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LANGUAGE ACQUISITION AND UNIVERSAL GRAMMAR

A Survey of Recent Research

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CONTENTS

ABBREVIATIONS

α	alpha (= syntactic category)
θ	theta (= thematic)
AH	Accessibility Hierarchy
e	empty category
CA	Contrastive Analysis
CC	Creative Construction
CP	Complement Phrase
DG	Developmental Grammar
D.T.C.	derivational theory of complexity
ECP	empty category principle
ECM	exceptional case marking
EPP	extended projection principle
GB	government and binding
I	inflection
IL	interlanguage
ILG	interlanguage grammar
IP	inflectional phrase
L1	first language
L2	second language
L2A	second language acquisition (also SLA)
LAD	Language Acquisition Device
LF	Logical Form
NP	Noun Phrase
PF	Phonetic Form
pro	null subject in tensed clauses
PRO	subject in infinitival clauses
SOV	subject object verb
SVO	subject verb object
t	trace
TL	target language
UG	Universal Grammar
V	verb
VP	verb phrase
*X	X is ungrammatical

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Originally, the subject of this thesis was suggested to me by Prof. Alberto Mioni following an exam on second language acquisition. The idea initially was to write a review of the various second language acquisition theories formulated during the last decade. Subsequently, after a course on syntax and one on generative phonology at the University of Maryland (autumn semester 1991), my interest in a generative approach to the subject grew, at the same time in a consideration of the language acquisition theme in more general terms.

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PART I: FIRST LANGUAGE ACQUISITION

INTRODUCTION

Language acquisition research is quite a varied field, and the variety of approaches and perspectives from which one can observe the phenomena of first and second language acquisition is remarkable. Teachers, psychologists, linguists, educators, are all people who, at different levels, can be interested in this field. The viewpoint adopted in this work is that of generative theory and more precisely that of the Government-Binding Framework (Chomsky, 1981b, 1986). Under generativism, theories of syntax have been largely developed. A valid theory must be testable, falsifiable, and explicit. So, when linguists say they are going to look at the acquisition of some aspects of syntactic knowledge, they can propose a very detailed hypothesis of what that knowledge is. In other aspects of knowledge such as discourse and pragmatic competence there is a less precise theory. In fact, due to the nature of their objects exposed to a high degree of variation, discourse and pragmatic competence are not always organized according to a discrete open system pattern[i]. One of the reasons why there is so much work in syntax is that one can ask very precise questions, put forward very precise hypotheses on the formal properties of language and test them. Another reason is that syntax represents a 'bridge' between other important areas of language (phonetic form and logical form, sounds and meaning), thus assuming a central role. An important area of research in generative grammar is L1 acquisition. Many linguists feel that in

L1 acquisition there is an innate component genetically transmitted, an inborn 'knowledge of language'. In first language acquisition, uniform acquisition sequences are observed. Every child is provided with a precise set of principles, part of the human cognitve endowment, which enable him/her to 'acquire' any specific language. Assuming that this view is correct, many L2 researchers wondered how similar and how dissimilar L1 and L2 acquisitions are and whether inborn knowledge is also used in L2 acquisition. These queries have a lot of appeal. There is now a controversial debate about whether or not aspects of what is called 'Universal Grammar' (henceforth UG) are available to second language learners as well as first language learners. The new view suggests that UG is also available in L2 acquisition, so, many studies now are testing whether the properties of UG that seem to play a role in L1 acquisition are also playing a role in L2 acquisition. The crucial variable in this context is represented by age. In fact, linguists assume that no difference between first and second language acquisition arises if a foreign language is acquired within a 'critical' age (i.e. the early teens). Thus, the terms 'first' or 'second' language do not make reference to the number of languages acquired, but rather to the point in cognitive maturation when the process of learning takes place. In this work, reference to 'second language' will be made in this sense, where the word 'second' includes the notion 'adult'.

Several differences arise between the first and second language acquisition processes. Nevertheless, among the differences it is possible to follow a common path of investigation, that of UG, as elaborated in Chomsky and others.

