-transfer" and the "developmental" approaches. As he points out, "these approaches find parallels in work in the field of L_2 acquisition that makes use of other theoretical models and notions of markedness", i.e. markedness is investigated in a number of different models of L_2 acquisition. For the purposes of this thesis, markedness will be used in the sense of Mazurkewich (1981, 1985) as discussed below.

1.1.3. Markedness in the Study of Adult L_2 Acquisition

Gass and Schachter (1989) point out that early approaches to second language acquisition concentrated on questions of acquisition stimulated by and aimed at resolving pedagogical issues in language teaching. The first of these, Contrastive Analysis (CA), was based on well-established theoretical principles, but was discarded by many researchers in favour of the second, Creative Construction Hypothesis (CCH), when it became apparent that neither theoretical nor empirical evidence could support its claims as will be seen in the following brief discussion of the two hypotheses.

1.1.3.1. Contrastive Analysis

Within a behaviouristic/structuralist framework (Fries 1952, James 1981), an attempt was made at investigating L_2 learners' acquisition difficulties through a systematic comparison of the learners' L_1 and L_2. Researchers expected that careful comparison of descriptions of two languages could predict areas likely to prove difficult for learners due to differences between the two languages (Lado 1957). By the same token, they expected that where comparison showed similarities, successful transfer from L_1 would result. The CA approach stimulated many research projects, but the results were disappointing. Apparent similarities between L_1 and L_2 expected failed to result in the expected positive transfer, while some apparent differences proved to be readily acquired, and other learner constructions in L_2 could not be traced to a source in L_1. However, the main difficulty was the theoretical background.

Impetus for the "contrastive-transfer" approach came from Eckman (1977) who proposed the Markedness Differential Hypothesis (MDH) as a reaction to the inability of CA to make appropriate predictions with regard to areas of difficulty in L_2 acquisition. His definition of markedness was based primarily on an implicational account of typological criteria, i.e. if

> "A phenomenon or structure X in some language is relatively more marked than some other phenomenon or structure Y if cross-linguistically the presence of X in a language implies the presence of Y, but the presence of Y does not imply the presence of X." (Eckman 1985:290)

Several researchers have worked within this framework, for example Benson (1983) and Broselow (1983) in phonology, Berent (1985) in syntax. Zobl (1983) expresses some criticisms of Eckman's framework and proposes that the markedness hypothesis be tested against the projection principle in order to explain L_2 learners' ability to project views of the target language on the basis of impoverished data.

1.1.3.2. Creative Construction Hypothesis

The Creative Construction Hypothesis (CCH) developed as a reaction to the inadequacies of the CA approach and on the realization that learners with different L_1s seemed to produce remarkably similar grammars. Its proponents concluded that L_2 learners go through developmental stages that are independent of L_1 but nevertheless bear some resemblance to L_1 development. Child and adult L_2 learners were treated though as if they were L_1 learners under the assumption that L_1 and L_2 acquisition are the result of the same set of innate principles (Bailey, Madden and Krashen 1974, Dulay and Burt 1974, Dulay, Burt, and Krashen 1982). Variables, such as developmental, social differences, were considered to act as filters which may enhance or hinder the L_2 acquisition process. Researchers became more interested in acquisition processes and developmental sequences in all L_2 learners rather than in typological similarities and transfer between L_1 and L_2 for specific language groups.

The linguistic framework of CCH studies falls within a traditional generative theory of language as these studies tend to incorporate general concepts such as universality, innateness and creativity. However, the formulation of these concepts is usually too general to permit systematic validation or refutation of most of the claims made by proponents of CCH (Flynn 1987:25).

Research within CA and CCH, although unsatisfactory in many ways, has nevertheless helped encourage L_2 research to develop into a discipline independent of pedagogical aims. Increasingly, it has focused on the sources of the learners' hypotheses about L_2 and on a characterization of L_2 learners' evolving L_2 grammar system. The increased interest in recent years in how particular approaches to linguistic theory can contribute to understanding L_2 acquisition has lead L_2 researchers to investigate similar issues to those investigated in L_1 acquisition within a UG framework in L_2. However, as mentioned, only a small number of parameters has been identified and researchers within linguistic theory often disagree on their precise details and the consequences they may effect on other areas of grammar. This lack of agreement on the linguistic analysis of some parameters leads to different interpretations of L_2 data and, consequently different conclusions regarding L_2 acquisition. An illustration of this is the on-going debate in the literature on word order parameters in German and their availability to L_2 learners (Clahsen and Muysken 1986, du Plessis et al. 1987, Clahsen 1988, Schwartz and Tomaselli 1988, Clahsen and Muysken 1989, Tomaselli and Schwartz 1990). Similar discussions

can be found on other topics of linguistic analysis, e.g. on the previously mentioned head-direction parameter (Lust, 1983, Rinehart 1986, Bley-Vroman and Chaudron 1990, Flynn and Lust 1990).

The developmental sequence associated with markedness discussed above, for example, has been explored in L_2 by Mazurkewich (1981, 1984), Liceras (1985, 1986), van Buren and Sharwood Smith (1985), Bardovi-Harlig (1987), Finney (1988), Polomska (1988). These studies and their relevance to a theory of markedness in the acquisition of preposition pied-piping and preposition stranding will be discussed in Chapter Two. The remainder of this chapter is devoted to an overview of positions researchers take with regard to UG in L_2 acquisition. These positions will be discussed again in relation to the findings presented in Chapter Four.

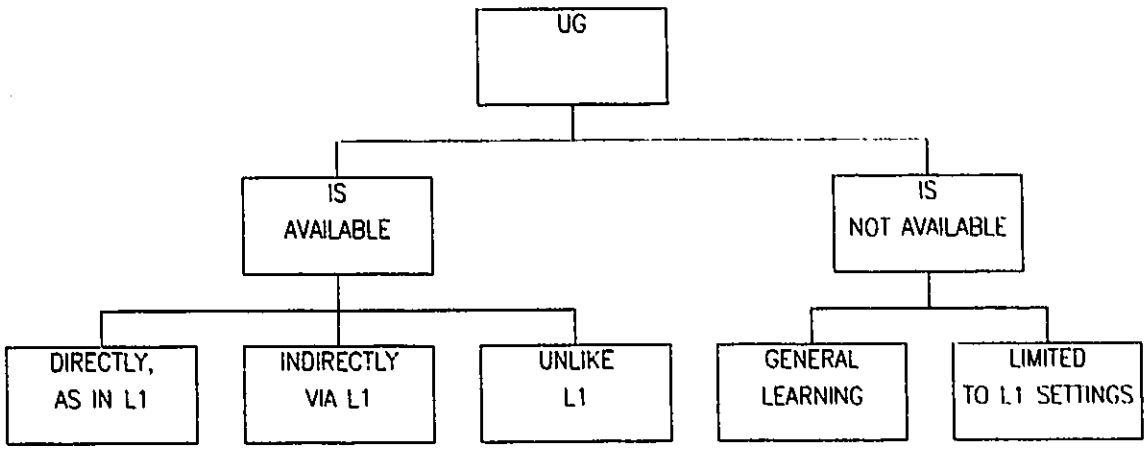
1.1.3.3. UG and Markedness in L_2 Acquisition

The primary goal of UG is to describe and explain children's rapid and uniform acquisition of their L_1 (Chomsky 1981b, Lightfoot 1982) but it makes no specific claims regarding L_2 acquisition. However, the argument of underdetermination put forth to justify UG in L_1 acquisition has also been made in the case of L_2 learners (e.g. Flynn 1987, 1988, Liceras 1988, White 1989 among others). Flynn (1988) argues that if the language faculty is biologically determined and is necessary for L_1 acquisition, it follows that principles of UG also operate in L_2. Others argue that adult L_2

acquisition is fundamentally different from L_1 acquisition (Schachter 1988, Bley Vroman 1989).

The different positions, although they vary[1] in detail, can be grouped into the following main categories:

Figure 1.1. Positions on the Availability of UG in SLA



UG is available:

a) *directly, as in* L_1

This position suggests that L_1 and L_2 acquisition are identical. If this position were adopted, it would predict that L_2 learners are as successful as L_1 learners in the acquisition task and that they achieve similarly homogeneous levels of ability in L_2 learning. Both these predictions are clearly not borne out by most

[1] The discussion here is limited to post-puberty L_2 language learners.

of the evidence from L_2 acquisition'. White (1989:49) considers this version equivalent to the CCH but with UG as a theoretical foundation.

b) *indirectly, via* L_1

This position hypothesizes that learners start with L_1 principles and parameter settings as an initial theory about L_2. Relevant parameters can be reset on the basis of input received during the L_2 acquisition process and interaction with UG, which is still active, to conform to the requirements of L_2. This position is advocated by e.g. Flynn (1983, 1986, 1987), White (1986, 1988), Schwartz (1987).

One of the problems with this position is that it cannot explain why some adult L_2 learners seem to be able to reset relevant parameters more readily than others, indeed, why some adult L_2 learners do not appear to be able to reset certain parameters.

c) *unlike* L_1

The claim that UG is available in L_2 as it is in L_1 but due to learning mechanisms available to adults does not operate the same way it does in children, is maintained by e.g. Felix (1985, 1988).

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[2] L2 learners who reach native-like competence in their L2 seem to represent a small minority and are rarely discussed in the literature. L2 learners who appear to have native-like competence have been shown to have different intuitions compared to native speakers (Coppieters 1987). However, these differences do not appear to relate to information hypothesized as being part of UG.

He postulates the existence of competing cognitive structures, including problem solving, that interfere with UG. This may happen to the extent that information expected to be available from UG in L_1 acquisition may no longer be available. This position is unique among the different positions in that it can account for differences attributed to age effects in L_2 acquisition. An integral part of this claim is that the emergence of problem solving skills is connected with puberty: adults are assumed to resort to UG and problem solving skills in the construction of an L_2 grammar, while children depend on UG. Felix's proposal hinges on the assumption that in L_1 linguistic input is processed by the language module, while in L_2 linguistic input is processed by the language module and the central processor (Fodor 1983). Because UG is still available to adult L_2 learners, this framework can account for seemingly UG-driven L_2 constructions in their IL.

UG is not available:

a) *general learning principles*

Some researchers hypothesize that in L_2 acquisition learners match/mis-match structures in a problem solving manner, or that they proceed through general hypothesis-testing based on the input they receive. In this view, L_2 acquisition depends on L_1 knowledge for some of the abstract principles involved but is seen to be similar to learning in domains other than language acquisition (e.g. Schachter 1988, Bley-Vroman 1989, Clahsen and Muysken 1989). Pienemann and Johnston (1987) try to account for language

acquisition in terms of processing strategies and claim that principles of UG are not relevant to an explanation of the observed developments.

Proponents of this view can explain the varying levels of success L_2 learners achieve. Negative evidence to confirm valid hypotheses or to reject invalid ones is available to many L_2 learners. However, the fact that most L_2 learners tend to produce very similar hypotheses seems to be somewhat more difficult to explain in this framework. Also, this framework may have difficulties accounting for successful L_2 acquisition where some knowledge of L_2 could not be attributed to L_1 or the input.

b) *limited to L_1 settings*

Proponents of this position consider the learners' L_1 an important factor in L_2 acquisition. Learners' grammars are constrained by UG as it applied in L_1 acquisition, input cannot trigger resetting of the parameters for L_1. Researchers who take this position argue that L_2 acquisition is guided and limited by UG and its parameter settings as fixed in L_1. Parameters set in L_1 remain at that value even when the corresponding L_2 parameter setting differs. This allows a plausible explanation of varying degrees of success in adult L_2 attainment. It is also close to the revised CA hypothesis van Buren and Sharwood Smith (1985) discuss. Other researchers whose work suggests this position are Bley-Vroman (1989), Clahsen and Muysken (1989) and Schachter (1988).

This point of view provides a potential explanation of unsuccessful L_2 acquisition, but it also predicts that learners whose L_2 is very similar to their L_1 are likely more successful learning their L_2, i.e. the claims are similar to those made by proponents of CA and are not substantiated by the literature[3].

This overview of positions represented in the literature with regard to the availability of UG in L_2 learning reflects general trends. It also suggests the difficulties involved in obtaining L_2 data that clearly support or reject one or the other of these positions.

1.2. The Research Problem

The preceding discussion shows that there is considerable uncertainty in the L_2 literature with regard to the role of UG and the influence of learners' L_1 in the L_2 acquisition process. Much recent research in L_2 acquisition has focused on the underlying question of whether or not UG is available in L_2 acquisition. One of the difficulties in the pursuit of answering this question is the identification of the extent of L_1 influence and the separation of competence from various effects of performance factors (Sharwood Smith 1988). Given that many aspects of linguistic theory are still changing or being refined, there is no clear account of which

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[3] Sharwood Smith (1988) tries to relate these claims to a number of clearly defined learner strategies. However, at this point they do not seem to be able to predict what IL can be expected from a given learner.

constructions are interdependent, or of which constructions are prerequisites to the acquisition of others. It seems reasonable to assume that there will be interaction between different modules of linguistic theory as well as second language acquisition theory. There will also be a need for a theory of performance and it is expected to interact with the other modules (Schwartz 1987). The research undertaken for this thesis concentrates on one small and clearly defined aspect of L_2 acquisition: the development of preposition pied-piping and stranding in relation to a theory of markedness. Recent studies show considerable uncertainty with regard to the applicability of a theory of markedness in L_1 and L_2 acquisition. Several studies of the acquisition of marked structures in L_1 development confirm that children go through a stage during which they have mastered the unmarked but not the marked variant of a syntactic construction (e.g. Krause and Goodluck 1983, Phinney 1981). However, there is also evidence that suggests children do not observe the developmental stages predicted by markedness theory (e.g. French 1984). Although questions of markedness extend over a range of constructions, this thesis will focus on preposition pied-piping and preposition stranding.

The purpose of this thesis is to determine whether or not longitudinal data from five adult ESL learners can provide new insight that will allow confirmation or rejection of the developmental claims made by a theory of markedness within UG with regard to preposition pied-piping and stranding. The studies investigating ESL learners' development of these structures have

provided cross-sectional data which do not provide conclusive support for the predictions made on the basis of markedness theory and which are inconclusive with regard to the role of UG in the L_2 acquisition process. As the above studies look at average results from a cross-sectional perspective, it seems plausible that important individual trends are missed, possibly leading to premature rejection or acceptance of the markedness hypothesis.

Although production data are generally considered to be insufficient for the purposes of drawing conclusions about acquisition, longitudinal production data, supported by data from a grammaticality judgement task will provide some insight into the development of preposition pied-piping and stranding. They will also allow the generation of hypotheses to be tested in future research. A comparison of the data provided by the longitudinal learners should provide support or rejection of similar data, obtained on a cross-sectional basis in formal learning environments, as discussed in the literature. In addition, native speaker (NS) control groups are used to validate the non-native speakers' use of the constructions under investigation, i.e. whether the learners use these constructions in a native-like manner.

Previous studies have involved learners of various L_1s. The learners in this study are native speakers of Swiss German or French. Neither of these languages allows preposition stranding in standard constructions, they do only allow preposition pied-piping. Consequently, if the learners do not use pied-piping in

English, serious doubt is cast on the transfer hypothesis, as well as on the concept of UG and markedness theories. However, if they use pied-piped constructions, the data can be used to argue for transfer as well as for UG.

The issues addressed in this thesis are expressed in the following research questions:

- how do adult L_2 learners acquiring English in a natural environment deal with pied-piping and preposition stranding? do they use these constructions in a native-like manner?
- what role, if any, does their L_1 appear to play?
- do longitudinal data permit new insight into the development of preposition pied-piping and stranding constructions, especially with regard to developmental claims made by a theory of markedness?
- can variables be identified that allow an explanation of the different results in previous studies?

The longitudinal and grammaticality judgement task data from this study will be used to investigate the above questions. Together they permit an analysis of learner organized and selected language on a more detailed level than possible in cross-sectional studies.

1.3. Comments Regarding Swiss German

Swiss German (SG) is not one language but the collective term for approximately two dozen different dialects (Lötscher 1983). Whereas some of these dialects vary only with regard to some

features of pronunciation, morphology or a limited number of lexical items, others differ from each other to such an extent that they are mutually unintelligible. As a result, there is no one text that elucidates Swiss German grammar, every dialect has its own grammar.

The dialects spoken by two of the learners discussed in this study, referred to as SG2 and SG/F5, closely resemble what Lötscher (1983:14) calls "repräsentives Zitierschweizerdeutsch" (representative citation form of Swiss German), a form of Swiss German found in the central part of Switzerland. Another learner, referred to as SG4, speaks a version of Swiss German that has more distinct forms, not only with regard to vocabulary and pronunciation, but also with regard to syntax. However, the use of prepositions and related forms in the different dialects involved in this thesis does not vary greatly and any differences will be described in the relevant discussions.

1.4. Summary of Chapter

This chapter provided an overview of the theoretical framework within which the work presented in this thesis is placed. The relationship between UG, principles and parameters were presented and related to a theory of markedness as applied in L_1 and L_2 research. Finally, the research problem was outlined and presented in specific research questions.

CHAPTER TWO: RELATED RESEARCH

2.0. Introduction

Preposition pied-piping and preposition stranding are two English structures where the first represents the unmarked and the second the marked structure. The first part of this chapter presents an overview of the main aspects of the two constructions as they have been discussed in the literature. The second part reviews empirical studies on the acquisition of preposition pied-piping and stranding in L_1 and in L_2.

2.1. Formal Linguistic Research on Pied-Piping and Preposition Stranding

Pied-piping and preposition stranding, originally identified by Ross (1967), have been discussed widely in the syntactic literature from both synchronic and diachronic perspectives (e.g. van Riemsdijk 1978; Allen 1980; Hornstein and Weinberg 1981; Kayne 1981; In-Sook 1982; Maling and Zaenen 1985; Dekeyser 1988; Takami 1988). They occur in English in constructions derived by wh- and NP-movement (van Riemsdijk 1978)[4] such as wh-questions and relative clauses with indirect objects or prepositional phrases, and passives. They are manifestations of the transformational rule *move alpha*, an optional rule which, if employed in a particular

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[4] Van Riemsdijk (1978) points out that stranding by wh-movement is possible in a larger number of contexts than stranding by NP-movement.

language, may be subject to parametric variation (Chomsky 1982:18). Such constructions involve principles defined by a syntactic parameter assumed to have marked and unmarked options.

Preposition stranding involves the extraction of an Noun Phrase (NP) from a Prepositional Phrase (PP), leaving the preposition behind, stranded. The effect of preposition stranding on 1a) and 2a) is shown in 1b) and 2b) below.

1a) He dreamed about somebody.
2a) You painted the house with something.

1b) Who(m) did he dream about?
2b) What did you paint the house with?

There are different levels of extraction whose analysis seems to be fairly non-controversial. Extraction from a PP separated from the Verb Phrase (VP) by an NP, for example, is generally considered to be the most marked form. It is also considered to be the least frequent and most language specific amongst different extractions (van Riemsdijk 1978)

3) $[_{S'}\text{who}_i\ [_S[_{NP}\text{Ed}\ [_{VP}\ \text{did bake}\ [_{NP}\text{the cake}\ [_{PP}\text{for}\ [_{NP}t_i]]]]]]]$
(Who did Ed bake the cake for?)
4) $[_{S'}\text{what}_i\ [_S[_{NP}\text{Liza}\ [_{VP}\ \text{did fix}\ [_{NP}\text{the basket}\ [_{PP}\text{with}\ [_{NP}t_i]]]]]]]$
(What did Liza fix the basket with?)

Extraction from a PP governed by a V is considered less marked and, as a result, more frequent.

5) $[_{S'}$who$_i$ $[_S$ $[_{NP}$the clown $[_{VP}$ did speak $[_{PP}$to $[_{NP}t_i]]]]]]$
(Who did the clown speak to?)

Although preposition stranding is considered to be more frequent than preposition pied-piping in English, preposition stranding is not always permitted. The question of restrictions on preposition stranding has generated considerable discussion in the literature. In early accounts of these constructions, their widespread occurrence in English (Ross 1977) led linguists to treat them as the norm, and constructions in which preposition stranding did not occur were treated as exceptions (van Riemsdijk 1978:134). In addition, there are a number of examples of such sentences where native speakers disagree about their acceptability. Some of these will be discussed below.