The leading idea of this thesis is that UG might play a role in second language acquisition as well as in first language acquisition. There are some advantages in considering second language acquisition from the point of view of UG. Gregg (1989) remarks that "a linguistic theory of the kind perhaps currently best exemplified by Chomskyan generative grammar could give us insights into SLA not available from other linguistic theories". The aim of the present work is to delineate an informative report about some of the positions assumed by linguists in the field of first and second language acquisition. In particular, the current trend under the parameter-setting model of language acquisition will be discussed. Many of the methodologies and issues involved in the study of L1 acquisition are also relevant to second language acquisition research. Thus, the first part of the thesis presents topics of first language acquisition, while the second part reviews some of the UG-based studies in the field of second language acquisition. The application of these studies in language teaching and learning is analysed.

Some reference is made to the scientific method employed by generative researchers. They will claim that the most interesting observations are the ones that surface as a result of having some kind of theory. When linguists start proposing some models, the models themselves suggest the way of observing new data. In order to choose between different sensible hypotheses one has to look carefully at the data. There is always a dialectic between the theory and the gathering of data. The reason for gathering the data is to test the hypothesis of the theory. The data one gathers may change the theory, but at the beginning there is the theory.

That is the way a deductive model works. Researchers, working in UG paradigm prefer this model to the inductive model. An inductive model presupposes that the senses, which are limited, can discover a sort of model directly from reality. With this sort of model the chances of discovering something of great interest are very slim. The more interesting the phenomenon one observes, the less profound the observation is going to be, if one uses the senses alone[ii]. The opposition between the two models can be viewed as the distinction between the 'Baconian model' and the 'Galileian model'.

Finally, as Rizzi (1990: 3) remarks, there are two viewpoints in generative theory which coexist and each one complements the other:

> "C'è un punto di vista concreto, per il quale il compito della teoria consiste nel rappresentare le generalizzazioni che emergono dai dati; ...C'è poi un punto di vista astratto per il quale l'individuazione delle generalizzazioni empiriche è il punto di partenza e non di arrivo dell'elaborazione teorica".

In reviewing some current research on language acquisition, it soon became clear that there exist two levels of discussion. One level considers the 'logical problem' of language acquisition, 'Plato's problem', cognitive maturation. Another level is that of a more concrete analysis and discussion of empirical data about principles and parameters. In order to make sensible questions and to answer them in a convincing way one has to look carefully at the data. The present work reflects, at least in part in the

intention of the writer, this twofold approach of addressing the same issue. Given the complexity of the phenomenom of language acquisition as a whole, various points in this work require a certain 'suspension of disbelief' on the reader's part for a better understanding of the issues involved.

1. LINGUISTIC THEORY AND LANGUAGE ACQUISITION

1.1 Generative grammar: some basic assumptions on language acquisition

1.1.1 The 'knowledge of language'

In the last few decades, the amount of discussion about language acquisition in the context of UG has grown considerably. This chapter can be roughly divided into two sections. The first part puts emphasis on some basic assumptions in generative theory also relevant for UG-account of language acquisition. The second part of the chapter is devoted to UG description of language acquisition. Brief mention will be made of some meaningful concepts of Universal Grammar relevant to later discussions. As a unitary path of investigation to this chapter and the following ones reference is made to the three fundamental questions raised by Chomsky (1981a) regarding the 'knowledge of language':

a: what constitutes knowledge of a language?

b: how does such knowledge develop?

c: how is such knowledge put to use?

The development of the arguments of this chapter does not follow a

chronological order, rather it consists of a coherent collection of ideas around an object of discussion, namely, the knowledge of language.

1.1.2 Departure from structuralism

Structuralist theories of language were not directly concerned with the problem of acquisition. Their main aim was to provide and collect sets of structures, samples of language and to give them the appropriate collocation in the theory of grammar. One main difference then between this approach and generativism was the emphasis the latter placed on topics such as creativity, the complexity of language structure and the problem of acquisition. Classical structuralism is not concerned with grammars as 'mental representation' of a language. By contrast, the main purpose of linguists operating within generative grammar was, and is, to build a simple and invariable system of rules, recently formulated as principles and parameters, which would define the grammatical sentences of the language. Crucially, the departure from structuralism is determined by the element of 'surface' and 'deep' levels of grammatical structure: two sentences may have similar surface structure but very different underlying structures. In other words, there is a level, the 'deep-structure', level which gives an insight into much of the inherent semantic ambiguity of apparently similar surface sentences. What relates deep structure and surface structure are transformations. For instance, Carol Chomsky (1969: 8) uses the following sentences as an example:

1) John is easy to see

2) John is eager to see

Despite the apparent similarity of the surface structure, the two sentences are very different at deep-structure level. In fact, the former sentence can be paraphrased as:

to see John is easy

On the other hand, the latter cannot be re-interpreted as

*to see John is eager

because it is ungrammatical. The sentences differ in other respects as well: in sentence (2) the NP John is performing the action (the agent), whereas in (1) it is rather the patient of the action; lastly, in sentence (1) John is the object of the complement verb see (the complement verb is in relation to the whole sentence : easy to see; the object of the verb complement is the object of VP), whereas in (2) it represents the real subject. In other words, in sentence (2) deep structure and surface structure level are closer than in sentence 1) (see also Chomsky, 1968: 161).

1.1.3 E-language vs. I-language

Chomsky stresses the difference between 'externalized language' as opposed to 'internalized language'. Externalized language approach has its root in previous structuralist tradition. It consists in grouping together sample sentences with certain meanings and analysing them as sequences of elements, grouped with reference to one another. In the externalized language approach, "the construct is understood independently of the properties of the mind/brain" (Chomsky, 1986a: 20). This approach is compatible with the work by Joseph Greenberg (1966) in the sense that it offers an explanation to many generalizations such as implicational universals, statistical universals (see section 1.3). On the contrary, to those people mainly concerned with the social or educational aspect of language, generative grammar has little to offer, at least at first sight, since it is primarily concerned with the inborn and constant mechanism of language acquisition rather than with sociocultural phenomena. In fact, generative grammar is committed to the study of internalized language:

> "the statements of a grammar are statements of the theory of mind about the I-language, hence statements about structures of the brain formulated at a certain level of abstraction from mechanisms" (Chomsky, 1986a: 23).

Moreover, the type of approach undertaken by generative theory

presupposes the idealization of a "homogeneous speech-community":

> "Linguistic theory is concerned primarily with an ideal speaker listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance" (Chomsky, 1965: 3).

Chomsky's definition reflects the need for linguistic theory to dissociate itself from facts like those analysed in a sociolinguistic inquiry[iii], which, in contrast, assumes that "no linguistic community is homogeneous" (see also, Mioni, 1977: 77). He does not deny the importance of other domains of linguistic inquiry, but points out that these merely deal with different aspects of language, with different types of data. Sociolinguistics, in facts, provides us with important insights into the nature of language change[iv].

1.1.4 Competence vs. performance

The difference between internalized language as opposed to externalized language clarifies another previously proposed notion namely, the distinction between competence and performance of language. The former is defined as the "speaker-hearer's knowledge of his language", the latter as the "actual use of language in concrete situations" (Chomsky, 1965: 4). Consequently,

> "the problem for the linguist, as well as for the child learning the language, is to determine from the data of performance the underlying system of rules [i.e. competence] that has been mastered by the speaker-hearer and that he puts to use in actual performance" (ib.).

and the main purpose of generative grammar is to describe the underlying system of rules, the knowledge of language. On the other hand, performance (i.e. linguistic behaviour) is the means by which it is possible to tap the competence component. Obviously, the notion 'competence' requires the linguist to abstract away from the high degree of variability always present in concrete situations.

Chomsky (1980: 59) admits the existence of a separate 'pragmatic competence' that "underlies the ability to use [grammatical competence] along with the conceptual system to achieve certain ends". Pragmatic competence refers to use of language knowledge in relation to the context. On the other hand, grammatical correctness can be evaluated separately from semantic interpretation. As far as the problem of meaning and grammatical correctness is concerned, judgements about meaning might diverge from judgements about sentence structure. A sentence may be grammatically correct but without meaning. The famous sentence:

> Colourless green ideas sleep furiously

is grammatically correct but has no meaning. Thus, it is possible

for native speakers to make a grammatical judgement even if the sentence has no meaning. Conversely, one could imagine a sentence that is completely ungrammatical from the point of view of the grammar but which can result meaningful to a hearer. In conclusion, although meaning and grammar (that is, sentence structure) are related, it is possible to evaluate each of them separately.