Reanalysis within the framework of markedness criteria led van Riemsdijk (1978) to propose pied-piping as the unmarked, and preposition stranding as the marked form. His arguments are based on two major criteria, one cross-linguistic/typological and the second theoretical. The cross-linguistic/typological argument he presents is based on the observation that the construction of preposition stranding seems to be limited to a small number of Indo-European languages, namely English and Scandinavian and, to a lesser extent, Dutch, where only the limited set of r-pronouns are

involved. His theoretical argument is based on his analysis of PPs as bounding[5] nodes, most of them islands out of which extraction is impossible: NP extraction from PP involves moving across a minimum of two bounding nodes. This contravenes the subjacency constraint, which does not allow movement across more than one bounding node.

6) *Which exam did Fred faint during?[6]

The wh-element in 6) above would have to cross both PP and S in order to move into COMP. The resulting derivation would violate subjacency and be ruled ungrammatical. As a result, preposition stranding is a marked phenomenon whose occurrence indicates the relaxation of a UG parameter, i.e. subjacency. The relaxation of a parameter in UG, in this case subjacency, results in a marked construction.

By comparison, pied-piped constructions are the result of an entire PP being moved. This movement does not violate any universal constraints and is assumed to occur in all languages that allow movement. It is considered to be unmarked relative to preposition stranding and part of core grammar (Koster 1978, van Riemsdijk 1978). Pied-piping in questions is exemplified below.

7a) (Luke dreamed about someone)

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[5] as defined in Chomsky 1981.

[6] Following the convention in the literature, unacceptable utterances are marked with asterisk (*).

7b) [$_{S}$ [$_{NP}$ Luke [$_{VP}$ did dream [$_{PP}$ about [$_{NP}$ who]]]]]

7c) About who did Luke dream?

8a) (You painted the house with something)

8b) [$_{S}$ [$_{NP}$ you [$_{VP}$ paint [$_{NP}$ the house [$_{PP}$ with [$_{NP}$ what]]]]]]

8c) With what did you paint the house?

The above unmarked vs. marked distinction seems to be fairly non-controversial in a generative framework. Differences tend to occur in discussions about how best to account for preposition stranding. Van Riemsdijk (1978) proposes an "Escape-hatch", which considers elements within PP to be beyond the scope of constraints, i.e. elements can be extracted. He argues that the Escape-hatch provides for a mechanism similar to COMP to which the NP of a PP is attached before it is moved to initial COMP. VP, a binding category, allows wh-movement to extract elements because they are moved into COMP[7]. Consequently, only one bounding node is crossed during each movement and subjacency is not violated.

However, Hornstein & Weinberg (1981) argue that the Escape-hatch theory is insufficient to account for the preposition stranding facts in English, in part because it does not account for the ungrammaticality of preposition stranding in languages that have S' rather than S as a bounding node, as illustrated in the following examples from French and Italian (Hornstein & Weinberg 1981:57):

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[7] As there is no COMP position in NPs and APs no extraction is possible.

9) La fille de qui il parlait
   (The girl of whom he spoke)
10) *La fille qu'il parlait de
   (The girl who he spoke of)
11) L'auto con la quale Giovanni ha portato Mario
   (The car with which Giovanni drove Mario)
12) *L'auto la quale Giovanni ha portato Mario con
   (The car which Giovanni drove Mario with)

They propose a reanalysis rule to take into account the grammaticality of preposition stranding in English (Hornstein and Weinberg 1981). This is based on Chomsky (1981c) who proposed a marked rule of reanalysis to create a complex verb, thus avoiding violation of a universal constraint on movement. Their proposal includes three mechanisms designed to account for preposition stranding:

a) A universal filter blocking oblique traces: *[$_{NP}e_{oblique}$], it is intended to disallow preposition stranding.
b) A universal Case-marking convention based on Chomsky (1980, 1981c):
   NP -- [+nom] if it is the subject of a tensed S
   NP -- [+obj] if it is governed by V
   NP -- [+obl] if it is governed by P.
c) A language-specific rule of syntactic reanalysis which applies in the base and precedes all transformations. It states that

any group of contiguous elements to the right of a V in the domain of VP can form a complex VP. The trace left behind by moving the object of the preposition will be governed by V and Case-marked [+ obj], thus will escape the oblique case filter.

Donaldson (1982) points out that these mechanisms are able to deal with preposition stranding in passive constructions but a number of problems remain with their application in wh-movement. Hornstein and Weinberg's (1981) proposal depends heavily on the argument that English accepts preposition stranding freely as long as the PP is dominated by VP. Donaldson (1982) shows that it predicts the ungrammaticality of sentences that are acceptable to most native speakers, e.g. her examples 44c), 49) and 52) are given below:

13) Which problems was Harry talked to about? (V PP PP)
14) What spot was the money found in? (S-PP)
15) What day did John leave on? (S-PP)
(Donaldson 1982:97)

She concludes that the conception of reanalysis proposed by Hornstein and Weinberg (1981) accounts for preposition stranding in passive constructions but proves unsatisfactory for more general problems associated with wh-movement.

Kayne (1981), following Rouveret and Vergnaud (1980) also suggests a reanalysis rule, but his is language-specific for

English. His framework, which includes the following main elements, prevents the majority of objects of prepositions from moving:

a) A universal constraint that excludes P from the category of proper governors.
b) A language-specific rule of reanalysis which makes V a governor of the object of P; any traces are properly governed by reanalysed verbs.
c) The Empty Category Principle (ECP) which requires that empty categories be governed by N, V, or A.

The requirement that empty categories be governed by antecedents or that they be in a projection of a governing category of theirs makes movement of the NP without the P, i.e. preposition stranding, impossible in most cases. Consequently, preposition stranding may occur when a preposition is given the government superscript of its governing verb, as long as the two superscripted elements constitute a semantic unit (Siegel 1983).

Maling and Zaenen (1985) question the validity of a unified account of preposition stranding as discussed above in light of their Icelandic data. Although they accept a lexical reanalysis rule to account for preposition stranding in passives, they question its usefulness to account for preposition stranding in wh-movement. They show that Icelandic permits preposition standing in wh-movement, but not in passive constructions and conclude that two

separate factors need to be included in an adequate theory of preposition stranding:

> "(i) whether prepositions are possible "governors" or "controllers" of empty categories, and
> (ii) whether or not it has a lexical reanalysis rule" (Maling and Zaenen 1985:207).

Their arguments against preposition stranding as a unified phenomenon receive support from other researchers. McCloskey (1986) provides examples from Irish to demonstrate that some languages do not permit preposition stranding in passives and wh-movement, but allow preposition stranding in right-node raising. He suggests that other languages, e.g. French, Irish, Polish, belong in the same category, i.e. they do not allow preposition stranding except in right-node raising.

Dekeyser (1988) examines data from Old English, Middle English and Germanic languages to trace preposition stranding and complementizer deletion in relative clauses. Among his four types of relative clauses he finds that one type was traditionally characterized by preposition stranding while two other types required obligatory pied-piping. However, the prevailing structure involved preposition stranding. During the Late Middle English period, he found that pied-piping was no longer obligatory with the latter two types. Comparing the number of constructions of pied-piping with that of preposition stranding in the Late Middle

English and Early Modern English periods he concludes that "the expansion of stranding in Modern English seems to be an unassailable fact" (DeKeyser 1988:166). His conclusion is further motivated by his observation that preposition stranding had also started to spread to wh-questions and passives during the Late Middle English and Early Modern English periods, demonstrating a further increase in the influence of the construction.

A somewhat different approach, based on functional principles, is proposed by Takami (1988) who argues that syntactic explanations cannot adequately account for the facts of preposition stranding. He rejects analyses such as Hornstein and Weinberg (1981) and Chomsky (1981a) because he considers reanalysis a problematic rule and the S-PP/VP-PP distinction invalid. His discussion of the syntactic analysis demonstrates that, like Donaldson (1982), he judges many of the sentences with S-PPs ruled out by Hornstein and Weinberg (1981) to be perfectly acceptable.

Takami's (1988) functional solution relies on the distinction between more/less important information. He considers each of the following sentence pairs to have the same structural description in terms of Chomsky (1986a,b). In addition, each pair uses the same preposition in an S-PP configuration according to Dresher's (1976) criteria used in Hornstein and Weinberg (1981), which would make the sentences unacceptable to native speakers. However, Takami (1988) argues that the second sentence in each pair is less likely acceptable to native speakers than the first one.

16a) Which party did John write the letter [after t]?

16b) ??/* Which party did John bury the letter [after t]?

and

17a) Which music professor did she sing the song [in front of t]?

17b) ??/*Which music professor did she forget the song [in front of t]?

18a) Which desk was the cat sleeping [under t]?

18b) ??/*Which desk was the cat scheming [under t]?

(Takami 1988:317/318, his sentences 36a,b, 37a,b, 38a,b)

He suggests that because writing a letter, singing a song, and sleeping under a desk are commonplace activities, the speaker/hearer's attention focuses on the more important information given in each PP. According to his hypothesis, sentences 16-18a) are expected to be acceptable as information can be extracted successfully from a PP when it contains the more important, newer, information. On the other hand, "burying a letter, forgetting a song, a cat's scheming, are so unusual and unexpected (Takami 1988:318), a speaker/hearer's attention is drawn to these parts, making them, rather than the information in the PP, important new information. In Takami's (1988) framework, this type of utterance (16b-18b) is ruled out by his more/less important information hypothesis[8].

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[8] An informal survey of 38 native speakers of English in an Introduction to Linguistics course shows that the vast majority (82%) of students considered sentences 16-18b) above and similar ones from Hornstein and Weinberg (1981) "grammatically correct". The sentences were presented out of context, which encouraged some

The above discussion of analyses of preposition pied-piping and preposition stranding indicates that the unmarked form, preposition pied-piping, appears to be non-controversial. The analysis of the marked form of preposition stranding, on the other hand, is problematic in a number of ways. Recent insights discussed in the literature suggest that the treatment of preposition stranding as a unified phenomenon is questionable and its characterization on the basis of syntactic aspects insufficient. The following explores empirical studies on aspects of preposition pied-piping and stranding.

2.2. Empirical Studies on the Acquisition of Preposition Stranding/Pied-Piping

There are few studies investigating the acquisition of preposition pied-piping and preposition stranding in the acquisition literature, whether L_1 or L_2. A summary of such research in L_1 acquisition is offered below, followed by a discussion of similar studies in L_2 acquisition.

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students to comment that they might have to re-evaluate their judgements in view of a specific context. This suggests that native speaker judgements may differ considerably from those of linguists. It also suggests that the expansion of stranding noticed by Dekeyser (1988) in data from the Late Middle English/ Early Modern English period is on-going.

2.2.1. L_1 Studies

Two studies within the framework discussed have recently been presented in the literature. The first, French (1984) discusses markedness in the acquisition of preposition pied-piping and stranding in young children. The second, Hildebrand (1987) investigates markedness in the acquisition of wh-questions. The results of the two studies lead to different conclusions.

2.2.1.1. French (1984)

French (1984) tested the developmental implications of the markedness hypothesis with regard to preposition pied-piping and preposition stranding in young children aged 2.11 to 5.6 years acquiring English as their L_1. Her results indicate that the three- to four-year-olds showed a slight preference for preposition pied-piping on the comprehension task, which involved picture selection. However, all groups demonstrated a strong preference for preposition stranding on the imitation task. Her overall results failed to support the claim that pied-piping is acquired before preposition stranding. O'Grady (1987:98) points out that the fact that French (1984) used sentences in which the stranded preposition is utterance final, with constructions in which the entire PP is moved to the beginning of the sentence, may have inflated those scores that suggest a preference for preposition stranding. The reason for this, according to O'Grady, is that sentence final position is the maximally salient position for

children, i.e. the preposition, which children had to notice in order to succeed on the imitation task, was in a favoured position. Consequently, the results provided by French (1984) may reflect on factors unrelated to markedness theory.

2.2.1.2. Hildebrand (1987)

Hildebrand (1987), tested the markedness hypothesis with regard to wh-questions[9]. She argues that children learning English as their L_1 will acquire structures involving wh-movement according to their relative markedness, i.e. the acquisition sequence will be as follows: (Hildebrand 1987:66-67):

a) Structures with no preposition stranding

   $[_{S'}$Who $[_{S}$did John $[_{VP}$kick $[_{NP}$t$]]]]$

b) Structures with preposition stranding in a PP dominated by a VP (i.e. an adverbial PP)

   $[_{S'}$Who $[_{VP}$did John $[_{VP}$sit $[_{PP}$near $[_{NP}$t $]]]]]$

c) Structures with preposition stranding in a PP dominated by an NP

   $[_{S'}$Who $[_{S}$did John $[_{VP}$read $[_{NP}$a book $[_{PP}$about $[_{NP}$t $]]]]]]$

The results from the forty-eight children aged four to ten show that the predicted developmental hypothesis is borne out very convincingly, both on the production and the imitation tasks.

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[9] There were no sentences with pied-piping in her study.

2.2.1.3. Conclusions with Regard to L_1

Goodluck (1986:89) acknowledges the difficulty in ascertaining the role of markedness in the acquisition of preposition pied-piping and stranding. She proposes two opposing hypotheses with respect to pied-piping and preposition stranding, The Rapid Projection Theory and The Restricted Interpretation Theory. The first theory maintains that children are able to project a grammar of unmarked forms based on the interaction of input data with their innate knowledge of UG principles. This grammar will include a rule of leftward movement from subject or direct object position and thus permit preposition pied-piping, even if this construction is absent in children's input. The second theory suggests that significant evidence of a marked construction in the input, and absence of the corresponding unmarked construction, might enable children to project a grammar based on input frequency rather than more general cross-linguistic criteria (Goodluck 1986:89).

Evidence from the studies by French (1984) and Hildebrand (1987) discussed above is somewhat contradictory and insufficient to permit strong conclusions. Considering the problems with regard to the sentence structures used by French (1984), it would seem that Hildebrand's (1987) developmental sequence is likely to be a more accurate reflection of children's acquisition of developmental sequences, but more empirical research is required to confirm its applicability for preposition pied-piping and preposition stranding.

2.2.2. L_2 Studies

Several studies have been carried out to investigate claims made with regard to markedness and a developmental sequence. The following discussion concentrates on those studies that focus on the acquisition of preposition pied-piping and stranding. The studies will be presented in chronological order.

2.2.2.1. Mazurkewich (1981, 1984)

Mazurkewich's (1981, 1984) study of native speakers of French and native speakers of Inuktitut acquiring English investigated two sentence pairs, the first involving prepositional and double object dative complements,

e.g. a) Fred gave his marbles to Anne (NP PP, unmarked)

b) Fred gave Anne his marbles (NP NP, marked)

the second questioned prepositional phrases in dative structures,

e.g. a) To whom did Fred give his marbles? (pied-piping,unmarked)

b) Who did Fred give his marbles to? (stranding, marked)

She predicted that in each pair learners would acquire the unmarked structure before the marked one. The subjects she chose for her study are particularly interesting in that French does not permit

preposition stranding[10], i.e. it requires pied-piping, while Inuktitut does not have prepositions (Mazurkewich 1981).

The task relevant to preposition pied-piping and stranding consisted of a written question formation task in which subjects were given declarative sentences. The phrase to be questioned was underlined,

e.g. a) Allen lent a dollar <u>to Louise</u>.

b) Allen lent <u>Louise</u> a dollar.

(Mazurkewich 1984:130, her examples 9 and 26)

The objective was to see whether learners preferred preposition pied-piping or stranding in their question formations. Her results show that the native speakers of French produced more pied-piping than preposition stranding constructions and although the number of both types of constructions generally increased with their evolving ability in English, the number of constructions with preposition stranding never exceeded that of constructions with pied-piping. This contrasts with the results from the Inuktitut speakers who produced more constructions with preposition stranding than with pied-piping.

The results from both groups show a very high percentage of errors, in some cases the percentage of errors is higher than the

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[10] Vinet (1979) discusses some non-standard forms in use in Quebec, e.g.
a) le gars que j'ai sorti avec
She analyses them as intransitive prepositions rather than instances of preposition stranding and demonstrates that they cannot occur in questions, e.g.
b) *Qui sors-tu avec?
(Vinet 1979:111)

percentage of pied-piping and stranding constructions combined[11]. In addition, the percentage of stranded constructions was higher for intermediate level Inuktitut subjects than for advanced level Inuktitut subjects, while the percentage for pied-piped constructions increased steadily from beginner to intermediate to advanced level.

Given that the results from the French speakers but not those from the Inuktitut speakers support her hypothesis, Mazurkewich argues that the Inuktitut speakers were more advanced than the French speakers because they were educated in an English immersion situation where they had more exposure to English than the French speakers. The French speakers, on the other hand, attended a French school where they received English lessons. Mazurkewich (1981, 1984) attributes the occurrence of preposition stranding in the data from the native speakers of French to their familiarity with the construction from French, i.e. transfer rather than acquisition. This seems to be a misinterpretation of Vinet (1979) whose examples refer to a relatively rare construction considered to be part of non-standard French. Mazurkewich (1981, 1984) concludes that, as predicted by the theory of markedness, native speakers of French start with the unmarked structure despite the fact that they could have transferred their knowledge of the marked structure from L_1 to L_2. The fact that their use of the pied-piped

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[11] This seems to suggest that the groups consisted of subjects who were not ready to deal with the constructions in question.

construction might have been the effect of transfer from L_1 does not seem to be a consideration.

The interpretation of these results is questioned by several researchers (e.g. Kellerman 1985, van Buren and Sharwood Smith 1985, Bardovi-Harlig 1987). The most pertinent criticisms for the purposes of this study are:

a) Mazurkewich's (1981, 1984) dismissal of the results obtained by the speakers of Inuktitut

Mazurkewich's claim that the native speakers of Inuktitut were more advanced in comparison to the native speakers of French appears to be valid given the results from the initial cloze test. A confounding factor in this respect may be the way in which the results were tabulated, i.e. the production by group was calculated as a percentage, which tends to obliterate individual results that might have allowed more insight into how lower level learners performed compared to more advanced level learners. As a result it is impossible to know which sentences were rejected and which subjects rejected them. It might be the case that a small number of subjects rejected a large number of sentences. White (1986) argues that the data from the Inuktitut speakers should show some evidence of a developmental sequence, even if they were more advanced. Given the lack of such evidence she argues in favour of a transfer effect for the French learners, i.e. they used their knowledge of pied-piping constructions and transferred it from their L_1 to their L_2. She offers no explanation for the data from the Inuktitut speakers.

b) Mazurkewich's (1984) argument that her French subjects produced preposition stranding as a result of transfer from L_1.

Preposition stranding does not seem to meet any of the generally accepted criteria for language transfer, i.e. preposition stranding in French seems to be neither unmarked, nor regular, nor productive, nor common (Bardovi-Harlig 1987:389). In fact, all of these descriptors apply to preposition pied-piping, suggesting that transfer from L_1 took place with regard to the unmarked construction.

c) Mazurkewich's (1984) claim that preposition stranding is rarely taught in ESL classes.

An informal survey of 24 ESL teachers in the intensive English language program at Brock University indicates that this construction is discussed regularly in ESL classes, usually in response to students' questions rather than a formal presentation in a text book. Some students seem to be aware of a prescriptive rule that prohibits placement of prepositions at the end of a sentence and ask a teacher to clarify it. Bardovi-Harlig (1987:404) refers to a similar student initiative which unintentionally preceded the administration of her elicitation task.

2.2.2.2. Van Buren and Sharwood Smith (1985)

Van Buren and Sharwood Smith (1985) present some preliminary results from an investigation conducted in Holland, involving Dutch school children and university students learning English. Dutch

allows preposition stranding with so-called R-pronouns only, i.e. it is more marked in comparison to English. The subjects used listening and reading skills "to accept or reject [English] sentences with prepositions that were both correctly and incorrectly stranded" (van Buren and Sharwood Smith 1985:32) or to rearrange jumbled sentences including pied-piping and preposition stranding. Van Buren and Sharwood Smith (1985) point out that these data stem from a preliminary investigation and they expect to refine both the data collection and analysis procedures. Preliminary results suggest that subjects might attempt to make the same +R/-R distinction in English that holds in Dutch, which would suggest support for their cross-linguistic interference framework. This might explain why some of the school children rejected some of the pied-piped constructions. However, van Buren and Sharwood Smith's (1985) results also give some indication of a developmental sequence in that close to fifty percent of the subjects in a school environment rejected stranding, whereas a much smaller percentage (20%) of university students rejected stranding. As in the preceding studies, there is insufficient evidence presented to conclusively reject either of the potential hypotheses presented above.

2.2.2.3. Liceras (1985, 1986)

The focus in these studies is on the form of ILs of learners of Spanish L_2 and the detailed development of relative clauses and related structures. Liceras (1985, 1986) hypothesizes that

unmarked properties of the L_1 will be transferred into the learners' IL, but marked properties will not be transferred. She studied forty-five native speakers of English, university students of Spanish at the beginner, intermediate and advanced levels. A small section on a translation and a grammaticality judgement task served to evaluate learners' knowledge of preposition pied-piping and stranding. Liceras (1985, 1986) ensured that learners concentrated on the relevant parts of the sentences by asking them to correct and translate the sentences on the grammaticality judgement task. However, there were only two sentences with preposition stranding on the grammaticality judgement task and six sentences with preposition stranding on the translation task. Her results show that learners at the beginner level accepted stranding on the two tasks in over 60% of the sentences, while learners at the intermediate and advanced levels had an acceptance rate of four and five percent respectively. This contradicts her expectation that marked constructions would not be transferred into the L_2. However, she points out that her subjects did not persist in their transfer of marked L_1 values to their L_2. This may have been due to her subjects' prior language learning background, i.e. they had studied other Romance languages which do not allow preposition stranding and may have come to the conclusion that preposition stranding is unique to English. In addition, only the subjects at the beginner level had not received explicit instruction on the relevant constructions in Spanish.

2.2.2.4. Bardovi-Harlig (1987)

Bardovi-Harlig (1987) presents results from her replication of Mazurkewich's (1984) dative wh-questions, extended by an additional questionnaire to take into consideration preposition pied-piping or stranding in relative clauses. Both sections of the task elicited subjects' preferred form in writing based on a stimulus sentence. Her ninety-five subjects are university level ESL or degree students ranging in ability from beginner to advanced and represent fifteen native languages, none of them allowing preposition stranding. The results show that the majority of her subjects produced the marked form, preposition stranding, before the unmarked pied-piped construction. In the early stages of acquisition, subjects tended to favour a strategy of not using a preposition at all, if they used a preposition they tended to strand it. Learners at levels one and three did not produce any constructions with preposition pied-piping, learners at level two produced 2% of their responses with preposition pied-piping. Students in level four produced slightly more pied-piped constructions than stranded ones, the percentage of pied-piped constructions compared to stranded ones decreased to approximately half in levels five and six. Finally, in levels seven and eight the percentage of pied-piped constructions increased by a factor of approximately two and six respectively. Bardovi-Harlig (1987) interprets these results as clearly demonstrating "that preposition stranding, a marked construction, is acquired before pied piping, its unmarked counterpart" (p. 400). She argues that her data show

a developmental sequence in which lowest level learners use a rule of No-Prep, followed by preposition stranding and, at the last stage, preposition pied-piping. However, it should be pointed out that the three lowest level learners in her study provided prepositions for between approximately sixteen and twenty-six percent of the stimulus sentences only. Learners in levels four, five and six produced replies in which forty percent lacked a preposition. This does not seem to suggest that these learners had *acquired* the relevant rules. The design of the study does not permit an examination of individual results, but clearly more details would be valuable in order to gain more insight into what these learners were doing.

Bardovi-Harlig (1987) concludes that her data do not support the developmental sequence predicted by the markedness hypothesis. She postulates a different developmental sequence, in which learners at the lowest level use no preposition, while the salience of preposition stranding in the input allows learners to acquire the marked construction before its unmarked equivalent. This conclusion is compatible with the above-mentioned Rapid Projection Theory and the Restricted Interpretation Theory proposed by Goodluck (1986) for L_1. It also receives support from Gass (1980), who found a similar effect of salience in the input in her study of the acquisition of relative clause formation in her L_2 learners.

Whereas these results clearly do not support the developmental sequence predicted by the markedness hypothesis, it is difficult to claim that they reject it. The subjects in Bardovi-Harlig's (1987)

study were not asked to reject unacceptable constructions, they were asked to provide their preferred constructions. Another potentially problematic factor might be the relatively small number of learners involved at each level (average of fewer than twelve). The results are given as percentages of each group, i.e. it is impossible to trace individual performance or specific constructions. Finally, the subjects lived in an ESL context, i.e. an environment in which they must have heard idiomatic English spoken on a regular basis. Such an environment would likely encourage their own use of PS.

2.2.2.5. Finney (1988)

Finney (1988) administered a battery of written and oral tasks, including comprehension and production, to French speaking university students at three different levels of ability in English. The various tasks were designed to verify the theory of markedness with regard to preposition pied-piping and stranding. Overall, he found a higher incidence of preposition stranding than pied-piping. An evaluation of standard answers only indicates an overall increase in the percentages of constructions with pied-piping and a corresponding decrease of constructions with preposition stranding as levels of ability increase. (By comparison, Bardovi-Harlig's (1987) data show a drop in the number of preposition stranding constructions and an increase in pied-piped constructions at the most advanced level only.) However, a large number of non-standard constructions suggests that learners

may have performed at or below the level of chance on some of the subtests.

Finney (1988) concludes that "intra-language frequency of a particular form or structure may have an important role to play in second language acquisition" (p. vi). His data fail to support the hypothesis that unmarked constructions are learned before marked constructions. As in Bardovi-Harlig's (1987) study, the salience of preposition stranding in the input appears to be a likely source of explanation. There was only one task that did not involve some form of manipulation of sentence elements; the grammaticality judgement test, which was administered as a listening/comprehension task. The learners' responses included a minimum of 21.25% acceptance of constructions with preposition pied-piping. Again, it is not possible to determine how this figure is distributed among subjects and sentences. The point is simply that, as in the earlier studies, the results are not consistent enough to clearly support or reject the notion of a developmental sequence based on markedness criteria.

2.2.2.6. Polomska (1988)

This study attempts to demonstrate how an acquisitional strategies framework applies to the investigation of L_2 learners' initial state. Her theoretical assumptions are based on van Buren and Sharwood Smith (1986, cited in Polomska 1988[12]), who elaborate

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[12] Sharwood Smith (1987) provides an elaboration and discussion of the five strategies involved.

a blueprint of acquisitional strategies that provide a framework in which markedness and parameters interact with cognitive and psycholinguistic factors. Her thirty-five subjects are adult native speakers of English learning Dutch[13], who were given a production and a grammaticality judgement task. The production task allowed subjects to indicate their preference for pied-piping, stranding or both. She then applied statistical tests to determine which of the five hypothesized strategies the learners had most likely adopted. There are a number of methodological and theoretical problems, but her tentative results suggest that learners' initial state of L_2 assumes non-equivalence with regard to preposition stranding, i.e. learners assume that their L_2 will be different from their L_1.

2.2.2.7. Conclusions with Regard to L_2 data

The preceding discussion indicates that studies on preposition stranding to date have been unsuccessful in determining the initial state of a learner's L_2, i.e. it has not been possible to determine what, if any role UG plays in second language acquisition.

2.3. Summary of Chapter

The discussion in this chapter has focused on providing an overview of research into theoretical and empirical aspects of preposition pied-piping and preposition stranding phenomena. It

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[13] It is not clear from Polomska's article whether the learners are in a *second* or *foreign* language setting.

was shown that studies in syntax tend to agree on considering preposition pied-piping the unmarked and preposition stranding the marked version of the parameter. However, it was also shown that preposition stranding involves a number of relatively poorly understood features and that no definitive analysis of the notion has been provided. Within the framework of UG, it is assumed that unmarked constructions are easier to acquire, therefore they are likely to appear first in L_1 and in IL varieties of English. However, neither L_1 nor L_2 research has been able to support this claim convincingly on the basis of empirical data.

One of the problems with the data reported on in the literature so far is that there are no two studies that observe exactly the same theoretical and methodological procedures. As a result, the new variables introduced in each study make comparisons difficult. The different procedures permit an overview of potential insights, but in order to make strong claims, several studies following the same procedures seem to be necessary. Future studies should also take the longitudinal perspective, which has not been discussed in preposition data, into consideration. As the study described in the next two chapters indicates, longitudinal data add additional insight to a growing pool of information.

CHAPTER THREE - METHODOLOGY

3.0. Introduction

This chapter presents a discussion of the methodological procedures adopted for the data collected in this study. In turn, the subjects and the criteria used to select them, their backgrounds and characteristics, the data collection process and the preparation of the data for analysis will be described.

3.1. Subjects

Two distinct groups of subjects provided data for this study. The first group to be discussed consists of five adult non-native speakers (NNS) who provided longitudinal data. The members of this group are described in some detail in order to establish how they differed from or resembled other NNSs investigated in similar research. The second group, sixteen adult native speakers (NS) of English, served as a control group to verify whether NSs would likely have used pied-piping and preposition stranding options in given contexts the same way as NNSs.

3.1.1. NNS Population

The non-native speakers in this study were selected according to a number of previously established selection criteria, some of them suggested in the work of Schumann (1978), ZISA (e.g. Clahsen 1980, Meisel 1977) and HPD (Heidelberg Project Deutsch 1978, 1979). The purpose of the selection criteria was to limit the number of

extra-linguistic variables that have been shown to affect L_2 acquisition. They cover a range of factors including the subjects' arrival and position in Canada, age, education, and socio-economic background. A detailed description of the criteria is given in Appendix I.

A first meeting with each of the six potential subjects interested in taking part in the study served to discuss the overall goals of the study[14] and the involvement of the subjects. Subjects were expected to be available for regular meetings, during which part of the conversation was to be tape-recorded. They did not receive any remuneration for participation in the study. Two potential subjects did not want to be tape-recorded and, consequently, could not be included in the study. The remaining five subjects agreed to participate without hesitation. Each of them was free to request deletion of all or part of a recording session or to withdraw from the study at any point during the data collection period. None of these subjects withdrew or requested a deletion, although one subject left Canada earlier than anticipated.

The five female subjects who participated in this study were of similar age, had similar backgrounds and comparable positions in Canada (Ottawa), but they were at different stages of L2 acquisition. They were Swiss citizens who had completed compulsory

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[14] The goal was characterized as "trying to learn more about how adults learn another language".

schooling in the central Swiss-German or the south-western French speaking part of Switzerland. They were close to twenty years old at the beginning of the study, and had arrived in Ottawa within a few days of each other to take up positions as mother's helpers in English speaking Canadian families with young children. All five subjects expected to stay in Canada for at least one year. The main characteristics of the subjects are summarized in Table 3.1. below, a more detailed description of each subject's background is given in Appendix II.

Individual NNSs will be referred to by a combination of letter(s) and number: the letter refers to the subjects' native tongue, i.e. F for French, SG for Swiss German and SG/F for bilingual Swiss German/French. The number refers to the level of ability in L2, with 1 indicating the most basic, and 5 the most advanced level amongst the five subjects[15].

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[15] The learners' level of ability was determined on the basis of a modified oral TOEFL evaluation sheet (Appendix V).

Table 3.1. Summary of Learner Characteristics

	F1	SG2	F3	SG4	SG/F5
Age (beginning of study)	21 yrs.	23 yrs.	20 yrs.	21 yrs.	19 yrs.
Nationality	Swiss	Swiss	Swiss	Swiss	Swiss
Completed compulsory schooling	yes, in F	yes, in SG	yes, in F	yes, in SG	yes, in F
Job related training	18 mths.of 30 month Nursing program	3 years Trade School	3 years Trade School	3 years Child Care Training	1 year Commercial
In Canada as Mother's Helper	yes	yes	yes	yes	yes
Date of arrival in Canada	82/07/30	82/06/30	82/08/01	82/07/31	82/08/01
Learner's language background					
- Mother	F	SG	F	SG	SG
- Father	SG	SG	SG	SG	SG
- Learner	SG to 4 years then F only	SG	SG to 5 years then F only	SG	SG at home F at school fluent in lim. contexts
*ability in Swiss German	none		a few words		
French		2 years in Sec. School		3 years in Sec. School 1 yr. in French Switzerland	
*ability in French		minimal		good oral ability	
German	8 months in West Germany	in school	3 years in Sec.School	in school	5 years in Sec. School
*ability in German	minimal	good receptive skills	fluent in lim. contexts	fluent	fluent in lim. contexts
Italian					3 mths. in Sec. School
*ability in Italian			a few words		a few words
Training in English (approx.)	40 hours Evening course	2 yrs. Sec. School	2 years in Sec. School	3 yrs. in Sec. School	4 years in Sec. School + 2 mths. in England
ability in English (at beginning of study)	false beginner	low beginner	low beginner	high beginner	intermediate
Age and number of children to look after	1 newborn	1 x 1 year	1 x 10 months 1 x 3 years	1 x 3 years	1 x 8 months
Language used with children	F only	English	F and E	E only	E only
Employer's L1	English	English	English	English	English Chinese

Abbreviatons:

*	=	learner's own rating	E	=	English
F	=	French	SG	=	Swiss German
cont.	=	contexts	Sec.	=	Secondary
beg.	=	beginning	lim.	=	limited

The non-native speakers in this study differed from those usually discussed in longitudinal studies such as Bodeman and Ostow (1975), HPD (1978), Klein and Dittmar (1979), Orlovic-Schwarzwald (1978), ZISA (e.g. Clahsen 1980, Meisel 1977) in a number of ways. One such difference concerns education and prior language learning. The learners in this study had completed compulsory schooling, as well as between one to three years of job oriented training (such as trade school or community college), before going abroad. Although the relationship between a learner's level of formal education and success in L_2 acquisition is not clearly understood (e.g. Cummins 1979, Gardner 1980), formal education, especially L_2 education, is likely to influence the way learners approach their L_2 acquisition. The five learners in this study, for example, were exposed to some guided L_2 learning during their primary or secondary school education. This exposure to formal learning, in which accuracy was stressed over fluency, may have encouraged them to be very concerned with their *correct* use of English (as opposed to fluency or communication), as some of the learners themselves suggested during discussions about their language learning strategies. They often asked questions about the form of their utterances and occasionally made basic but concrete comparisons between the system of their L1 and their L2.

Another difference between the learners in earlier studies and the ones discussed here is their purpose in going abroad. Many of the learners in the above studies went abroad to find work and to improve their standard of living. The five subjects in this study

decided to work in Canada to learn English, to experience a different lifestyle, and to travel. After one, possibly two years in Canada they expected to return to Switzerland and to look for employment there. None of the five learners wanted to learn English to find permanent employment in an English language environment, and only SG/F5's employment prospects in Switzerland were likely to improve with a knowledge of English. A more important consideration for all five learners (and their families) seemed to be learning a foreign language while experiencing life in another culture. This was considered to be a desirable component of a young person's education[16] and, as a result of this attitude, the learners in this study could depend on their families for moral as well as financial support. Unlike political refugees discussed in Noyau (1982) or d'Anglejan, Renaud, Arseneault, and Lortie (1981), the learners in this study were free to return to their country of origin any time they wished to do so. However, they had a desire to demonstrate their ability to survive away from family and friends and to stay for the planned period of time. In other words, the learners discussed in this study did not learn a language, in their case English, as a means to an end, but as an end in itself.

The preceding discussion illustrates that the subjects who participated in the longitudinal study shared very similar

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[16] Arquint et al. (1982) suggest that this is a widespread attitude in Switzerland, where the ability to speak several languages is encouraged and valued.

backgrounds and training. They had experienced similar language learning situations in which they were exposed, to varying degrees, to languages that do not permit preposition stranding. Educational, psychological, economic, etc. factors in their backgrounds appeared to be favourable, allowing the learners to concentrate their time and energy on learning English.

Despite the numerous similarities in their backgrounds, the five learners differed from each other in several ways. The most evident seemed to involve the learners' motivation and learning style. Whereas SG/F5 and F3 indicated at the beginning of the study that they were determined to learn to speak English as well as possible during their stay, F1, SG2 and SG4 seemed to be less certain about their linguistic goals. F3 and especially SG/F5 sought and found countless opportunities that allowed them to listen to and speak English, F1 made friends with speakers of French only and tried to avoid contact with non-French speakers. SG2 and SG4 expected and liked to use English during their work day, but in their leisure time, they associated almost exclusively with other native speakers of Swiss German. Although all five learners knew that the interviewer spoke French and Swiss German, only F1 tried to initiate conversations in her L1 after the first meeting. The other subjects occasionally used their L1 to request clarifications or equivalences, either on the level of vocabulary, sentence structure or social conventions. F1 frequently asked for help with self-imposed English homework, usually grammar exercises from a book a friend had given her. She seemed to prefer speaking

about the language rather than the language itself and soon decided that the large number of speakers of French living in the Ottawa area made learning English unnecessary for her. She returned to Switzerland after eight months in Ottawa, four months before the expected date.

3.1.2. NS Population

Sixteen NSs of English provided the control group, four for each of the NNSs, i.e. SG2, F3, SG4, SG/F5[17]. Four NSs were matched as closely as possible with each of the learners with regard to sex, age, education and socio-economic background. There are differences in age of school entry, school leaving, etc. within different areas (cantons) in Switzerland as well as between Switzerland and Canada. Consequently, the number of years NS and NNS subjects spent in school varies. All subjects included in this study completed compulsory schooling, regardless of the number of years involved. Another area of difference involves the training subjects received after compulsory schooling. High school graduates who do not expect to follow an academic career tend to enter an apprenticeship program that combines on-the-job training and courses in trade school for two to four years, depending on the chosen field. Care was taken to select NS subjects who had undergone training to perform the same type of job as that of each

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[17] F1 did not produce any utterances with preposition pied-piping or stranding in the recorded data, which made no data available for NSs to judge.

of the NNSs, which usually meant that they had followed a relatively short course at a community college.

3.2. Data Base

The data base is comprised of two parts, the longitudinal data from the NNS and second the selections from the NS[18]. The NNS data were collected and analyzed first. They include tape-recorded spontaneous speech and written grammaticality judgements with oral comments. The NS data consist of the constructions NSs selected when they were presented with the pied-piping or prepositions stranding utterances the NNSs produced. The NNS data is discussed first.

3.2.1. NNS Speaker Data

Between two and eight and a half hours of narratives and conversations from the five subjects, tape-recorded over a period of between six and twenty months, form the NNS data base collected for this thesis. Initially, the recording sessions took place weekly, then bi-weekly, and finally once a month. The first few recordings with each subject are approximately fifteen minutes long, later recordings are thirty minutes long. Details on dates and duration of individual recordings are given in Appendix III.

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[18] Some of the NNS data were collected within the framework of a larger study on NNS's acquisition of syntax which was supported by Social Sciences and Humanities Research Grant #410820356 to Dr. C. Adjémian.

The recordings were made during pre-arranged, informal visits of between one and two hours duration at each learner's place of work. The subject and the researcher were usually alone in the room. Occasionally the children of a learner's employer were present and a few short exchanges between learner and child were part of a recording session. However, such exchanges were too infrequent and brief to be included in the data base. In addition, individual learners occasionally phoned the researcher between meetings to ask questions, cancel meetings, discuss news or problems, etc. No recordings were made during such additional conversations; they simply helped to establish and maintain a friendship between each learner and the researcher. This friendship was an important factor in helping learners feel comfortable[19] during recording sessions, and in maintaining their availability for recordings.

The format of the recording sessions tended to follow the same three-phase pattern throughout the study period. At the beginning of each visit, a small microphone was attached to the learner's collar and the cassette recorder was placed on the floor, out of sight. After a warm-up period of between ten and twenty minutes, the researcher turned on the recorder, initially for a fifteen minute period and later in the study for a thirty minute period[20].

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[19] F1 was eager to be part of the study and enjoyed the visit. However, she never seemed at ease when the conversation was in English.

[20] Fifteen minutes was the time span suggested by socio-linguistic methodology. However, initial analyses of the data showed that the L_2 learners' halting rate of delivery made longer

The warm-up period enabled the subjects who did not use English immediately prior to the visit to re-adjust to English, to get interested in a topic, and to forget about the fact that they were being recorded[21]. The post-recording period was often a time for subjects to raise personal problems or questions that required longer responses from the researcher.