1.1.5 Perception vs. production (language processing/use)

Along with the competence/performance distinction mentioned earlier, it is necessary to introduce another important distinction, namely the distinction between perception (parsing) and production. Chomsky (1986a: 25) makes a distinction between a 'perception (or reception) problem' and a 'production problem':

> "the perception problem would be dealt with by construction of a parser that incorporates the rules of the I-language along with other elements: a certain organization of memory and access... the production problem is considerably more obscure...".

In 'Knowledge of Language', Chomsky undertakes a different approach to the parsing problem. In fact, he maintains that UG parsers "should not be based on rules at all but should rather be based on lexical properties and principles of UG that determine structure from them" (Chomsky, 1986a: 151).

The perception and the production problem should be

considered separately. White (1991: 171) observes that "there is no direct relation between the input-processing mechanisms and the production mechanisms, although both draw on the grammar". There are cases reported in the literature where the child perceives what the adult grammar is but he just does not perform the same task correctly. In other words, he perceives when the adult is making a mistake, but he is not able to perform it correctly. Although they may interact with a competence grammar, production and perception are separate skills.

The distinction assumes its relevance in two perspectives: firstly, when considering the general learnability problem, namely, how input data are parsed or how production data are performed, and secondly, in the assessment of experimental data (see section 1.5.2).

Reception and production topics are generally referred to as language processing. Frazier (1990: 1) observes that

> "studies of language acquisition have largely ignored processing principles and mechanism.... In principle, however, theories of language comprehension can and should be subjected to the same criteria of explicitness and explanatorieness as other theories, e.g., theories of grammar".

Recent developments in language acquisition research attribute a lot of importance to parsing mechanisms, namely to the way the input available to the child is parsed and processed. Syntactic parsing is meant as "that aspect of human sentence comprehension that recovers a syntactic structure for a given word

string" (Gorrel, 1991: 279).

1.1.6 Descriptive and explanatory adequacy

According to Chomsky (1965: 26-27), a linguistic theory requires two levels of adequacy which are accounted in terms of descriptive and explanatory adequacy:

> "...there are two respects in which one can speak of 'justifying a generative grammar.' On one level (that of descriptive adequacy) the grammar is justified to the extent that it correctly describes its object, namely the linguistic intuition - the tacit competence - of the native speaker.... On a much deeper and hence much more rarely obtainable level (that of explanatory adequacy), a grammar is justified to the extent that it is a principled descriptively adequate system in that the linguistic theory with which it is associated selects this grammar over others, given primary linguistic data with which all are compatible".

Descriptive adequacy. Description is more articulated than a mere observation. In order to have a description, one already needs something that resembles a theory, something that has the property of a theory: coherent, falsifiable, testable etc; thus, "a grammar constructed by a linguist is 'descriptively adequate' if it gives a correct account of the system of rules that is mentally represented, that is, if it correctly characterizes the rules and representations of the internally-represented grammar" (Chomsky, 1981a: 33). In other words, a descriptive adequate

grammar presents a set of rules that correctly produces all, and only, the observed facts and the observable behaviour of a native speaker.

Explanatory adequacy. On the other hand, "explanatory adequacy... is essentially the problem of constructing a theory of language acquisition, an account of the specific innate abilities that make this achievement possible" (Chomsky, ib.). The problem of explanatory adequacy relates linguistic theory with the problem of learnability, namely, the problem of giving an explanation of what makes language learnable[v].

1.2 The language faculty

1.2.1 The Language Acquisition Device

Earlier theories of language acquisition regarded language acquisition as a process of imitation and reinforcement, a kind of 'habit formation'. According to this view, the child would learn linguistic forms by a process of analogy with other forms. The last decades have marked the decline of this concept of language acquisition. Many observations and studies indicate that the child cannot proceed in the acquisition of language by relying only on a process of analogy. By no means, in fact, can such a process account for the richness of language, creativity and for the complexity of language, given the limitations of data actually available to the child.