The aim of the recording sessions was to obtain learner-organized chunks of speech that are as natural and as close to everyday conversations as possible. Guided conversations used in the initial stages of data collection resulted in many, often prolonged, pauses. In subsequent meetings, the learners were encouraged to speak freely about anything they chose. The researcher provided interjections etc. as appeared appropriate in order to maintain the conversation. The learners clearly preferred to select their own topics, several of which recurred throughout the recording sessions (e.g. work conditions, leisure activities, comparisons between home and host country, etc.), and consequently, the stylistic and linguistic varieties that resulted are limited. These learner-selected topics deal mostly with concrete issues, especially with "here" and "now". When a learner appeared to have run out of things to say, the researcher asked a question or made a comment to encourage the learner to elaborate on a topic or to

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recording sessions desirable.

[21] F1, the least advanced subject, seemed to feel least comfortable about being tape-recorded, while SG/F5, the most advanced learner, seemed most comfortable with it.

provide a new topic. This technique seemed to work well at the time of the recording sessions[22].

A short chronological account written after every meeting provides a record of the main points of the encounter as well as information regarding time and place of each interview, reasons for deferred or cancelled meetings, a description of the subject's attitude and unusual reactions, interruptions, difficulties and special occurrences. One frequent observation in these notes refers to the relative guardedness evident in the subjects' speech.

At the beginning of the third month of the study, the learners were asked to complete a written grammaticality judgement task. The task consisted of five sentences for translation and twenty-three sentences to be judged. The sentences relate to various aspects of relative clause formation, only three of them involve preposition pied-piping or stranding and only those will be considered as data for this study[23]. The learners were asked to judge the grammaticality of the sentences, if they judged a sentence to be ungrammatical, they were asked to try to rephrase it to render it grammatical. If they judged a sentence to be grammatical, they were asked if they could rearrange the string of

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[22] The discussion in Chapter Four shows that as a result of this technique it is not possible to determine whether the data represent the extent of learners knowledge of L_2 or avoidance of certain structures.

[23] The three sentences are (sentence and page numbers refer to the respective numbers on the original test):
4) What do you think we can repair this with? (p.1)
11) With what do you think we can repair this? (p.3)
18) With what do you think that we can repair this? (p.4)

words to express the same idea in another, grammatical, sentence. The learners were asked to discuss their judgements of the constructions in order to ensure that they focused on the relevant aspects for the purposes of the task (Kellerman 1984). The goal was to determine whether the learners had access to the rules for the two constructions under discussion.

3.2.2. NS Data

The NS data were collected in order to have a basis of comparison for the NNS data, to obtain an indication of whether NSs might have used preposition pied-piping or preposition stranding in similar contexts. Accordingly, meetings to match the conditions outlined above for NNSs were arranged with each NS subject. Most NSs chose to meet in their home, two preferred to meet in the researcher's home.

All relevant NNS utterances from the recordings were listed separately for each subject in order to provide the stimulus for the collection of the NS data. Each NS was presented with the contexts in which the matched NNS produced a relevant construction. The contexts were presented orally, in the same formulation in which they occur in the NNS transcripts, one at the time, with the target utterance given once as a pied-piped and once as a stranded construction. Random selection determined which one was presented first. NSs were told that the choice depends on personal preference, that there is no right or wrong answer. They were encouraged to select the form they would likely have used in a

similar context. The researcher recorded each NSs' selections as well as any comments NSs made about the utterance or their selection on an answer sheet .

3.3. Data Structure and Preparation for Analysis

The data collected from the NNSs were treated first. The relevant constructions isolated from them were then compiled to be used as the stimulus sentences for the NS selections. The NNS data are discussed first, the NS data second.

3.3.1. Structure and Preparation of NNS Data

The tape-recordings collected from each subject were transcribed in chronological order, using standard orthography but observing a number of transcription conventions (listed in Appendix VI), onto the mainframe computer at the University of Ottawa. The Oxford Concordance Programme (OCP) served to structure the learner data and to produce three different types of listings for each interview:

a) an alphabetically ordered list of words produced during the recording, with a record of the number of times each word occurred;

b) an alphabetically ordered list of words produced during the recording, indicating the line number on which each word listed occurred;

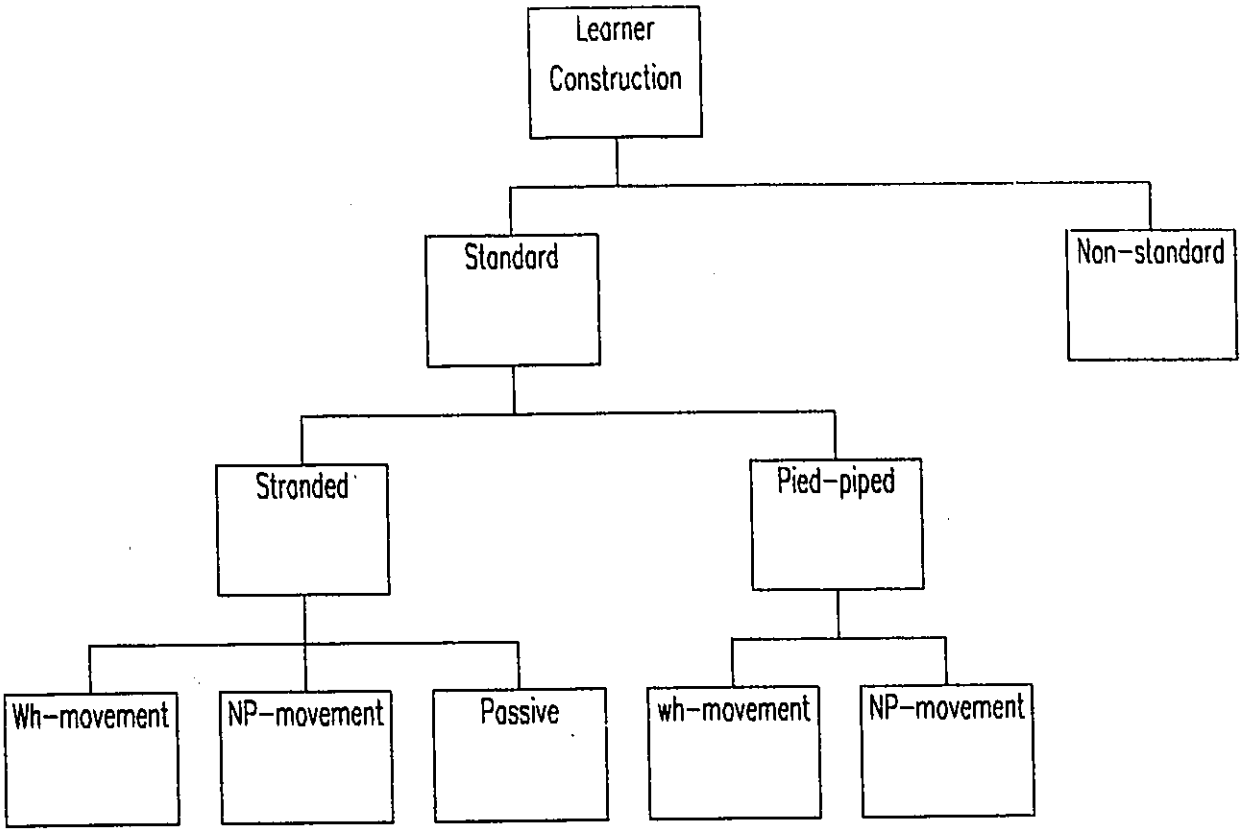
c) an alphabetically ordered list of words produced during the recording, indicating each occurrence of the word in question

surrounded by up to fifty characters of context in which it occurred.

(Examples of these listings are given in Appendix VII.)

All constructions with a pied-piped or stranded preposition were identified and categorized according to whether each of them was standard or non-standard. The non-standard constructions were grouped according to the element(s) that made them non-standard. Standard constructions were grouped into pied-piped and stranded constructions and the latter were further classified into those that involved wh-movement, or NP-movement, or passive, as Figure 3.1. below illustrates.

Figure 3.1. - Steps in the Analysis of Learner Data



3.3.2. Structure and Preparation of NS Data

The NSs had selected one of two options for each of the preposition pied-piping or stranding utterances the corresponding learner produced. Thus, the data base consists of four times the number of relevant utterances produced by each NNS. The selections the four NS matched with each NNS made were sorted into whether

they agreed or disagreed with the NNS' utterance. They were then further grouped according to whether they involved wh-movement or NP-movement. The NSs' evaluation of the relevant sentences on the grammaticality judgement task were compiled.

3.4. Input NNS Received

At the beginning of this study it was assumed that most of the input the five learners received would be from their employers and their employers' family. In order to obtain more concrete information about the nature of the input the learners in this study received, their employers, their teachers and the learners themselves were interviewed. The information gained through these three different sources suggests that the learners received primarily unmodified input that included little negative feedback.

A meeting between the researcher and each set of employers was arranged during the early stages of the data collection, but the employers did not consent to having the conversation during this meeting tape-recorded. All except one of the employers were native speakers of English. All of the employers were professionals[24] who had been educated in English Canada and had earned their undergraduate and/or graduate degrees from Canadian universities. They spoke what might be considered Standard Canadian English.

These meetings indicated that there was very little communication between the employers and their employees. The

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[24] Two medical doctors, a dentist, a lawyer, a city alderman, a credit manager, a nurse, three officers in the Canadian Armed Forces.

employers were primarily concerned with how well their employees performed their duties. As long as the learners could understand and carry out instructions and requests the employers considered their level of English to be satisfactory. They considered the subjects responsible for their own language learning. None of the employers expressed an interest in helping the employee improve her language skills. Clearly, communication between the employers and the learners was very limited in all five cases.

The learners were asked to keep a record of their interaction with native speakers and non-native speakers of English over a period of three weeks. Their records confirm that they had very limited contact with their employers. Their interactions seemed to be limited to exchanges about their work and general social routines. These records (Appendix IV) indicate that four of the learners received most of their input from radio and television or from native speakers they met through leisure activities. SG/F5 seems to have been particularly successful with regard to finding native speaker contacts. The records show that much of the input the learners received was not directed at them, but at an assumed audience of native speakers of English, as is the case in radio and television.

The third source of input the learners received was from the ESL classes they attended at a local high school or a community college once or twice a week[25]. These classes seemed to take the

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[25] F1 attended ESL classes during one 12-week session, SG2, F3, SG4 during two 12-week sessions, and SG/F5 during three 12-week sessions.

form of social gatherings: neither textbooks nor curriculum nor syllabus guidelines were used. All five learners mentioned that most of the class time was spent discussing topics proposed by students. Although they could ask the teacher to explain specific points of grammar if they wished to do so, most explanations were limited to clarifications of vocabulary items. The learners seemed to look on their ESL classes as an opportunity to socialize. For F1, they represented the primary source of English language input.

A brief meeting with each of the teachers involved confirmed that the classes were used to provide the learners with an opportunity to listen to and speak English, and that little or no time was spent on deliberate practice of forms. Classes usually consisted of one of the following activities:

a) A student gave a short presentation of an aspect of his/her country, often accompanied by slides or other visual support, and followed by a class discussion.

b) Students read and discussed a short newspaper or magazine article one of the students had brought to class.

c) Students watched a movie and discussed it.

All three activities focused on ideas presented and none of the teachers corrected non-standard utterances unless such utterances lead to a breakdown in communication.

Towards the end of the fourth month of the study, the five learners were asked to indicate what, if any, adjustments they had noticed in the speech that native speakers of English used to address them to accommodate their developing language skills

(Appendix V). The few modifications they noticed involved slowed down rate of speech, exaggerated articulation and, if the learners requested it, paraphrased expressions.[26] All five learners pointed out that such modifications occurred very infrequently, primarily in situations where they had to request a speaker to repeat an utterance. The learners expressed disappointment about the fact that native speakers rarely corrected their utterances or provided explanations.

The preceding triangulated investigation of the input the learners received underlines two important factors in this study: a) The five learners had little input from native speakers directed specifically to their level of ability. Four of the five learners in question seem to have received primarily input directed at native speakers (see Appendix IV), input that did not try to accommodate the learners' evolving knowledge of English, as is shown in studies of language input in controlled environments (Clyne 1982, Long 1985, Wesche and Ready 1985). It is not clear what effect this type of input had on the learners' L2 development and this point will be raised again in Chapter Four.

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[26] F1 reported that one of her employers used few words and many gestures and facial expressions whenever she had to communicate with the learner. This was observed by the researcher on two occasions, when utterances similar to the following were produced:
"me (pointed at herself) go (waived), now" (gloss: I'm leaving now);
"me (pointed at herself) back (pointed at entrance floor, where she was standing), six (put six fingers up), F1 (name of F1 while pointing at F1) cook" (gloss: I'll be back at six, you cook supper).

b) The preceding descriptions of the input the learners received, their reasons for wanting to learn English and their background characterize the learners and show how they differ from other L2 learners discussed in the literature.

In addition, it should be made clear that all the learners involved in this study had some formal training in English in their native country, as their profiles indicate (Appendix II).

3.5. Summary of Chapter

In this chapter, the methodology for collection and analysis of the data from the NNS and the NS control group were described. It was shown that the NNS differed from other subjects described in the literature: the longitudinal subjects had completed compulsory education in their native country and they had good job prospects there. Each NS control group was matched with one learner according to age, education and socio-economic background.

The NNS data base consists of longitudinal learner-organized data and three relevant sentences for each learner from a grammaticality judgement task. The longitudinal data from the NNS were categorized into pied-piped and stranded constructions, they were then further sub-categorized and analyzed according to the criteria outlined. The relevant constructions from each learner were listed and presented to the NS controls in order to determined whether they would have used the pied-piped or stranded construction in the same situation. The NNS results from the grammaticality judgement task were tabulated. The sentences were

also presented to the NS in order to ensure that they considered the constructions native-like. Information from different sources about the input the NNSs received were compiled.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.0. Introduction

This chapter presents the results from the spoken and written data collected from the NNSs, and from the preference task given to the NSs. The results are presented and discussed in two major sections: first, the overall and individual results from the spoken and written NNSs data are provided and discussed in terms of the results from other studies investigating the acquisition of preposition pied-piping and stranding. It concludes with a discussion of the findings in terms of Markedness Theory and UG. It will be shown that the data lend support to the markedness theory but, as expected, they cannot resolve the question as to whether or not UG is involved in L_2 acquisition. The data also support a position that argues in favour of transfer from L_1, where UG is available only to the extent to which it applies in L_1. Second, the NS data are presented and discussed in terms of the NNS data. It will be shown that NSs use preposition stranding more liberally than NNSs. The results from this study suggest that when NNSs use preposition stranding, NSs would use it as well.

4.1. NNS Data

The recorded learner data of over one hundred and sixty-two thousand words include a total of thirty-seven instances of pied-piping and preposition stranding. They occur primarily in

constructions with NP-movement, less frequently with wh-movement, but not with passives. Details of these constructions will be discussed in the presentation of individual learner data. First, Table 4.1. below shows a summary of the preposition pied-piping and stranding constructions identified in the transcripts from the learners.

Table 4.1. Summary of Preposition Pied-Piping/Stranding Constructions in Learner Transcripts

Subject	Preposition		Constructions w/out Prep.	# of relevant Constructions
	Stranding	Pied-Piping		
F1	-	-	-	-
SG2	10	1	4	15
F3	4	1	-	5
SG4	2	1	6	9
SG/F5	6	2	-	8
Total	22	5	10	37

Table 4.1. reflects the absence of constructions with preposition pied-piping and stranding in the recorded data of the lowest level learner, F1. It also shows that the remaining four learners produced more constructions with preposition stranding than pied-piping, both overall and individually, regardless of level of ability. This and other aspects of the results are discussed below, after a presentation of results for individual learners.

4.1.1. Data from Individual Learners

The results from the recordings are presented before those from the grammaticality judgement task, starting with the lowest level learner.

4.1.1.1. F1

As indicated above, the recorded data collected from this learner does not include utterances with either pied-piping or preposition stranding. The data primarily consist of very short utterances, usually limited to subject-verb sequences or an utterance fragment.

The grammaticality judgement[27] task indicated that F1 accepted the two pied-piped versions without reservation, but considered the sentence involving preposition stranding to be non-standard English. She remembered hearing or reading the rule that prepositions do not occur at the end of sentences in English. However, she thought that she might have heard native speakers violate this rule in some of their utterances. F1 was unable to rephrase the sentence to achieve a standard utterance, or to rephrase the pied-piped version to express the same idea.

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[27] As pointed out in Chapter Three, the three sentences are (sentence and page numbers refer to the respective numbers on the original test):

4) What do you think we can repair this with? (p.1)
11) With what do you think we can repair this? (p.3)
18) With what do you think that we can repair this? (p.4)

4.1.1.2. SG2

This learner produced a total of fifteen utterances relevant to the constructions under investigation: ten include preposition stranding, one pied-piping, while four cannot be assigned to either construction because the preposition is missing, e.g.
"I don't know [with?] who they go [with?]" (SG2 83/03/28). The pied-piped and one non-standard utterance involve wh-movement, the others NP-movement.

During the first recording session SG2 produced
"what do you do this for?" (SG2 82/10/26:27) After a short pause she rephrased the utterance to the only pied-piped version in her transcripts, i.e.
"for what do you need this?" (SG2 82/10/26:28)
The next relevant construction in the spoken data is stranded, with NP-movement, and occurs almost four months later. Subsequently, she produced one or two stranded versions with NP-movement in most recordings. It seems likely that the first version of the above utterance was available to the learner as a fixed pattern or a routine, i.e. she had not yet acquired the rule for preposition stranding, therefore she "corrected" her utterance.

This hypothesis receives support from SG2's rejection of the stranded version on the grammaticality judgement task, which took place just over two months after she produced the above utterance. She was unable to explain why it appeared to be incorrect or to rephrase it to achieve a standard utterance. However, she considered the two sentences with pied-piping to be correct. When

asked whether she considered it possible to rearrange the words in a different sequence to ask the same question she suggested "how do you think (that) we can repair this", which seemed to be her preferred construction.

4.1.1.3. F3

The transcripts of the spoken data from F3 include one utterance with preposition pied-piping and four with preposition stranding. All of these are standard utterances with NP-movement. The utterance with preposition pied-piping occurred in the third month of taping (83/02/09) and constitutes the first occurrence in the recorded data of either of the two constructions under investigation. Each of the stranded versions occurred during a different recording session.

Despite the fact that the four occurrences of preposition stranding in F3's recorded data appear during different recordings, they all involve the preposition *"about"* and the verbs *"talk"* (twice), *"do"* and *"know"* e.g.

"...explain on a paper what the story is talking about" (F3 83/03/16:48)

"...she had problems I didn't know about" (F3 84/05/02:217)[28].

F3 used the above three verbs without prepositions in intransitive utterances. The four stranded utterances represent the only transitive uses of the four verbs. This seems to suggest that her

[28] In comparison, the other three learners formed relevant constructions involving between four and six different prepositions.

use of preposition stranding was somewhat formulaic and limited to a small number of lexical items.

F3 accepted the two sentences with pied-piping on the grammaticality judgement task as standard English but was unable to re-phrase them as a stranded construction. She considered the sentence with preposition stranding as non-standard and pointed out that *with* cannot be placed at the end of a sentence. She offered "How do you think we can repair this?" as an improved version of "What do you think we can repair this with?" It is not clear why she did not offer the pied-piped version as a potential alternative.

4.1.1.4. SG4

The data for this learner include one utterance with preposition pied-piping and two with preposition stranding. The pied-piped version, involving wh-movement, occurred within the first month of taping, while the two utterances with preposition stranding involved NP-movement and occurred during a recording session three months later (83/02/10). In addition, SG4's transcripts include six utterances with missing prepositions.

SG4 judged the two sentences with preposition pied-piping to be standard English but suggested that "How can we fix this" was better and more likely what NSs would say. She rejected the version with preposition stranding, explaining that *with* cannot be placed at the end of a sentence. She offered "How do you think we can repair this?" as a corrected version of "What do you think we

can repair this with". When asked whether she could improve the sentence with the words given, i.e. without resorting to the "How..." construction, she produced the pied-piped version but added that her version was better.

4.1.1.5. SG/F5

The transcripts for SG/F5 show six constructions with preposition stranding and two with preposition pied-piping. One of the latter involves wh-movement, the other seven constructions involve NP-movement. The wh-movement and one of the stranded constructions with NP-movement occur during the second taping (82/11/23), i.e. within the first month of recordings.