Later formulations of grammar acquisition in the context of

generativism postulate the existence of some kind of cognitive mechanism governing and permitting the acquisition of language, the 'language acquisition device' (henceforth LAD). It is undeniable that the environment affects L1 learners. In order to learn a language, children need the incoming data, but also something that allows them to process the data they are exposed to. In the following passage, Chomsky postulates the existence of LAD:

> "Having some knowledge of the characteristics of the acquired grammars and the limitations on the available data, we can formulate quite reasonable and fairly strong empirical hypotheses regarding the internal structure of the language-acquisition device that constructs the postulated grammars from the given data" (Chomsky, 1968: 113).

According to this view, the content of LAD is a system of universal principles and parameters fixed through the available data.

There is agreement among linguists that the process of acquiring a language is very peculiar and complex. There is, however, not much consensus about the nature of the mechanism which governs it. In particular, various proposals have been made about the nature of the LAD and its psychological basis.

1.2.2 The 'modular mind'

It is possible to assume a mental representation by justifying the existence of a certain set of parameters and of universal principles. The central idea is that the human mind is made up of different modules, one of them is UG (the language faculty), another one is the vocal system, then vision, hearing systems and so on. Lightfoot (1982: 43) makes a distinction between a perceptual mechanism, grammar and conceptual knowledge. Each module has a separate set of universal principles within and can be evaluated separately. The important aspect of the 'modular mind' (Fodor, 1983) is that the connections between modules are very different from the modules themselves: the modules are 'hardwired'[vi] and autonomous, in other words, they are very precisely specified and are transmitted genetically. Moreover, the information inside these modules is said to be 'encapsulated', namely, filled with information specific to the module (e.g. the 'θ-criterion' is specific only to UG); crucially, the connection between modules is not modular. Modules may or may not interact with each other (meaning and grammar can be evaluated separately). If one thinks about language being not the output of one single module but the interface of a number of modules, then what one expects are parameters because there are different logical options, and one has to take the decision in terms of the input data: the connection between modules is then left open to the different types of parameter setting. In this context, the violation of a principle of grammar "can be decided only in light of the success of the theory of the mind as a whole" (Lightfoot, 1982: 44)[vii].

Every module is "likely to develop in time and to have

distinct initial and mature states" (Lightfoot, 1982 : 46). This proposal involves the idea that

> "the theory of grammar is a hypothesis about the initial state of the mental organ, the innate capacity of the child, and a particular grammar conforming to this theory is a hypothesis about the final state, the grammar eventually attained" (ib.: 27).

1.2.3 Alternative views

Not all linguists and psychologists accept these assumptions. Some of them deny the formulation of LAD as composed of a system of general principles and parameters in favour of a more general 'cognitive mechanism', not language specific. They view the mind as "consisting of more uniform, homogeneous principles of general intelligence" (Lightfoot, 1982: 31).

A whole school of European psychology, the Piagetian psychology, would actually argue that there is development in mental behaviour. From this theoretical viewpoint "no principles of language structure are genetically determined or even present at a very early age" (ib: 48). In this connection, White (1989: 17) remarks that "these attempts usually overlook the fact that the linguistic phenomena to be accounted for appear to be unique to language; there do not seem to be any equivalent principles in other cognitive domains, suggesting that specifically linguistic principles are required to explain them".

A number of popular theories suggest that the child starts

focusing more essentially on pragmatics and that syntacticization takes place later on. Thus, "the basic form of language is determined not by genetic principles but by its communicative function" (Lightfoot, 1982: 31). Certain principles like "structure dependency might be shown to arise naturally from some environmental factors, unlikely as they may seem" (Cook, 1988: 71). Finally, it may be that the child uses some kind of 'evaluation metric', so that he chooses between different grammars through a process of trials and errors. However, as Lightfoot remarks, although "children do use trials and errors to some extent... they succeed by virtue of the genetic constraints, which severely limit the hypothesis space and therefore the range of their inductions" (ib.: 33).

1.3 Universals of language and language acquisition

One of the aims of linguistics is to describe what is different and what is similar in the languages of the world. Depending on the theoretical viewpoint one adopts, there may be different ways of looking at language universals. The issue addressed in this section is the relevance of language universals to (first) language acquisition.

It is common to make a distinction between language universals and language typology[viii]. The two viewpoints are complementary though the object of linguistic inquiry may be the same. The interest of the former approach focuses primarily on "structural features that all or most languages have in common"

(Crystal: 84), the latter concentrates "on the features that differentiate them" (ib.). Typology requires the study of a vast variety of languages; by contrast, linguistic universals rely on "in depth studies in single languages... and tend to make generalizations about the more abstract, underlying properties of language" (ib)[ix].

Traditionally, language universals are classified as formal, substantive and implicational. Chomsky (1965: 28) makes the distinction between formal and substantive universals:

> "It is useful to classify linguistic universals as formal or substantive. A theory of substantive universals claims that items of a particular kind in any language must be drawn from a fixed class of items... It is also possible however to search for universal properties (29) of a more abstract sort. ...The property of having a grammar meeting a certain abstract condition might be called a formal linguistic universal, if shown to be a general property of natural languages. ... Substantive universals... concern the vocabulary for the description of language; formal universals involve rather the character of the rules that appear in grammars and the ways in which they can be interconnected".

Recently, Eckman (1988: 421) has observed how formal universals are theory-dependent, whereas substantive universals are theory-independent. The former, in fact, follow deductively from the general theory of grammar (a set of interlocking modules); the latter make use of theory-independent constructs "formulated on the basis of superficial representations". On the

other hand, 'implicational', 'typological' universals "always take the form 'if X, then Y', their intention being to find constant relationships between two or more properties of language" (Crystal: 85).

Typological and transformational approaches to universals seem to oppose one another. Notwithstanding this view, nowadays the typological approach to universals may be consistent with recent theorization of Universal Grammar: languages are constrained by UG principles and are subject to parameter variation (Chomsky, 1981b). Thus, different typological patterns could be considered as different configurations of these parameters. For instance, SOV word order normally implies a 'head-last' configuration across all syntactic categories of one language (now in terms of X-bar theory: see section 3.1.4). UG principles are constant across languages; parameters, on the other hand, may have different 'settings' according to a specific language structure. For instance, 'structure-dependence' constitutes an invariable principle of all languages, whereas 'head-parameter' permits two possible settings, head-first (e.g. Italian) or head-last (e.g. Japanese).

Depending on the explanation one accepts for the origin of language universals, there are different consequences on language acquisition theory. Are language universals already build-in as a genetic endowment of the human species or is there some external fact that accounts for their existence? How are universals of language issues linked to the problem of language acquisition? In order to provide sensible answers to these questions, which also depend on the level of abstractness considered, linguists have

introduced to an important concept closely linked to language universals, that of 'markedness'.

1.4 Markedness

The markedness theory has proved very important in linguistics. Jakobson (1941) found that certain categories of a language are less marked (i.e. basic) than others. Unmarked categories are widespread, whereas marked categories are related to a specific language and are conditioned by different factors. Unmarked categories are more 'natural' than marked categories.

Two different approaches to the the markedness theory can be found, namely, the 'typological' and the 'transformational' approach. After Jakobson, the typological approach was developed by J. Greenberg; the discovery of implicational universals is the aim of this type of research. In a very general sense, implicational universals consist of a generalization concerning the correlation of various properties of language according to certain principles. In syntax, Keenan and Comrie's Accessibility Hierarchy (1977) represents a well-known example of this type of universals[x]. The other approach to the markedness theory, that of transformational grammar, has been developed by Chomsky and followers. Chomsky remarks that the process of language acquisition proceeds over a relatively short period of time (compared for instance to second language acquisition). He argues in favour of an innateness of language acquisition process. As a consequence, there must be a number of abstract inherent

principles which can be equated with language universals. Thus, any grammar can be divided into a 'core', unmarked grammar and a more marked 'periphery': the core of language includes universal principles and only unmarked parametric options; the marked periphery of language consists of whatever else lies outside of the core of language.

Markedness theory is a complex concept, and it has been used by 'acquisitionists' in various ways. In the typological approach, it has been hypothesized and checked (Jakobson, 1968) that less marked language structures are more easily learned and processed than marked ones. Thus, "if a marked category A always implies the presence of the unmarked B, a child must acquire B before, or simultaneously with A" (Greenberg, 1991: 38). In acquiring the first language, children seem to follow the same general developmental route. More general rules imply less general rules, which are acquired at a later stage of development. Several studies focus on the relation of implicational universals to language acquisition.