This learner also accepted the pied-piped constructions on the grammaticality judgement test but rejected the one involving preposition stranding. She suggested "How do you think can repair this" as an alternate to the pied-piped constructions. Her corrected version of the latter includes preposition pied-piping and S-V inversion in the main clause to yield "With what do you think can we repair this?" SG/F5 was not convinced that her version was acceptable and was unable to produce one that she felt was correct.

4.1.1.6. Summary of Longitudinal Data

In summary, all five learners accepted preposition pied-piping without reservation but rejected preposition stranding when these forms were presented to them in writing as part of a grammaticality

judgement task[29]. Their comments made it clear that they had specific reasons for rejecting the stranded version, i.e. they did not reject it as part of a strategy adopted for the purposes of the task (Birdsong 1989, White 1989).

Despite their acceptance of the pied-piped constructions in written form, the learners did not produce many of them in their recorded data. Three of the five learners produced one construction, one learner produced two constructions, with preposition pied-piping during the first few recordings, but each of the four produced between two to ten times more constructions with preposition stranding than with pied-piping in subsequent recordings (as shown in Table 4.1.). However, the total number of these constructions is very low in the overall learner data. Despite their small number, their occurrence over the course of the recordings produces a pattern which is illustrated in Table 4.2. below.

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[29] The grammaticality judgement task took place after the fifth recording, which was at the beginning of the third month of the recordings for most learners.

Table 4.2. Distribution of Constructions in NNS Data

Learner	Number of Recording (ordinal)																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
SG/F5			+*		+				+				*+ +			+			
SG4		*		o		++		o			oo	o							
F3						*		+			+			+			+		
SG2	+*							+	+o	+o	o+ +		++ +o +						

* Preposition pied-piping
\+ Preposition stranding
o Preposition missing, but relevant construction[30]

The table shows that preposition pied-piping (*) occurred before preposition stranding (+) in F3 and SG4's recordings. The two constructions occurred during the same recording in SG2's and SG/F5's data. As pointed out in 4.1.1.2. above, SG2 corrected her utterance with preposition stranding to the pied-piped version during the first interview. It seems that the learners' internalized grammar included the rule system for preposition pied-piping and was available to them at a conscious level, as the data from the grammaticality judgement task indicate.

The occurrence of preposition stranding is somewhat less clear. Given that all five learners rejected the stranded version at the time of the grammaticality judgement task, the learners'

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[30] There were missing prepositions in constructions not relevant to preposition pied-piping and stranding and not discussed in this thesis.

grammar did not appear to include the relevant rule system. However, SG/F5 had produced two and SG2 one such construction already. Most preposition stranding constructions in the learners' data occurred after the grammaticality judgement task. The interpretation of these results with regard to the related studies presented in Chapter Two will be discussed below.

4.1.2. Discussion of Results in Terms of Related Studies

The results from the longitudinal study allow a number of interesting comparisons with results from the cross-sectional studies examined in Chapter Two. The longitudinal results confirm some of the conclusions drawn based on results from previous studies, or suggest a different interpretation or new hypotheses to be tested in further research. The first aspect to be discussed concerns the occurrence of missing prepositions (shown in Table 4.1. above) in learner data and Bardovi-Harlig (1987)'s proposed developmental sequence.

4.1.2.1. Missing Prepositions and a Developmental Sequence

Bardovi-Harlig (1987) shows that missing prepositions occurred more frequently in utterances from low level learners than more advanced ones and concludes that they represent the first stage, followed by preposition stranding and finally preposition pied-piping, in a developmental sequence. She argues that "before learners attempt either rule, they employ the strategy of using no preposition at all...in both questions and relative clauses"

(Bardovi-Harlig 1987:393). However, the longitudinal data from the four learners who produced relevant constructions do not confirm Bardovi-Harlig's (1987) hypothesis. Table 4.1. above shows that there were no missing prepositions in F3's and SG/F5's data, but that 27% of the relevant constructions in SG2's and 67% of those in SG4's data lacked a preposition, i.e. only the NSs of SG produced this type of utterance and a higher percentage of the more advanced learner's constructions reflect this non-standard form[31].

Missing prepositions have been identified as a general characteristic in the early output of L_1 and L_2 learners of prepositional languages (Brown 1973, Klein and Dittmar 1979, HPD 1978, HPD 1979, Cammarota and Porquier 1984, Broeder, Coenen, Extra, van Hout & Zerrouk 1984, Pavesi 1987). They are usually attributed to a learner's initially limited ability in the language, their typically low salience and/or communicative value, and in the case of L_2 learners, influence from their realization in L_1[32]. In other words, missing prepositions are part of a more

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[31] However, if all the missing prepositions, regardless of type of construction, are included, they occur more frequently in the data from the lower level learners than the more advanced learners. As a percentage of the total number of obligatory contexts that occurred in each learner's transcripts, almost 10% of the prepositions were missing in F1's transcripts, 7% in SG2's transcripts, just over 5% in F3's transcripts, 3% in SG4's transcripts and just over 1% in SG/F5's transcripts.

[32] The latter may explain why the two NSs of SG produced more constructions without prepositions than the NSs of F: most dialects of SG express accusative, dative, and genitive case morphologically rather than lexically.

general phenomenon in early L_2 acquisition and are therefore unlikely part of any one specific developmental sequence.

The last stage Bardovi-Harlig (1987) discusses concerns her adult ESL learners' preference for pied-piping constructions as their proficiency increases. Mazurkewich (1981, 1984) and Finney (1988) report a similar tendency in their subjects[33]. Bardovi-Harlig (1987) takes this as evidence for the final stage in the developmental sequence of the acquisition of the two constructions. However, given that the subjects involved are students in pre-university or university level ESL programs, this seems to reflect the input they are likely to receive. The emphasis at more advanced levels in these programs tends to be on more formal academic English, where materials presented include more examples of pied-piping. Bardovi-Harlig's (1987) last stage may well be an artifact of the type of subject tested. The data from SG/F5 show no increase in pied-piped constructions and suggest that this trend is not likely to be found in the interlanguage of students who are not in an academic environment. This is an aspect that can be verified with experimental evidence from learners in different settings[34].

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[33] this applies to NSs of Inuktitut only in Mazurkewich

[34] A related concern is raised by Birdsong (1989) who argues for more representative learner samples in his objections to the use of metalinguistic judgement tasks. He argues that only learners in academic environments are able to perform these tasks adequately, learners who are not representative of the L_2 learner population which should include illiterate and semi-literate subjects.

4.1.2.2. Limited Non-standard Constructions

Related to the above discussion is the observation that all relevant non-standard constructions in the longitudinal data occurred when learners omitted a required preposition, i.e. when they produced a string of words that includes all the elements, in the appropriate sequence, of a pied-piped or stranded utterance, but lacks a preposition. No other non-standard constructions occurred, i.e. no learner attempted to place the preposition in a position other than that allowed by preposition pied-piping or stranding. These limited types of non-standard constructions lend support to the hypothesis that learner grammars are constrained in some manner, possibly by UG, as Otsu (1981) argues for L_1 and Flynn (1986) for L_2. Although there are many logically possible errors learners might make when they produce pied-piped and stranded constructions, the longitudinal data are insufficient to support such a hypothesis. Moreover, they also allow the argument that the constructions with missing prepositions were intended as pied-piped versions and the constraint is due to transfer from L_1 or general learning principles.

4.1.2.3. The Markedness Hypothesis

The data from the five learners indicate that the learners acquired preposition pied-piping before preposition stranding, as predicted by the markedness hypothesis and advocated by Mazurkewich (1981) to the extent that they accepted the pied-piped sentences but rejected the stranded version on the grammaticality judgement

task. Most learners produced a pied-piped construction first and a small number of stranded ones later. The observed acquisition sequence agrees with Mazurkewich's (1981) interpretation of the results she obtained from her French speaking subjects. Once the longitudinal subjects started to produce stranded constructions, they were not likely to return to pied-piped ones. However, given the fact that few NNSs produced more than one construction with preposition stranding during one recording session, no meaningful claim seems to be possible.

The results from the longitudinal study suggest the potential hypothesis that the lower the level of ability, the more likely a learner is to use a pied-piped construction. This is confirmed by Mazurkewich whose results show that the NSs of French were less proficient in English than the NSs of Inuktitut[35]. It might be beneficial to look at individual learner trends in her study in order to determine whether the group percentages given obscure the results, especially given the large number of errors recorded on her question formation task.

The longitudinal data contradict Bardovi-Harlig's (1987) and some of Mazurkewich's (1981, 1984) data. On the basis of her experimental study with university level ESL learners she claims that preposition stranding is acquired before preposition pied-piping due to the salience of the former in the input. Finney's (1988) results are somewhat less clear, but overall he found that

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[35] The high error rate reported in the data of the question formation task suggests that some of her subjects may not have mastered the construction.

his university level ESL learners had less difficulty with preposition stranding and tended to prefer it, especially at the lower levels. Van Buren and Sharwood Smith's (1985) study involved subjects at the university and school levels and different tasks were assigned to the two groups. Their overall results indicate rejection of stranded sentences by the university students[36] and a preference for preposition pied-piping by the school age subjects[37], leading to "the general results which showed a marked preference for pied-piping" (van Buren and Sharwood Smith 1985:34).

As the comparison of results from the above studies illustrates, the results appear contradictory. The different subjects, methodologies and presentations of results make it difficult to draw parallels. However, three factors emerge from them, suggesting that these results appear to show a trend, that they may be part of the same development. These factors will be discussed in the next section.

First, it should be remembered that the tasks in the above studies do not provide data indicating that learners *reject* preposition pied-piping at any given level. Typically, they show that a percentage of subjects rejects preposition stranding on grammatical acceptability tasks or supplies preposition stranding

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[36] Rejection of stranded sentences is not equivalent to acceptance of pied-piping.
The two tasks seemed to include "correctly and incorrectly stranded" sentences only (van Buren and Sharwood Smith 1985:32).

[37] Van Buren and Sharwood Smith stress that the results from the school age learners may be "somewhat deflated due to test fatigue" (1985:35).

(rather than preposition pied-piping) in open-ended tasks. Results from Mazurkewich's Inuktitut speaking subjects, Bardovi-Harlig's subjects and to a large extent Finney's subjects suggest that many of these learners are able to produce stranded constructions and that they tend to prefer them over pied-piped ones, especially at the lower and middle levels of ability. In other words, these results indicate that NNSs deal with the relevant constructions in a native-like way: as pointed out in the literature (e.g. Ross 1977, van Buren and Sharwood Smith 1985) and as confirmed by the NS data (to be discussed in 4.2. below), they prefer preposition stranding to preposition pied-piping. Nevertheless, the results do not provide evidence that these NNSs have not acquired preposition pied-piping and it cannot be concluded that they acquire preposition stranding before pied-piping. Such a conclusion would have to be based on results from tasks that give learners an opportunity to accept or reject both preposition pied-piping and stranding.

Second, the groups of subjects who preferred preposition stranding were immersed in English, i.e. they either studied in an intensive English program or they studied/worked in English in locations where the language of the immediate environment was English. In contrast, the groups of subjects who preferred pied-piped constructions, i.e. the French speaking subjects in Mazurkewich's study and the Dutch speaking subjects in van Buren and Sharwood Smith's study received regular English lessons in an educational institution and lived in an environment where their L_1

was the dominant language. A comparison of the results from the two groups indicates that learners in a second language environment use the marked, frequent preposition stranding construction in a more native-like manner than those learning English in a foreign language context. The first group seems to benefit from exposure to an aspect in the input which must be lacking in the exposure the second group received, as van Buren and Sharwood Smith (1985:33) observe with regard to their university level subjects:

> "...intensive formal exposure to English and all the informal exposure that Dutch learners get in their daily lives has not yet got these learners to a position which is anywhere near native-like with regard to preposition stranding." (van Buren and Sharwood Smith 1985:33).

White (1989) agrees that lack of naturalistic input has an effect on L_2 acquisition and links it to a UG framework in which such a lack "might make it harder for universal principles to be triggered", thus suggesting a potential explanation of the observed difference between the two groups of learners.

The NNSs in this study were in an L_2 environment and overall they produced more stranded than pied-piped constructions[38]. As pointed out above, the results from their grammaticality judgement task ssuggest that they had not acquired the relevant rule system at that point, although two of them had produced such a construction by then. It appears though as if the learners' performance exceeded their competence, i.e. they appeared to produce a construction for which they lacked the necessary rule

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[38] although the overall occurrence of these constructions is low

system. This may explain why they used few instances of a construction that is considered to be very frequent in the L_2. Given these data it is difficult to agree with Hornstein and Weinberg (1981) who argue in their discussion of the acquisition of the marked rule of reanalysis in L_1 that "[exposure to] a small number of PP strandings will force the rule" (p.68) given the learners' explicit rejection of preposition stranding. If a rule has been "forced", learners would be expected to have incorporated it into their internal grammar system and to actualize it when they need to process a relevant construction. A reasonable explanation for the occurrence of a very limited number of constructions that appear to be too complex for the learners' current level of ability seems to be that they used set patterns or routines, i.e. units that were not fully analyzed. As suggested in the discussion of the learners' individual results in 4.1.1. above, the first occurrences of preposition stranding in the spoken data may represent formulaic use of the language. This involves the use of memorized units which have not been analyzed into their constituent parts. Such unanalyzed chunks have been identified in L_1 and L_2 acquisition (e.g. Hakuta 1974, Clark 1978, Huang and Hatch 1978, Dulay and Burt 1978, Wong-Fillmore 1976) and are thought to facilitate communication in the early stages of language development (Schachter 1986:122) through a strategy independent of the process of rule formation (Huang and Hatch 1978). Initial stranding in the form of routines seems particularly likely given the longitudinal data, in which learners produced the construction

in combination with few, but generally frequently occurring verbs and prepositions[39]. Exposure to a naturalistic learning environment combined with the fact that stranded prepositions tend to occur at the end of utterances, which O'Grady (1987) considers to be a maximally salient position for children learning their L_1, may allow L_2 learners to memorize preposition stranding as a chunk. Expressions such as

"What do you do this for?" (SG2 82/10/26:27)

might well occur frequently in the environment of the longitudinal learners and encourage them to try to incorporate them into their lexicon[40]. Once learners have a few of these routines in their lexicon, re-organization of the internalized grammar system would permit them to infer the rule. This would explain why learners do not appear to be testing hypotheses about preposition stranding, as witnessed by the absence of various non-standard constructions.

Set expressions or routines may also be involved in the results Mazurkewich (1981) and Bardovi-Harlig (1987) discuss in their studies. A closer examination of the items they used to elicit relevant constructions from their subjects shows that the prepositions required were limited to *to* and *for* in Mazurkewich, and to *to, for,* and five prepositions that can be used

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[39] Primarily the verbs *talk/say, do, look* and the prepositions *for, with, to,* and *about*. These prepositions can occur in transitive and intransitive preposition (Emonds 1985) constructions.

[40] This is seen in contrast to classroom learning which might offer an explanation or encourage questions.

intransitively[41] in Bardovi-Harlig. The sentence constructions used in the tasks tend to be very similar, which may have resulted in a "pattern effect" similar to that found in structuralists' substitution drills, e.g.

> Item 1) Diane baked *Nicole* a cake.
> (Subject: Who did Nicole bake a cake *for*?)
> Item 2) David suggested the trip to Ruth.
> (Subject: Who did David suggest the trip *to*?)
> Item 3) Isabelle made a sweater *for Jerry*.
> (Subject: Who did Isabelle make a sweater *for*?)
> Item 4) Dennis annoyed Karen yesterday. (control)
> (Subject: Who did Dennis annoy yesterday?)
> Item 5) Paul designed a house *for Claire*.
> (Subject: Who did Paul design a house *for*?)
> Item 6) Sylvia chose Betty a pattern.
> (Subject: Who did Sylvia choose a pattern *for*?)
> (Mazurkewich 1984 :130)

Based on one or more relevant routines in their lexicon, some subjects may have assumed a pattern and completed subsequent sentences in the same, stranded, manner. This may be another example of a task oriented strategy (Birdsong 1989) learners develop which provides misleading results. To confirm or reject this hypothesis, individual subjects' answers to items like the control sentence in 4.) above, i.e. items that do not conform to the pattern, need to be analyzed. However, the nature and design of Mazurkewich's (1981) and Bardovi-Harlig's (1987) study did not allow for an analysis of individual students' responses, as will be discussed below.

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[41] Vinet (1979) argues that constructions such as "la fille que j'ai dancé avec" occur because the prepositions involved are intransitive, which suggests that intransitive prepositions encourage stranded (or stranded-like) constructions.

More support for the postulation of set patterns or routines is provided by Bardovi-Harlig (1987), who explains the occurrence of preposition stranding before preposition pied-piping on the basis of the latter's salience in the input, which encourages learners to produce stranded versions. Salience in the input is a plausible explanation, supported by the observation that preposition stranding involves the fronting of an NP, allowing it to function as a topic and thus giving it greater salience in the utterance (van Buren and Sharwood Smith 1985). O'Grady (1987) points out the importance in L_1 acquisition of the utterance final position of a lexical item, i.e. the preposition in stranded utterances, which may similarly affect L_2 learners. Thus salience combined with frequency in informal interaction results in a lack of evidence for preposition pied-piping in the learners' input, which induces learners to focus on preposition stranding until they are exposed to more formal language that includes preposition pied-piping. At that point, learners seem to over-correct their utterances and favour pied-piping over stranding for a period of time. The final stage in the acquisition of the two forms is likely the realization that both forms are part of standard English but that there are primarily stylistic differences between them.

The discourse aspect of preposition stranding would seem to be particularly influential in situations where learners work/ study in their L_2, i.e. where communication (as opposed to form) is assumed to be of prime concern. Results from the cross-sectional studies discussed support this in that the subjects who prefer

preposition stranding function in contexts where English is the working language (i.e. Mazurkewich 1981, Bardovi-Harlig 1987, Bley-Vroman, Felix and Ioup 1988, Finney 1988).

Third, the above studies report on cross-sectional methodology, designed to reflect the combined results from a number of learners at a specific point in time, i.e. their design precludes insight into how individual learners dealt with the construction and how their IL reflects the evolving rule system. For example, if learner A used form x 90% of the time, while learner B used it 10% of the time, the result shows that the form was used 50% of the time but conceals its composition. It is impossible to tell whether both learners performed equally well or whether one learner experienced considerably more success than the other. Considering the variation observed in L_1 acquisition, and considering the additional variables involved in L_2 acquisition (Schachter 1988) it seems essential to investigate individual trends rather than averages that may not exist. White (1989:83 confirms that longitudinal studies of the same learners and "[i]n certain cases, spontaneous production data" are appropriate methodologies when investigating initial settings of e.g. parameters.

4.1.3. Additional Observations

A number of observations that are not directly related to the theory of markedness or UG, but that provide additional insight, ensue from the longitudinal data. These observations tend to

relate to strategies the learners adopt in order to deal with the language learning task. Since some of the observed variability in the data can likely be attributed to them, these observations will be briefly discussed in the following.

4.1.3.1. Infrequent Use of Preposition Stranding in Longitudinal Data

It has been pointed out that researchers consider preposition stranding to be a frequently occurring construction in informal NS interaction, yet learners' spontaneous utterances in the longitudinal data show few such constructions. This unexpected development suggests further examination of the data in order to determine why few such constructions occur. The results of this examination are discussed below.

a) Inability to Produce the Construction

One of the most plausible reasons for the absence of a particular construction is that individual learners have not yet mastered the relevant rule or rule system. The precise nature of a relevant rule system is, in most instances, not clear, as there are few indications of what aspects of language serve as building blocks for others[42]. Consequently, researchers make a number of decisions that may affect the results of a study, for example regarding the scope of the data analysis, or determining "how wide to cast the net in order to make sure of getting all relevant

[42] Keenan and Comrie (1977) is one of the few precise examples of verifiable hypotheses of this type that spawned considerable research.

information on the structure(s) in question" (Schachter 1986:122). In the case of the acquisition of preposition pied-piping and/or stranding, learners would minimally need a number of prepositions at their disposal. In addition, as pointed out in Chapter Two, preposition pied-piping and stranding occur as a result of wh-movement or NP-movement or in passives; one or several of these constructions would be expected to occur in the learners' output. The transcripts show that all learners have a basic vocabulary including a minimum of four lexically different prepositions during each recording session. Wh-movement, which Bardovi-Harlig (1987) considers to be easier than NP-movement, is infrequent in the recorded data of all five learners. The three lowest level learners show no evidence of wh-movement during the first few recordings, and only very small numbers of the construction later on. The most frequent construction with NP-movement in all learners' transcripts occurs in relative clauses with subject extraction, less frequently with object extraction and rarely (SG4, SG/F5) or not at all (F1, SG2, F3) with other extractions. Passive constructions occur twice only in the data of the most advanced level learner towards the end of a corpus spanning two years. This suggests that limited NP-movement constructions and some wh-movement were part of the learners' internalized rule system, but passive constructions were not[43]. Indications are that the

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[43] Further investigation of this aspect may indicate support for Maling and Zaenen's (1985) argument that preposition stranding in passives should be treated separately from preposition stranding in wh-movement, as discussed briefly in Chapter 2.

learners were not sufficiently comfortable with the first two constructions to produce them regularly.