In the transformational approach, core grammar rules are acquired in a relatively short time in comparison with peripheral rules. Core grammar rules (structures, sentences) are unmarked as opposed to peripheral rules (sentences, structures) which are marked. Some of these rules are complex, and a very sophisticated set of conceptual tools is required to exemplify them.

1.5 Early child grammar

1.5.1 Early stages

By a very early age children are probably fully competent in perception; the processing of phonological material probably starts immediately after birth. "Since such sophisticated speech perception is possible for very young children, it suggests that the ability is innate" (Foster, 1990: 14). Crystal (1987: 232), furthermore, remarks that in child language acquisition "there is a simultaneous development of sounds, grammar, meaning, and interaction skills; and significant progress can be made on several different fronts in a matter of days". It is thus no easy matter to quantify the amount of language learned by a child within a particular period. The initial stage of grammatical development consists of single words which are basically used to name things. The so-called 'one-word' stage occurs between 12 and 18 months, and it is considered to be a pre-syntactic stage, in the sense that grammatical constructs by children at this point consist of simple associations between given symbols and given entities. In this phase of language development, "the words used by young children have phonological and semantic properties, but as yet have no syntactic properties" (Radford, 1990: 1-2). Then, at the 'two-word' stage, children start by associating words and form utterances which usually have the format of association of properties, arguments with meanings, etc. At that point 'real' grammar begins (Crystal, 1987: 227-242). The two-word stage, also defined as 'early grammatical speech', occurring at around 20 months of age is, according to Radford (1990: vi), "of paramount importance for any attempt to construct a theory of language

acquisition, since it represents the first point at which we have clear evidence that the child has begun to develop a grammar of the language being acquired". Obviously, in the course of language development, there are transition periods during which two stages may occur together (see also Foster, 1990: 201).

1.5.2 The control of experiments

From the point of view of experimental linguistics, fixing a controlled experiment is never an easy task. In principle, one cannot have any controlled experiment to see how the child fixes up the language. Let us try to think of the logic of it. Differently from adults, children do not have a developed pragmatic competence. While the adult can discuss theories of language, the child cannot. On the other hand, a certain degree of pragmatic competence is assumed to be at work in children as well. In the sixties, Carol Chomsky carried out a famous experimental study with children aged from 5 to 10. The basic assumption of the experiment was that the grammatical relations expressed by the following sentences

a) John is eager to see

b) John is easy to see

were more directly expressed in the s-structure by sentence a) than by sentence b). The intent of the experimenter was, then, to

see whether such a difference also arises in the acquisition of language by children at different levels of language development. A blind-folded doll was placed on the table in front of the child. The test sentence was the following

The doll is easy to see

This sentence was selected insofar as the meanings of words allow two equally possible interpretations, namely, that (1) someone else sees the doll (correct) or that (2) the doll is doing the seeing (incorrect). The sentence was carefully selected to avoid possible intereference due to the pragmatic context or to semantic implied meaning. The child was then asked the following question:

Is the doll hard to see or easy to see?

The answer with hard to see presupposes interpretation (1), whereas the answer with easy to see presupposes interpretation (2). In other words, the former interpretation is closer to the d-structure level than the latter (see section 1.1.2). The result of the experiment showed that nine-year-old children performed correctly, whereas almost all five-year-old children performed incorrectly. From this experiment, linguists deduced that the type of structure corresponding to the former interpretation takes a lot of time to be acquired by children. Criticism of the experiment pointed to the fact that the the presence of the adult asking the child odd questions, too 'narrowly focussed', might

have altered the final result of the experiment in question. In other words, when data are gathered in an unnatural way the validity of the experiment may be called into question. In fact, in some cases the presence of an observer may alter the result of experiments (the 'observer's paradox').