In addition, learners produced preposition pied-piping and stranding constructions with VP-PP only, i.e. none of the S-PP constructions discussed in Chapter Two are part of the data.

b) Avoidance

If it can be determined that the learner has the ability to produce a construction, there is the possibility of avoidance. Learners cannot avoid a construction they do not know exists. Tarone, Frauenfelder, and Selinker (1976:113) point out that "...in syntax there is...more than one correct way of saying the same thing." Consequently it is not possible to determine which constructions were produced in order to avoid a given alternate. However, it was observed above that several of the longitudinal learners offered a "How..." construction as the preferred alternate to the item with preposition stranding in questions on the grammaticality judgement task. If learners felt more comfortable with the "How..." construction, they might have used it in place of a pied-piped or stranded version. In addition, the transcripts from the recording sessions indicate that questions starting with "how" are the most frequently used in the learner data (between 65-85% of all questions). It was pointed out in 4.1.1. above that several subjects indicated at the time of writing the grammaticality judgement task that they preferred "how" over other question words. Some of the questions they formed with "how" could have been formed as pied-piped or stranded constructions, with a

somewhat different meaning. E.g. "With what shall I fix it" seems a more specific/pointed question than the more general "How shall I fix it".

c) Limited Vocabulary

Chapter Three described the format of the recording sessions and pointed out that the learners were encouraged to choose their own topics. This technique was selected to help learners feel comfortable and to avoid long pauses during recording sessions (Purdue 1984). However, it appears to have encouraged learners to return to the same topics from one recording session to the next. Consequently, the number of different vocabulary items is low, i.e. learners used from between 144 (F1, 82/11/02) and 653 (SG/F5 84/03/06) different vocabulary items during one recording. The most advanced learner used a maximum of 653 different vocabulary items during a 30 minute recording session. A comparison of vocabulary items for each learner from one recording session to the next shows that 80% or more of the vocabulary items used in earlier sessions recur in subsequent sessions. This suggests that either the learners' progress in the acquisition of vocabulary was slow, or they had adopted a strategy of using the same topics and vocabulary items, possibly to avoid potential difficulties.

d) Context of Data Collection

Care was taken to try to make the data collection sessions seem like a natural conversation between two friends, but the objective was to obtain data from the learners, not the researcher. Consequently, although learners were encouraged to ask questions

and to re-tell conversations they had had with others, the researcher tried to answer questions as briefly as possible, reducing the natural flow of conversations. The major problem seems to be the difficulty of extracting knowledge (competence) from production (performance). As Lust (1988) notes, the object of inquiry is linguistic knowledge rather than behaviour. If evidence from experimental work is to serve as the foundation for strengthening theoretical claims in the study of L_2 acquisition and use as discussed by Gass and Schachter (1989), converging methodologies, including experimentation with judgement, comprehension and production tasks as well as the collection of naturalistic data, are required (Lust 1988). This seems to reinforce, once again, the need for more replications of studies, involving similar subjects and comparable methodologies.

4.1.4. Implications for Markedness Hypothesis and UG

The preceding discussion showed that there is no evidence in the cross-sectional studies discussed[44] that the learners rejected preposition pied-piping. Consequently, as they did not reject its acceptability, it cannot be concluded that they had not acquired the relevant rule system. In fact, the longitudinal data and the results from the grammaticality judgement task indicate that they acquired preposition pied-piping before preposition stranding. The

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[44] Finney's (1988) battery of tasks includes one sub-test that encouraged learners to indicate whether they considered pied-piped constructions acceptable. However, he does not discuss the results due to "a flaw in the research design" (p.80).

claim made for L_1 that either the unmarked or the marked construction may occur first is not supported by the data from the longitudinal learners. A re-consideration of results presented in related studies suggests that cross-sectional studies may not be able to capture the short period during which learners do not yet accept preposition stranding and they do not allow sufficient detail to determine whether PS is produced as a more or less set routine. In order to reject the markedness hypothesis it has to be demonstrated that learners reject pied-piping during the early stages of learning ESL. It should, however, be remembered that such evidence would also support the position that L_1 is available for L_2 acquisition, either with a still active UG or with parameters as set in L_1. The longitudinal learners may have used their L_1 knowledge to evaluate the sentences on the grammaticality judgement task. This possibility cannot be ruled out despite the fact that the learners did not verbalize any such comparisons they may have made during the grammaticality judgement task. However, had they used their L_1 knowledge they would likely have produced more pied-piped constructions, especially in the early stages of the recordings.

The data are also compatible with the position that UG is available but does not operate the same way it did in L_1. The learners' early use of pied-piped constructions could be taken as an indication of the availability of UG. The fact that the learners did not use the construction might be taken as evidence of competing cognitive systems at work (Felix 1985, 1988), i.e. the

learners may have compared stranded constructions in the input with similar constructions in their L_1. When they found disagreement, they may have decided to avoid the constructions until a later stage when they were reconciled to the fact that both structures are part of the L_2[45]. These same data can also be used to argue for the position that favours general learning principles as the driving force for L_2 acquisition. The data are compatible with the view that learners make predictions about L_2 guided by general learning principles formed during L_1 acquisition, and they are compatible with the position that UG is limited to L_1 settings. Again, given that preposition pied-piping is a frequent construction in SG and in French it seems odd that the learners did not use their knowledge of this construction more widely. As the unmarked value is a feature of both L_1 and L_2, it is not possible to determine whether the learners' choice of the unmarked value is based on transfer or some other mechanism.

It has been determined that learners appear to use preposition pied-piping before they use preposition stranding. It has also been determined that they are more likely to use preposition stranding than pied-piping in their output. It remains to be verified whether the learners' use of stranded constructions is close to native-like. Consequently, the next section will discuss

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[45] This might suggest that the acquisition of preposition pied-piping and preposition stranding has less to do with markedness than with learners' initial reliance on formal, explicit rules, which are likely part of a competing cognitive system.

how NSs judged the constructions produced by the NNSs, i.e. whether NSs would have used preposition pied-piping or stranding in the case of each relevant learner utterance.

4.2. NS Data

The use of NS control groups serves to establish target language norms, to verify that NSs' intuitions about their L_1 are as linguists predict them to be, and to ensure that difficulties language learners may display are not due to extraneous factors (White 1989). The NS control group in this study served primarily to establish whether the NNSs used preposition pied-piping and stranding in a native-like manner. These results are presented in the following.

4.2.1. NS Selections

Overall, the NSs' selections were homogeneous in the sense that in most cases the majority of them selected the constructions with preposition stranding over those with pied-piping in the spoken as well as the written data, regardless of whether the construction involved wh- or NP- movement. It was shown in 4.1.1. above that four NNSs used one or two constructions with preposition pied-piping, the remaining ones with preposition stranding. NSs preferred stranded constructions in all instances where NNSs had selected a pied-piped version. Table 4.3. below presents a

summary of the NSs' selections, details for each sentence/NS are given in Appendix VIII.

Table 4.3. Summary of NS Selections

NNS	Construction Type	NS Selections (average from 4 NSs)	
		Agree	Disagree
SG2	PS PPP	82.5% 0%	17.5% 100%
F3	PS PPP	100% 0%	0% 100%
SG4	PS PPP	100% 0%	0% 100%
SG/F5	PS PPP	91.7% 0%	8.3% 100%

Table 4.3. shows that NSs agreed strongly with NNSs' preposition stranding constructions and disagreed even more strongly with their pied-piped constructions. Although the unanimity in NS selections evident in the above table provides clear support for arguments claiming that preposition stranding has become the dominant construction in NS use (Ross 1977), it has to be pointed out that there were only five pied-piped constructions, three of them involved the preposition *for*, two the preposition *with* in what might be considered fairly common questions, phrased in rather formal language,

i.e. "for what do you need this?" (SG2 82/10/26:28)

"you don't know for what they need that" (SG4 82/12/08:18)

"he explain everything for what it's good (SG/F5 83/06/10:102)

Consequently, the results cover a limited variety of potential constructions with preposition stranding. In addition, the fact that NSs accepted sentences such as the above suggests that their judgements may not be representative of NS judgements.

The NS seemed to object to the apparent formality of the NNSs pied-piped constructions. Almost all of the NS controls commented on how formal the NNS utterance seemed[46]. Several NSs also indicated that they might use a given pied-piped utterance in a written context, but not in oral interaction.

NS agreement on the stranded constructions is 100% for two of the NNSs' utterances F3 and SG4 and slightly lower for the other two learners. Appendix VIII shows that disagreement is not unanimous among NSs. For example, among the four NSs matched with SG2, one agreed with all the utterances from the NNS, one each disagreed with one or two respectively, while one NS disagreed with four constructions SG2 stranded. Among the NSs matched with SG/F5, only one disagreed on two sentences with the NNSs selections. No pattern seems to emerge with regard to where NSs disagree: both wh- and NP-movement and a number of different prepositions and

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[46] This seems to provide further evidence that the learners used the unmarked option first: the message in these utterances may have occurred in the input the learners received, but NSs would likely have used preposition stranding. Because learners were more familiar with the rule for pied-piping, they used it to formulate their formulation of the message.

verbs occur. Table 4.4. below presents the overall results for the four native speakers matched to each learner.

The NSs considered the three sentences on the grammaticality judgement task to be standard English, but twelve NSs thought that they were unlikely to use the pied-piped versions. Two NSs argued that the pied-piped sentences were "old-fashioned" English and no longer part of everyday language, while two others maintained that pied-piping was more correct[47].

4.2.2. Comparison of NS - NNS Selections

The NSs selections of preposition stranding as a percentage of all their selections exceed that of the NNSs, as Table 4.4. illustrates.

Table 4.4. Comparison of NS - NNS Selections

NNS	Constructions				
	NNSs' Utterances			NSs Selections (4/NNS)	
	PPP	PS	OP	PPP	PS
SG2	1 (6%)	10 (67%)	4	16 (27%)	44 (73%)
F3	1 (20%)	4 (80%)	-	-	20 (100%)
SG4	1 (11%)	2 (22%)	6	9 (25%)	27 (75%)
SG/F5	2 (25%)	6 (75%)	-	2 (6%)	30 (94%)

[47] These two NSs selected pied-piped constructions over NNSs' stranded oral utterances.

Table 4.4. shows that NSs selected considerably more stranded options than pied-piped ones. The same pattern is evident in the NNSs' original utterances.

Sharwood Smith's (1988:181) claim that preposition stranding dominates in the input learners receive in conversational English receives strong support from the NS control group in this study. Assuming that the data from the native speakers are representative of spoken English in Canada, they predict the type of input to which the learners in this study were exposed. This in turn provides support for Bardovi-Harlig's (1987) claim that a construction that is salient in the input may appear early in the IL of the learner, even if the construction is marked. Given the evidence from the NS control group above, it can be assumed that the learners[48] receive no or minimal input suggesting pied-piping during the early stages of acquisition, therefore they produce preposition stranding. Van Buren and Sharwood Smith (1985) argue that if second language learning is data driven (as L_1 is usually considered to be), the input would lead the learner to acquire a marked alternative early simply due to its greater frequency, the unmarked option "...never sees the light of day" (p. 27). As pointed out above, the time frame during which the learner entertains the unmarked, pied-piped option may be too brief to be reflected in experimental data in most cases. It may more evident before learners are exposed to authentic intput.

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[48] This includes children acquiring English as their L_1

When learners produce preposition stranding constructions, they appear to use the construction in a native-like manner. A cross-sectional graphic illustration of how close the NNSs's use of preposition stranding was to that of NSs is provided in Figure 4.5. below.

Figure 4.5. Cross-Sectional Comparison between NNS and NS use of Preposition Stranding (PS)

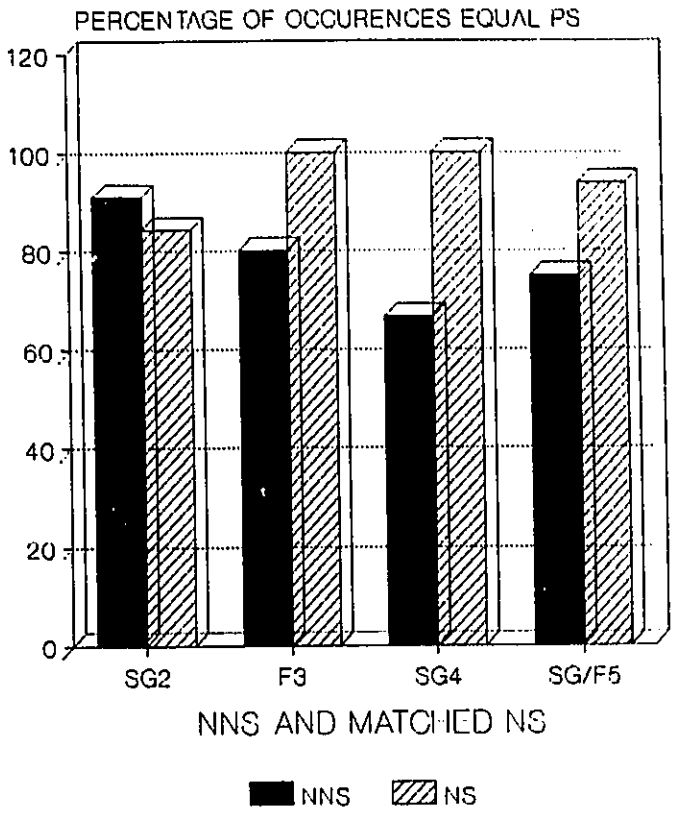

Figure 4.5. seems to suggest a U-shaped curve for NNSs' use of preposition stranding: SG2 is the only NNS whose use of preposition stranding exceeds that of NSs. The curve reaches its lowest level with SG4, then picks up for SG/F5. A very tentative interpretation

of this curve could be linked to the learners' level of ability. Given that the learners represent different levels of L_2 ability, the curve might suggest decreasing reliance on set patterns or routines and increasing awareness of the relevant rule, which might be reflected in comparatively fewer instances of preposition stranding. At the most advanced level of ability represented in the learners, the rule system is in place and reflected in increased use of preposition stranding. On the other hand, the curve might be an artifact of individual learner strategies.

The relatively small number of these constructions produced suggests that the learners may have had some difficulty reconciling their primary rule for an appropriate construction, i.e. pied-piping, with the input from NSs. This may be particularly problematic when the learners have sufficient time to consider relevant constructions. Learners may have taken the opportunity to compare L_2 with L_1, maybe having already noticed that pied-piping in L_2 has a near-parallel construction in L_1. The fact that stranding is not standard in the source languages involved may have led them to the conclusion that the stranded sentence on the grammaticality judgement task must be non-standard. This was, after all, an opportunity for some of the learners to point out the prescriptive rule they were aware of. The apparent conflict may have resulted in subconscious efforts at trying to work it out. It may also have led to avoidance of the construction, similar to avoidance described by Schachter (1974). As pointed out earlier, learners have to be aware of a construction in order to avoid it.

Even if it is assumed that some learners produced the stranded versions as set patterns or routines during an early recording, the more advanced learners produced relevant utterances with varied vocabulary and syntactic constructions (wh- and NP-movement), i.e. they must have formulated a rule.

4.2.3. Summary of NS Selections

The NSs selected primarily stranded constructions when given a choice between pied-piped and stranded versions of the relevant learner utterances. Whereas NSs clearly preferred the stranded alternative over the NNSs pied-piped constructions, they were not as definite in their judgements of stranded constructions. Where a NS favoured a pied-piped construction over a NNS's stranded construction, the other NSs in the group did not agree, i.e. it represented an idiosyncratic judgement. The NS data provide support for the claim that stranding is the preferred construction by NSs and therefore dominant in the input L_2 learners receive in a naturalistic environment.

4.3. Summary of Chapter

This chapter presented the results from the NNS and the NS subjects involved in this study. The analysis of the learner transcripts revealed few instances of preposition pied-piping and stranding. Their data were shown to provide support for the developmental sequence postulated by the theory of markedness. However, they can also be used to argue in favour of other

positions such as transfer from L_1. Various similarities and differences between this and studies in the literature were discussed.

The NS selections indicate that preposition stranding is likely to occur more frequently in the input the NNSs receive and that the latter use preposition stranding in a native-like manner. NS tend to favour preposition stranding in oral and in written contexts.

CHAPTER FIVE: SUMMARY AND CONCLUSIONS

5.0. Introduction

This concluding chapter is divided into three parts. First, the main points and findings of the work presented in this thesis are summarized. Second, the questions asked in Chapter One will be answered in light of the findings presented. Third, a number of conclusions are drawn, some of which are presented as potential hypotheses for future research into the stages and processes of preposition pied-piping and stranding.

5.1. Summary

The objectives of this study were to investigate longitudinal data from five adult ESL learners acquiring English in a naturalistic environment from the perspective of a generative theory of UG. The focus was on the applicability of a theory of markedness in the acquisition of preposition pied-piping and stranding. Two sets of data were considered, one collected from NNSs, the other from NSs. The data from the learners were collected during tape recordings of informal conversations between each of the five learners and the researcher over a period of up to two years, and from sentences on a grammaticality judgement task. Preposition pied-piping and stranding constructions were isolated and analyzed. A second set of data were collected from NSs, who were asked to consider the constructions isolated in the recordings

with the NNSs and to indicate whether in each case they would have selected preposition pied-piping or stranding.

The results of the analysis of the longitudinal data confirm that they cannot support or reject the positions on UG discussed in Chapter One. They indicate that a theory of markedness and the developmental sequence are supported by the data, but they also support e.g. transfer-based frameworks. The longitudinal learners acquired the unmarked pied-piped construction before the marked preposition stranded construction, which replaced the unmarked form later in the learners' IL. Although few learners used pied-piped constructions after the first few weeks, there is no evidence indicating that they reject preposition pied-piping at any stage. It is hypothesized that this is a characteristic of the ILs of learners acquiring English in a second language context. In comparison, the literature suggests that learners in foreign language contexts appear to favour the unmarked form for a longer period of time. The salience of the marked construction was hypothesized to effect the early appearance of marked constructions in the learners' output. As suggested by the NNS data in this study, timing might be crucial in L_2 acquisition for their elicitation. The low number of occurrences and the limited formulations of the pied-piping and stranding constructions suggests that their earliest use reflects their status of unanalyzed chunks in the IL of the learners. L_2 learners may be avoiding preposition pied-piping and stranding constructions, possibly due to the conflict between the internalized rule system

and the data in the input. An examination of the learners' transcripts indicates that avoidance is a likely explanation as learners produce small numbers of what might be considered pre-requisite constructions (e.g. wh-movement, NP-movement). They also demonstrate a preference for short constructions of the type subject-verb(-object), effectively avoiding longer and more complex constructions.

The analysis of the NS data show that for every pied-piped construction the NNSs produced, the NSs preferred the equivalent stranded construction. Most of the NSs also selected the stranded version when NNSs produced stranded utterances, although there are a small number of instances where one of the NSs selected the pied-piped version. The NSs judged the pied-piped sentences on the grammaticality judgement task acceptable but too formal for their perception of current English usage.

5.2. Review of Questions

The research questions asked in Chapter One can be answered as follows:

- How do adult L_2 learners acquiring English in a natural environment deal with pied-piping and preposition stranding?

The longitudinal data indicate that adult L_2 learners acquire the unmarked form of preposition pied-piping before they acquire the marked form of preposition stranding. The data suggest that the period of time during which learners have the unmarked version

only at their disposal may be very short and missed by cross-sectional studies that do not consider which learners accept/reject which construction. It is, however, not clear whether this developmental sequence is due to markedness; other possibilities, including transfer, cannot be ruled out. Preposition stranding occurs in the learners' oral production data before they appear to have internalized the relevant rule system, but when they use stranded constructions they seem to do so in a native-like manner. However, they do not appear to reach a stage at which they use preposition stranding freely.

- What role, if any, does their L_1 appear to play?

It is unlikely that studies on the acquisition of preposition pied-piping and stranding can identify the role the learners' L_1 plays in the acquisition process if the learners' L_1 includes the unmarked option. This situation does not permit the researcher to rule out transfer, which seems to be a strong possibility in much of the research discussed in the literature. Liceras (1985, 1986), for example, shows that learners transfer marked properties from their L_1. It might be expected that unmarked properties are even stronger possibilities for transfer than marked ones.

- Do longitudinal data permit new insight into the development of preposition pied-piping and stranding constructions, especially with regard to developmental claims made by a theory of markedness?

Longitudinal data suggest that learners acquire the unmarked construction before the marked one, but that the marked option may occur in the form of unanalyzed chunks in a second language environment. The stage at which the learners use the unmarked construction is likely missed by cross-sectional studies that group learners into general categories. It may also be difficult to detect whether the learners' internalized rule system allows preposition pied-piping if learners are asked to indicate which form they prefer. Longitudinal data also afford the researcher more insight into how learners use the constructions in question, for example, the NNSs' use of preposition stranding suggests that initially they produce these constructions as unanalyzed chunks. In addition, longitudinal data allow the researcher to examine constructions that were not initially targeted for investigation, but that may be related to the targeted constructions.

A construction that is frequent in NS language, but does not occur often in NNS language suggests that there are specific reasons for their absence in the learners' IL. Avoidance seems a strong possibility, especially considering the fact that most of the pied-piped or stranded constructions produced occurred in native-like form. Further investigation of these reasons may provide additional clues to the acquisition puzzle. However, longitudinal data, if used, would have to be supported by data from various elicitation techniques to enable the researcher to determine whether learners have acquired a given construction.

- Can variables be identified that allow an explanation of the different results in previous studies?

It was pointed out in Chapter Two that some of the differences in results are due to the different tasks assigned and populations studied. In addition, the learning environment was found to coincide with results obtained, i.e. learners in a second language environment were found to favour preposition stranding, while learners in a foreign language situation were found to favour pied-piping.

5.3. Conclusions

The data analyzed for this thesis show that the markedness hypothesis can be maintained. They show that unmarked constructions may appear rarely in the learners' IL if the marked construction has high salience in the input.

Considering the precise hypotheses that have been and can be made within the framework of UG, in addition to its clear articulation of a theory of language and its headway in L_1 acquisition, it would seem appropriate to further refine these hypotheses on the basis of new insights from empirical evidence. It is clear though that a theory of performance and its anticipated interaction with a theory of competence needs to be articulated in order to solve the L_2 acquisition puzzle.

The exploratory research in this thesis suggests the following hypotheses to be tested in further research on preposition pied-piping and stranding:

a) The developmental sequence proposed in the markedness theory as defined by Mazurkewich (1981) and others can be shown in all types of learners if the data collection procedures are adjusted to reflect the fact that unmarked constructions may appear for a short period of time only or not at all. One of the adjustments necessary to past data collection procedures in cross-sectional studies seems to be that learners have to be given an opportunity to indicate which of a number of possibilities they accept and reject. If learners select which of two forms they prefer, they likely indicate which form is dominant in their IL, not which form is absent. It would also seem beneficial to select learners whose L_1 does not use prepositions. Data from such groups would rule out possible transfer from L_1 with regard to preposition pied-piping and stranding.

b) The developmental sequence predicted by markedness theory is clearer in the IL of learners who do not live, work or study in an L_2 environment. A more general formulation of this hypothesis has been available for some time, but not formulated in a way that lends itself to empirical investigation. L_2 learners exposed to traditional texts with relatively little authentic use of English and, accordingly, less input with preposition stranding, will produce pied-piped constructions before stranded constructions. In addition, they will produce and prefer pied-piped constructions for a longer, more noticeable period of time.

c) The type of evidence required to falsify the UG hypothesis with data on preposition pied-piping and stranding may not be available.

If learners whose L_1 contains the unmarked form reject preposition pied-piping early in the L_2 acquisition process, this would indicate that neither UG via L_1 nor UG as in L_1 are available.

With the emergence of some studies on the acquisition of preposition pied-piping and preposition stranding it becomes possible to determine where methodologies used in previous studies obscure answers to specific questions. Their ground breaking work allows researchers to undertake further studies with increasingly more sophisticated data elicitation procedures. White (1989:137) suggests that the mixed results obtained by researchers investigating markedness in L_2 acquisition might lead them to abandon the concept, but argues against deserting the paradigm. The results from the longitudinal study support her arguments. At least some of these mixed results appear to be due to partial information about the process of L_2 acquisition, some of them stemming from the tasks assigned to learners. Insights gained on the basis of earlier studies can be used to design subsequent studies in what appears to be the most suitable format. Each subsequent piece of research will likely add more detail and more refined insight until the L_2 acquisition puzzle is solved.

The framework of generative theory of UG has provided a fruitful basis for new insights into L_1 acquisition. Gass and Schachter (1989:1) point out the significance of the bidirectionality that exists between L_1 acquisition research and linguistic theory in the sense that the latter directs and limits hypotheses in L_1 acquisition research while empirical results from

L_1 acquisition research serve to validate and refine theoretical models. Liceras (1986), Flynn (1987), Gass and Schachter (1989), White (1989), and Flynn and O'Neil (1988) bear testimony to the surge in recent research into L_2 acquisition, developing a body of knowledge that reflects the role linguistic theory plays in L_2 acquisition. White (1989) argues that the issue of access to UG in L_2 cannot be resolved with the conflicting information on subjacency available at the moment.

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APPENDIX I

SELECTION CRITERIA FOR SUBJECTS

This appendix lists the specific criteria that were observed in the selection of potential subjects for the longitudinal data collection.

a) Arrival in second language environment

Potential subjects had to have been in Canada for less than three months when first contacted. This time limit was expected to allow observation of early L_2 acquisition, but to exclude fossilized forms. Results from the HPD indicated that length of stay was not significant after two years in the second language environment and Schumann (1975) recorded fossilized forms in his subject after 14 months.

b) Age limits

Potential subjects had to be of similar age, but not older than 22 years at the beginning of the study. Results from the HPD showed a close relationship between the age of a learner at the time of immigration to Germany and performance on their syntactic index. The higher learners ranked on the syntactic index, the more likely they were 22 years or younger at the time of immigration.

c) Educational background

Potential subjects had to have completed compulsory schooling in their native country and have undergone some post-secondary training (either academic or professional). Researchers on the HPD found that subjects who had attended school and who had professional qualifications were more likely to be successful L_2 learners.

d) Legal status in Canada

Potential subjects were required to have official permission to be in Canada and to work in their chosen position. Recent studies suggest that L_2 acquisition in refugees and immigrants may differ considerably as they are subject to the influence of different pychological factors (Trévise, 1984; d'Anglejan, Renaud, Arseneault and Lortie, 1981).

e) Interaction with L_1 speakers

Potential subjects had to have the opportunity to interact with native speakers of English. Although whether a learner chooses to make contact with native speakers is to some extent a question of personality, results from the HPD indicate that L_2 learners' contacts with native speakers at work and during leisure time positively affected L_2 acquisition.

f) Socio-economic background

As socio-economic factors have been identified as variables in L_2 acquisition, every effort was made to select subjects whose socio-economic background is very similar.

Visiting and exchange students were ruled out as possible subjects as their L_2 acquisition would likely be more strongly influenced by institutionalized L_2 learning.

g) First language

The native language of the subjects was not a criteria for inclusion in or exclusion from the study, but two or more speakers of each first language were included to allow some comparisons and generalizations amongst speakers of different L_1s.

APPENDIX II

BIOGRAPHICAL DATA

This appendix contains detailed biographical information for each of the subjects, who are identified by a code as described in Section 3.1.1.

F1

Personal details:
F1 was born May 15th, 1961; her father is a skilled factory worker, her mother is a housewife. F1 has a younger sister.

Arrival in Canada:
End of July, 1982, Ottawa

Language background:
F1's native language is French, she was born in the French speaking part of Switzerland. Her father's native language is Swiss German and he used to speak Swiss German with F1 until she was approximately five years old. Her mother is a native speaker of French. F1 has relatives in the Swiss German part of Switzerland who do not speak French, but she is unable to converse in Swiss German.

Before coming to Canada, F1 spent eight months in Konstanz (W.Germany) learning German. During her stay in Konstanz she attended German classes in the mornings and she looked after her host family's children (three and five years old) in the afternoons.

F1 had taken a three month English course (two one-hour lessons a week) prior to her arrival in Canada. Her knowledge of English was judged at the low beginner level according to a modified TOEFL oral assessment form on October 15, 1982 (first meeting with F1). She had very little vocabulary and virtually no knowledge of basic structures. Her utterances were frequently incomprehensible. Conversation in English was very difficult.
Most recordings with F1 are very short and/or punctuated by long pauses. F1 often preferred to remain silent rather than to try to get her message across.

F1 enrolled in an English as a second language course at the High School of Commerce, Ottawa, in September 1982. She did not like the course very much and missed about half of it. F1 started another course in February 1983 but again she did not attend regularly and did not seem to make much observable progress. Modified TOEFL oral assessments were made at regular intervals.

Educational background:
F1 finished compulsory schooling in the areas of Geneva and Lausanne. She started a three year nursing program (periods of practical training at a hospital in Geneva interspersed with intensive study periods) in Geneva. F1 abandoned her training program after almost two years.

Position in Canada:
F1 had come to Canada to learn English and to decide what she wanted to do once she returned to Geneva. She accepted a position as a mother's helper in Ottawa. She had to look after a newborn infant and to take care of general housework. Her employers were English Canadians (a bank employee and a city alderman). The wife could not speak any French and generally preferred not to engage in conversations with her helper. She usually gave very brief instructions before leaving. These instructions seemed to take the form of what she considered "simplified English", e.g. "Me go now, me back six o'clock". The husband spoke French fairly fluently and wanted to practice French whenever he had an opportunity to do so. He rarely spoke English with F1, so she had very little contact with native speakers of English during her working hours.

Comments:
F1 discovered soon after arriving in Ottawa that she could get by very easily without knowing much English. She tended to avoid any situation that required her to use English. Most of her friends were native speakers of French.

SG2

Personal details:
SG2 was born July 13, 1959; her father is a skilled factory worker, her mother is a housewife. SG2 has a younger sister and a younger brother. Her older brother died in an accident when she was a child.

Arrival in Canada:
End of June, 1982, Ottawa.

Language background:
SG2's native language is Swiss German. She was born in the Swiss German part of Switzerland. Her parent's native language is Swiss German and she does not remember having contact with other languages as a child until she had to take French in secondary school.

SG2 studied French in school for five years, three hours per week. She only took French because it was a compulsory subject. She preferred English, which she studied in school for two years, three hours per week. Before leaving for Canada she enrolled in a private language school and studied English for six more months,

for ninety minutes a week. Her knowledge of English was judged at the high beginner level on a modified TOEFL oral assessment form on October 26, 1982 (first meeting with SG2). Although she had many false starts and her utterances were often inaccurate, she could keep up a conversation as long as it centred around a limited number of topics. SG2 liked company and enjoyed the regular visits. Usually it was not difficult to get her to talk for the recordings.

SG2 enrolled in an English as a second language course at the High School of Commerce in September 1982 and again in February 1983. She liked the course because it allowed her to meet people, but she did not feel that it helped improve her English significantly. SG2 pointed out that she does not like formal language learning.

Educational background:
SG2 finished compulsory schooling in a small town in the Swiss German part of Switzerland. After graduation she served a three year apprenticeship as a dressmaker and worked for a short period of time in her chosen profession before coming to Canada.

Position in Canada:
SG2 had come to Canada to learn English and to think about her future. She accepted a position as a mother's helper in Ottawa, where she had to look after a two-year old child who frequently slept during the day, allowing SG2 to watch television or listen to the radio. Two older daughters, approximately the same age as SG2, occasionally visited the household for extended periods. At first SG2 enjoyed these visits as they allowed her to interact with native speakers. However, they became a source of frustration when she found that her housekeeping duties increased during these visits. Whereas she initially liked her position, she frequently felt discouraged and unappreciated after the first few months. Her employers were English Canadians, spoke English only, and both were officers in the Armed Forces. They were frequently absent, even in the evenings.

Comments:
SG2 was initially very motivated and keen on learning as much as possible about Ottawa and Canada. After a few months she became homesick and was eager to leave when her contract expired. During her time in Ottawa she tried to make friends, but many of them were native speakers of Swiss German.

F3

Personal details:
F3 was born April 10, 1962. Her father is the postmaster of a small sub-postoffice, her mother is a housewife. F3 has two younger sisters.

Arrival in Canada:
End of August, 1982, Ottawa.

Language background:
F3 was born in the Swiss German part of Switzerland. Her father's native tongue is Swiss German, her mother's native tongue is French. Her family lived in the Swiss German part of Switzerland until F3 was five years old. Up to that point Swiss German was the dominant language at home. When F3 was five years old, the family moved to the French speaking part of Switzerland and the language of the home soon changed to French. She had her formal education in French language schools and only came into contact with Swiss German on occasional visits to relatives in the Swiss German part of Switzerland. She remembers very little Swiss German and does not feel able to converse in Swiss German.

F3 studied German for three years (two hours a week) in High School, but she cannot remember more than a few vocabulary items. She considers her knowledge of German insufficient for practical purposes. She also studied English for two years (two hours a week) while in High School. F3's knowledge of English was at the beginner level according to a modified TOEFL oral assessment form when she was first contacted on October 10, 1982. Conversation was difficult as F3 had limited control over English structures and vocabulary. Her oral production included many French expressions, but she used gestures and humour and usually managed to communicate her ideas.

In September 1982 F3 enrolled in an English as a second language course at Algonquin College (two times two hours a week) in Ottawa. She attended regularly and quickly made friends, including many whose native tongue was other than French, allowing her to use English. F3 enrolled in another English course in February 1983.

Educational background:
F3 finished nine years compulsory schooling in Geneva. She then followed a three year apprenticeship training program as a window decorator (i.e. part of her training took place in a work environment, part of it in a trade school). Once qualified, F3 worked for a year as a decorator in Lausanne.

Position in Canada:
F3 came to Canada to learn English and to experience something new. She accepted a position as a mother's helper. She had to look after two girls aged one and two. Also, she had to perform general household duties. Her employers (a physician and a lawyer) spoke very little French and tried to communicate with F3 in English. This proved difficult at times and as a result conversation between her and her employers was minimal and usually related to her duties.

Comments:
F3 demonstrated a very outgoing personality and a very optimistic outlook on life. She was involved in a number of different activities and she made many English speaking friends.

SG4

Personal details:
SG4 was born July 11, 1961. Her father is a skilled factory worker, her mother is a housewife. SG4 has a younger sister and a younger brother.

Arrival in Canada:
July 31, 1982, Ottawa.

Language background:
SG4 was born in the north of Switzerland. Her parents' native language is Swiss German and no other languages were spoken at home.

Before coming to Canada, SG4 spent one year in Geneva as a mother's helper in order to learn French. However, her employer spoke German with her and although she attended some evening classes in French, she did not learn French well.

SG4 studied English for three years in secondary school for two hours every week. Although she wanted to learn English, she did not like the course as it was a grammar course. She was judged to be at the high beginner level on a modified TOEFL oral assessment scale at the beginning of the study.

In Ottawa, SG4 enrolled in an English course at the High School of Commerce in September 1982 and again in February 1983. She attended regularly, although she did not think that it improved her English.

Educational background:
SG4 completed compulsory schooling in the small town in northern Switzerland where she grew up. She then moved to a larger town nearby to serve a three-year apprenticeship as a child care worker.

Position in Canada:
SG4 had come to Canada to learn English and to see another part of the world. She accepted a position as a mother's helper on the outskirts of Ottawa. She had to look after a three-year old child and perform light housekeeping duties. Her employers were English Canadians, both were members of the Armed Forces (a mechanic and a nurse), and spoke English only. SG4 was quite content with her position, although she was eager to leave at the end of her contract.

Comments:
SG4 was very shy initially and it was difficult to get her to open up and talk, especially when the tape recorder was on, although she liked the regular visits. After a while she appreciated the opportunity to speak English, especially as most of her friends were Swiss German.

SG/F5

Personal details:
SG/F5 was born February 14, 1963. Her parents own and operate a farm. She has four older brothers.

Arrival in Canada: Early September, 1982

Language background:
SG/F5 was born in the Swiss German part of Switzerland. Her parents and her brothers speak Swiss German. When SG/F5 was seven years old her family moved to the French speaking part of Switzerland. She attended local, and in "submersion" French language schools and quickly learned French to communicate at school and with her friends. At home, the family continued to speak Swiss German.

SG/F5 studied German for five years in High School and College (two hours two times a week) and feels comfortable with oral and written German. Also in High School, she took an Italian course (two hours a week for twelve weeks) but did not enjoy it and gave it up. She studied English for four years (three hours a week), first in High School and then in College. Her knowledge of English was considered at the intermediate level according to a modified TOEFL oral assessment form. While still in College, SG/F5 spent a summer vacation in England as a mother's helper. She had to look after a five year old child and had no friends who spoke either French, German or Swiss German.

SG/F5 enrolled in an English as a second language course in September at Algonquin College, Ottawa and attended classes regularly. She took another ESL course there in February 1983.

Educational background:
SG/F5 completed nine years compulsory schooling in the French speaking part of Switzerland. She then attended a private commercial college for one year and graduated with a certificate in secretarial studies. She worked as a clerk/secretary for three months before coming to Canada.

Position in Canada:
SG/F5 came to Canada because she wanted to improve her English. At the same time she wanted to see North America. She accepted a position as a mother's helper in Ottawa, where she had to look

after an eight month old girl and perform general household duties. Her employers (a physician and a dentist) spoke English although the husband's native tongue was Chinese.

Comments:
SG/F5 never enjoyed studying English in a formal environment but she was keen to listen to native speakers and to try to communicate with people. She had a very outgoing personality, made friends easily, and actively sought contact with English speaking people by joining in a number of activities (e.g. judo club).

APPENDIX III

RECORD OF TAPERECORDED INTERVIEWS USED FOR ANALYSIS

This appendix lists details of the recordings available from each learner.

1F

	Date	Approx. length	# of words	vocab.
I	82/11/02	10 minutes	429	144
II	82/12/02	15 minutes	544	179
III	83/01/13	15 minutes	654	203
IV	83/03/03	30 minutes	1,586	352
V	83/03/17	30 minutes	1,423	338
VI	83/04/08	30 minutes	1,452	307
	Total	2 hrs.10 mins.	6,088	-

2SG

	Date	Approx. length	# of words	vocab.
I	82/10/26	15 minutes	1,271	281
II	82/11/02	15 minutes	1,649	304
III	82/11/16	15 minutes	1,985	372
IV	82/11/30	15 minutes	1,590	361
V	82/12/14	15 minutes	1,687	361
VI	83/01/10	5 minutes	1,541	356
VII	83/01/24	30 minutes	3,372	511
VIII	83/02/07	30 minutes	3,468	549
IX	83/02/21	30 minutes	3,684	507
X	83/03/07	30 minutes	4,158	515
XI	83/03/28	30 minutes	3,889	561
XII	83/04/25	30 minutes	3,509	527
XIII	83/05/24	30 minutes	3,539	545
	Total	5 hours	35,342	-

3F

	Date	Approx. Length	# of words	vocab.
I	82/11/09	15 minutes	1,283	310
II	82/11/23	15 minutes	809	254
III	82/12/07	15 minutes	1,123	276
IV	83/01/12	15 minutes	1,287	296
V	83/01/26	30 minutes	2,259	432
VI	83/02/09	30 minutes	2,540	457
VII	83/03/02	30 minutes	2,295	439
VIII	83/03/16	30 minutes	2,582	458
IX	83/04/18	30 minutes	2,361	436
X	83/05/18	30 minutes	2,363	405
XI	83/06/22	30 minutes	2,069	425
XII	83/09/16	30 minutes	2,433	416
XIII	83/10/17	30 minutes	2,220	444
XIV	83/11/28	30 minutes	2,293	457
XV	84/01/11	30 minutes	2,237	508
XVI	84/02/22	30 minutes	2,541	483
XVII	84/05/02	30 minutes	2,914	533
XVIII	84/06/18	30 minutes	2,674	508
	Total	8 hours	38,283	-

4SG

	Date	Approx. Length	# of words	vocab.
I	82/11/08	10 minutes	359	149
II	82/11/24	15 minutes	874	287
III	82/12/08	15 minutes	1,377	237
IV	82/12/21	30 minutes	2,516	460
V	83/01/13	30 minutes	1,503	343
VI	83/01/27	30 minutes	1,271	315
VII	83/02/10	30 minutes	2,596	423
VIII	83/02/22	30 minutes	2,827	466
IX	83/03/10	30 minutes	2,265	401
X	83/03/28	30 minutes	2,560	435
XI	83/04/07	30 minutes	3,022	480
XII	83/05/26	30 minutes	2,568	431
XIII	83/06/28	30 minutes	3,077	521
	Total	5 hrs. 40 min.	26,815	-

5SG/F

	Date	Approx. Length	# of words	vocab.
I	82/10/26	15 minutes	700	233
II	82/11/08	15 minutes	1,786	334
III	82/11/23	15 minutes	1,696	412
IV	82/11/30	15 minutes	1,539	366
V	83/01/10	30 minutes	2,175	447
VI	83/01/24	30 minutes	3,440	604
VII	83/02/07	30 minutes	2,937	548
VIII	83/02/21	30 minutes	3,043	589
IX	83/03/07	30 minutes	3,554	605
X	83/03/28	30 minutes	3,302	516
XI	83/04/18	30 minutes	3,351	583
XII	83/05/09	30 minutes	3,667	617
XIII	83/06/10	30 minutes	3,571	635
XIV	83/07/08	30 minutes	3,325	614
XV	83/10/05	30 minutes	3,477	634
XVI	83/11/04	30 minutes	2,832	513
XVII	83/12/05	30 minutes	3,866	655
XVIII	84/01/20	30 minutes	3,904	582
XIX	84/03/06	30 minutes	3,915	653
	Total	8 hrs. 30 min.	56,080	-

SUMMARY

Total of recorded learner speech: 29 hours 15 minutes, 162,608 words.

# of words: These figures represent OCP's count of words. This means that false starts and repetitions are considered as words and counted as such.

vocab: "Vocabulary" includes false starts; e.g. "be- beg-beginner" is counted as three words. The total number of vocabulary items used by some learners is, as a result, somewhat inflated.

APPENDIX IV

CONTACT WITH EMPLOYER AND OTHER NATIVE SPEAKERS

This appendix reflects how much contact each learner had with NS. (recorded over a 3 week period, average per week given)

Type of contact	1F	2SG	3F	4SG	5SGF
Employer	10 min.	35 min.	35 min.	45 min.	30 min.
Children of employer	French	English	F/E*	English	English
Service people (e.g. mailman, stores, etc.)	5 min.	2 min.	4 min.	2 min.	10 min.
Telephone (calls, messages for employer)	15 min.	15 min.	5 min.	2 min.	5 min.
Radio (English, mostly music)	0 min.	5 hrs.	7 hrs.	25 hrs.	35 hrs.
TV (English)	10 min.	14 hrs.	3 1/2 hrs.	12 hrs.	10 hrs.
English course	3 hrs.	3 hrs.	4 hrs.	3 hrs.	4 hrs.
Leisure activities (friends through judo, church, etc.)	10 min.	6 hrs.	26 hrs.	5 hrs.	24 hrs.
Time spent learning English alone (exercises, grammar books)	3 1/2 hrs.	40 min.	30 min.	20 min.	15 min.

* 3F was expected to speak French with the children but did not do so consistently.

APPENDIX V

MODIFIED ORAL TOEFL EVALUATION SHEET

A sample of the modified oral TOEFL evaluation sheet used to determine the subjects' level of ability is shown on the following page.

Factors in Speaking Proficiency

Pronunciation	Frequently not intelligible	Generally intelligible though constantly foreign ✓	Generally intelligible, sometimes foreign	Always intelligible, occasionally slightly foreign	Indistinguishable from native speaker
Grammar	Accuracy limited to set expressions; almost no control of syntax; often conveys wrong information	Fair control of most basic syntactic patterns; conveys meaning accurately in simple sentences most of time – ✓	Good control of most basic syntactic patterns; always conveys meaning accurately in reasonably complex sentences	Makes only occasional errors, and these show no pattern of deficiency	Control equal to that of an educated native speaker
Vocabulary	Adequate only for survival, travel, and basic courtesy needs	Adequate for simple social conversation and routine job needs ✓	Adequate for participation in all general conversation and for professional discussions in a special field	Professional and general vocabulary broad and precise, appropriate to occasion	Equal to vocabulary of an educated native speaker
Fluency	Except for memorized expressions, every utterance required enormous obvious effort	Usually hesitant; often forced to silence by limitations of grammar and vocabulary ✓	Rarely hesitant; always able to sustain conversation through circumlocutions	Speech on all professional matters as apparently effortless as in English; always easy to listen to	Speech at least as fluent as in English on all occasions
Comprehension	May require much repetition, slow rate of speech; understands only very simple, short familiar utterances	In general understands non-technical speech directed to him, but sometimes misinterprets or needs utterances reworded. Usually cannot follow conversation between native speakers ✓	Understands most of what is said to him; can follow speeches, clear radio broadcasts, and most conversation between native speakers, but not in great detail	Can understand all educated speech in any moderately clear context; occasionally baffled by colloquialisms and regionalisms	Equal to that of the native speaker

F3 83/03/16

APPENDIX VI

TRANSCRIPTION CONVENTIONS

This appendix lists the conventions that were used to transcribe the tape recorded material from the audio tapes into machine-readable format.

- each learner is referred to by an alpha-numeric code representing the learner's native language and rank level among the five learners, e.g. F1 represents a native speaker of French with the lowest level amongst the five learners studied;

- the first line of each new transcript identifies the learner and the date of the recording;

- learner utterances are in upper and lower, interviewer utterances completely in upper case letters;

- each first line by the interviewer is preceded by an I;

- each first line by the subject is preceded by an S;

- pauses are indicated by periods, one period (.) represents approximately five seconds, while three periods (...) represent approximately fifteen seconds;

- after a pause, no space occurs in the script;

- after a sentence, two spaces occur;

- regular spelling is used, but changes in grammatical morphemes are indicated, e.g. \gonna| where the learner used this form;

- non-English utterances appear between asteriks, e.g. *verbe*;

- interruptions or non-verbal learner reactions are indicated between brackets, e.g. (laugh);

- compounds are separated by # in order to keep them as one word for the purposes of the concordance, e.g. Los#Angeles;

- likewise, where several non-English expressions occur, the string is linked by #, e.g. *comment#le#dire*?

- questions are marked in standard fashion, i.e. ?, and if the syntactic structure indicates a question but the supra-segmentals do not match the structure a comment is added between brackets ();

- a very small number of learner utterances were incomprehensible, such strings are marked ???? in the transcripts;

- rising intonation is indicated by a question mark;

- all verbal hesitations are marked, e.g. uh, uhm, etc.;

- utterances by occasional additional participants during a recording session, e.g. employer's children, are identified and transcribed on the transcripts;

- all false starts and repetitions are transcribed; and,

- false starts are followed by a hyphen ,eg. un-, un-, unsure.

APPENDIX VII

SAMPLES OF TRANSCRIBED RECORDINGS

A sample page of a transcribed recording and a sample page of each of the three analysis reports produced follow.

```
IT 821102     1 T: (ABT21102)       (1-1221)
3T 821102     2 I: ...IT IS ON TUESDAY YOU GO TO SCHOOL?
IT 821102     3 S: Monday and Wednesday evening...and...the teacher is very dynamic
3T 821102     4 S: and...ahm she begin with ask what I have-n in the weeks...ah...to do
BT 821102     5 S: and...
BT 821102     6 I: SHE ASKS WHAT DID YOU DO AT THE WEEKEND AND THEN YOU ALL SAY
3T 821102     7 I: NOTHING...
3T 821102     8 S: Nothing (laugh)...oh, no, nothing, ahm...the weekend I go shopping
BT 821102     9 S: Saturday...I go in the evening ahm maybe theatre or concert and
BT 821102    10 S: Sunday horseback riding and many swimming after, afternoon
BT 821102    11 I: REALLY?
BT 821102    12 S: Yes, when I am not tier and she ask ahm...for the weeks what did
3T 821102    13 S: you no di what I did for the weeks and the work of the weeks
3T 821102    14 I: SHE WANTS TO KNOW ABOUT YOUR WORK?
BT 821102    15 S: Yes.
BT 821102    16 I: HAVE YOU SEEN ANY PLAYS SINCE YOU'VE COME TO CANADA...AT THE
BT 821102    17 I: THEATRE?...HAVE YOU BEEN TO THE THEATRE?
BT 821102    18 S: Yes.
BT 821102    19 I: WHAT DID YOU SEE?
BT 821102    20 S: Mon dragula (??)
BT 821102    21 I: ...AND DID YOU LIKE IT?
BT 821102    22 S: ahm, is is good for ahm smile and...(laugh)...
BT 821102    23 I: WHAT IS IT ALL ABOUT?
ABT 821102   24 S: The story?
ABT 821102   25 I: AGREEING NOISE
ABT 821102   26 S: ...is ahm a woman and a man is...no, her husband and her husband is
ABT 821102   27 S: for the see the sky at night..
ABT 821102   28 I: A PILOT?
ABT 821102   29 S: ...the work of the husband and is to seven years married and has
ABT 821102   30 S: not children and ahm...she go always day in ah *Kirche*
ABT 821102   31 I: CHURCH
ABT 821102   32 S: for chil...when she will children
ABT 821102   33 I: AH, TO PRAY FOR CHILDREN
ABT 821102   34 S: Yes, and his husband go and is a men *enfaisant*? what is the (..)
ABT 821102   35 S: ...the holes is ar a *cots*...
ABT 821102   36 I: BESIDE
ABT 821102   37 S: yeah, a man is beside and he love the woman and he will with the
ABT 821102   38 S: woman one night go and...his friend say he is ahm...ahm...like this
ABT 821102   39 S: (pointed)
ABT 821102   40 I: A PLANT?
ABT 821102   41 S: ...a plant and the name is mon dragula and the woman must drink the
ABT 821102   42 S: mon dragula and she can baby ahm...she
ABT 821102   43 I: CONCEIVE A BABY
ABT 821102   44 S: yes, but the man to the first time with the woman come dead seven or
ABT 821102   45 S: eight day next day and the the friend say ok you can this explay...
ABT 821102   46 S: explaining into husband...the husband ask no is not good the man can
ABT 821102   47 S: not dead for a *Kind*mein* wife will not this and his ahm he speak in
ABT 821102   48 S: his head no or yes and finishes yes, the the man can can go the
ABT 821102   49 S: woman will ok I am ok ah for a man is wo...man will dead...suicide?
ABT 821102   50 I: THE MAN WILL...OH KILL HIMSELF
.BT 821102   51 S: Yes, and ahm...the the man is beside go and the mon dragor dead
BT 821102    52 S: not is not dead no...
```

a 10

26 IT ALL ABOUT? The story? AGREEING NOISE ...is ahm a woman and a man is...no, her husband and her
26 The story? AGREEING NOISE ...is ahm a woman and a man is...no, her husband and her husband is for
34 PRAY FOR CHILDREN Yes, and his husband go and is a men *en#faisant*? what is the (..) ...the holes
35 *en#faisant*? what is the (..) ...the holes is ar a *coté*... BESIDE yeah, a man is beside and he
37 the holes is ar a *coté*... BESIDE yeah, a man is beside and he love the woman and he will
41 he is ahm...ahm...like this (pointed) A PLANT? ...a plant and the name is mon dragula and the woman
47 ask no is not good the man can not dead for a *Kind#mein* wife will not this and his ahm he
49 man can can go the woman will ok I am ok ah for a man is wo...man will dead...suicide? THE MAN WIL
66 GET TO SEE ONE IN ENGLISH? I have an English a movie of Shakespeare...like that...on the TV
74 Yes, I see, not always there...ahm...I see a little... GIVE YOU PRACTICE. Yes. DID YOU GO AND

action 1

88 OF PREFERENCE? Yes,mhm...and the movie is more action than theatre

after 1

10 and Sunday horseback riding and many swimming after, afternoon REALLY? Yes, when I am not tier a

afternoon 1

10 Sunday horseback riding and many swimming after, afternoon REALLY? Yes, when I am not tier and she

ah 3

4 she begin with ask what I have-n in the weeks...ah...to do and... SHE ASKS WHAT DID YOU DO AT THE
30 has not children and ahm...she go always day in ah *Kirche* CHURCH for chil...when she will childr
49 the the man can can go the woman will ok I am ok ah for a man is wo...man will dead...suicide? THE

ahm 15

4 evening...and...the teacher is very dynamic and...ahm she begin with ask what I have-n in the weeks
8 SAY NOTHING... Nothing (laugh)...oh, no, nothing, ahm...the weekend I go shopping Saturday...I go in
9 I go shopping Saturday...I go in the evening ahm maybe theatre or concert and Sunday horseback
12 REALLY? Yes, when I am not tier and she ask ahm...for the weeks what did you no di what I did
22 YOU SEE? Mon dragula (??) ...AND DID YOU LIKE IT? ahm, is is good for ahm smile and...(laugh)... WHA
22 AND DID YOU LIKE IT? ahm, is is good for ahm smile and...(laugh)... WHAT IS IT ALL ABOUT? T
26 IS IT ALL ABOUT? The story? AGREEING NOISE ...is ahm a woman and a man is...no, her husband and her
30 to seven years married and has not children and ahm...she go always day in ah *Kirche* CHURCH for
38 the woman one night go and...his friend say he is ahm...ahm...like this (pointed) A PLANT? ...a plan
38 one night go and...his friend say he is ahm...ahm...like this (pointed) A PLANT? ...a plant and
42 woman must drink the mon dragula and she can baby ahm...she CONCEIVE A BABY yes, but the man go the
47 deal for a *Kind#mein* wife will not this and his ahm he speak in his head no or yes and finishes ye
51 suicide? THE MAN WILL...OH KILL HIMSELF Yes, and ahm...the the man is beside go and the mon dragon
74 A LOT EASIER... Yes, I see, not always there...ahm...I see a little... GIVE YOU PRACTICE. Yes. DI
78 Yes. DID YOU GO AND SEE ANY MOVIES? Yes...ahm...I don't *Titel* in English...was difficult

als 1

79 was difficult...but when I can see is best best als heard...? BETTER THAN JUST HEAR IT, YEAH, OR Y

always 2

30 married and has not children and ahm...she go always day in ah *Kirche* CHURCH for chil...when s
74 THAT THAT'S A LOT EASIER... Yes, I see, not always there...ahm...I see a little... GIVE YOU PR

ABT 82/11/02

a	10	husband	6	this	5
action	1	I	14	tier	2
after	1	in	6	time	1
afternoon	1	into	1	to	1
ah	3	is	20	tv	1
aha	15	It	1	very	1
als	1	know	1	vas	6
always	2	like	3	Wednesday	1
aa	2	little	1	weekend	1
an	1	love	1	weeks	4
and	29	man	8	what	4
ar	1	many	1	when	3
ask	3	married	1	wife	1
at	2	maybe	1	will	5
baby	1	me	1	with	3
begin	1	men	1	vo	1
beside	2	Mhm	4	woman	6
best	2	Mon	4	work	2
but	2	Monday	1	yeah	1
can	6	more	1	years	1
chil	1	movie	4	Yes	17
children	2	must	1	you	2
Cnr	1	name	1	*als*	1
come	1	next	1	*co*6*	1
concert	1	night	2	*en*faisant*	1
day	3	no	8	*Find*mein*	1
dead	5	not	8	*Kirche*	1
di	1	Nothing	2	*Titel*	1
did	2	of	3		
difficult	2	oh	1		
do	1	ok	3		
don't	2	on	1		
dragor	1	one	1		
dragula	3	or	3		
drink	1	plant	1		
dynamic	1	ridinq	1		
eight	1	Saturday	1		
English	2	say	2		
evening	2	see	4		
explaining	1	Sesame	1		
explay	1	seven	2		
finishes	1	Shakespeare	1		
first	1	she	6		
for	7	shopping	1		
French	1	sky	1		
friend	2	smile	1		
go	8	speak	1		
good	2	story	2		
has	1	Street	1		
have	1	suicide	1		
have-n	1	Sunday	1		
he	4	swimming	1		
head	1	teacher	1		
heard	1	than	1		
her	2	that	1		
his	4	the	39		
holes	1	theatre	3		
horseback	1	there	1		

TOTAL WORDS READ = 429
TOTAL WORDS SELECTED = 429

TOTAL WORDS READ = 429
TOTAL WORDS SELECTED = 429
TOTAL WORDS PICKED = 429

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2SG

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XII	83/04/25	30 minutes	3,509	527
XIII	83/05/24	30 minutes	3,539	545
	Total	5 hours	35,342	-

3F

	Date	Approx. Length	# of words	vocab.
I	82/11/09	15 minutes	1,283	310
II	82/11/23	15 minutes	809	254
III	82/12/07	15 minutes	1,123	276
IV	83/01/12	15 minutes	1,287	296
V	83/01/26	30 minutes	2,259	432
VI	83/02/09	30 minutes	2,540	457
VII	83/03/02	30 minutes	2,295	439
VIII	83/03/16	30 minutes	2,582	458
IX	83/04/18	30 minutes	2,361	436
X	83/05/18	30 minutes	2,363	405
XI	83/06/22	30 minutes	2,069	425
XII	83/09/16	30 minutes	2,433	416
XIII	83/10/17	30 minutes	2,220	444
XIV	83/11/28	30 minutes	2,293	457
XV	84/01/11	30 minutes	2,237	508
XVI	84/02/22	30 minutes	2,541	483
XVII	84/05/02	30 minutes	2,914	533
XVIII	84/06/18	30 minutes	2,674	508
	Total	8 hours	38,283	-

4SG

	Date	Approx. Length	# of words	vocab.
I	82/11/08	10 minutes	359	149
II	82/11/24	15 minutes	874	287
III	82/12/08	15 minutes	1,377	237
IV	82/12/21	30 minutes	2,516	460
V	83/01/13	30 minutes	1,503	343
VI	83/01/27	30 minutes	1,271	315
VII	83/02/10	30 minutes	2,596	423
VIII	83/02/22	30 minutes	2,827	466
IX	83/03/10	30 minutes	2,265	401
X	83/03/28	30 minutes	2,560	435
XI	83/04/07	30 minutes	3,022	480
XII	83/05/26	30 minutes	2,568	431
XIII	83/06/28	30 minutes	3,077	521
	Total	5 hrs. 40 min.	26,815	-

5SG/F

	Date	Approx. Length	# of words	vocab.
I	82/10/26	15 minutes	700	233
II	82/11/08	15 minutes	1,786	334
III	82/11/23	15 minutes	1,696	412
IV	82/11/30	15 minutes	1,539	366
V	83/01/10	30 minutes	2,175	447
VI	83/01/24	30 minutes	3,440	604
VII	83/02/07	30 minutes	2,937	548
VIII	83/02/21	30 minutes	3,043	589
IX	83/03/07	30 minutes	3,554	605
X	83/03/28	30 minutes	3,302	516
XI	83/04/18	30 minutes	3,351	583
XII	83/05/09	30 minutes	3,667	617
XIII	83/06/10	30 minutes	3,571	635
XIV	83/07/08	30 minutes	3,325	614
XV	83/10/05	30 minutes	3,477	634
XVI	83/11/04	30 minutes	2,832	513
XVII	83/12/05	30 minutes	3,866	655
XVIII	84/01/20	30 minutes	3,904	582
XIX	84/03/06	30 minutes	3,915	653
	Total	8 hrs. 30 min.	56,080	-

SUMMARY

Total of recorded learner speech: 29 hours 15 minutes, 162,608 words.

# of words: These figures represent OCP's count of words. This means that false starts and repetitions are considered as words and counted as such.

vocab: "Vocabulary" includes false starts; e.g. "be- beg-beginner" is counted as three words. The total number of vocabulary items used by some learners is, as a result, somewhat inflated.