Naturalistic studies rely on a collection of a children 'free speech', in a natural setting. Two types of data are actually employed: comprehension data and production data (Radford, 1990: 14). However, the simple understanding and production of sentences cannot be considered evidence of syntactic competence: there is no direct correspondence between understanding and performing linguistic complex structure. Processing strategies derived from production data might reflect production strategies rather than internalized grammar. In the same way, processing strategies reflecting language comprehension might be affected by pragmatic and semantic, rather than grammatical, knowledge. On the one hand, Radford (1990: 19) observes how "it is remarkably difficult to establish from naturalistic data which aspects of a child's comprehension might be due to semantic/pragmatic knowledge, and which to purely grammatical knowledge". It may well be that the child interprets the sentence according to his semantic and pragmatic competence, namely meaning and context only. Radford (ib.: 14) reports the following sample speech:

ADULT: Who did Fido bite?

CHILD: Daddy[xi]

Thus, the mere fact that the child interprets the first sentence correctly does not necessarily imply syntactic competence by him: it might well be that the child interprets the sentence according to his semantic and pragmatic competence. Thus, "given this minimal semantic and pragmatic knowledge (and no syntactic knowledge) it is clearly a simple enough task for the child to infer that who is the logical subject and Fido the logical object of bite". On the other hand, Production data do not seem more reliable than comprehension data in the assessment of linguistic competence. In fact, "the very fact that a child produces a particular utterance clearly cannot be taken as indicating grammatical knowledge" (ib.: 16). The child in his free speech production sometimes uses 'memorized routines' which cannot reflect grammatical competence.

1.5.3 Child language acquisition research: two approaches

Within linguistic theory, there are two ways of looking at child language acquisition. One is an 'adultocentric' approach (also 'top-down' approach) which is based on the observation of adult speech. The question of the linguists from this perspective is: how is the child ever going to learn the adult language, namely the steady state? Linguists working under this perspective employ the theory of what adult speakers know and formulate hypotheses about what children might know.

The other complementary approach (a 'bottom-up' approach) "begins with the child and assumptions about the cognitive

capacities children bring to the language learning task" (Bloom, 1991: 5). From this theoretical perspective, "language acquisition must be viewed within the context of a child's intellectual development" (Crystal, 1987: 234). In the eighties, there was a certain degree of convergence between the two approaches:

> "in moving toward convergence, learnability research has made increasing use of the data of the children's talk for empirically testing theories of acquisition. At the same time, the questions asked in developmental research have been increasingly informed by changes in linguistic theory and learnability research" (Bloom, 1991: 12).

From a UG perspective, Radford (1989: 8) remarks that "the emergence and nature of early child grammars cannot be resolved by consideration of adult grammars, but instead requires us to make a detailed study of the child's developing syntactic competence" (see section 3.2.4).

2. THE LOGICAL PROBLEM OF FIRST LANGUAGE ACQUISITION

2.1 The poverty of stimulus and Plato's problem

Theoretical linguists consider the following question: what type of data does the child get and process in order to make the transition from the two-word stage to the grammatical stage? Two related matters must be taken into account, that is, the poverty of stimulus argument and the analysis of the input the child is exposed to.

Hornstein and Lightfoot point out (1981) that the input the child is exposed to is deficient in three different respects. From their viewpoint, the input is degenerated, underdetermined (that is insufficient) and no negative evidence is supplied. Let us illustrate these points. Firstly, the language children hear is not always (although for the greater part grammatical) made up of grammatical sentences, but also of slips of the tongue, false starts and grammatical errors[xii]. Secondly, the set of sentences the child is able to handle is enormous in comparison with the limited set of sentences he actually hears:

> "it is a near certainty that fundamental properties of the attained grammars are radically underdetermined by evidence available to the language learner and must therefore be attributed to UG itself" (Chomsky, 1981b: 3).

Lastly, the child hardly gets corrected by his/her parents,

therefore receives no negative correction. In spite of all this, he/she will soon achieve a sophisticated degree of knowledge which cannot be justified on the basis of the incoming data alone. Children under normal conditions will be able to acquire "a fairly rich system of knowledge" in a very short time and a developed system of knowledge by puberty. The question is referred to by Chomsky as 'the Plato's problem':

> "The essence of the Plato's problem was well expressed by Bertrand Russel in his later work when he raised the question: 'How comes it that human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as they do know?'" (Chomsky, 1986: xxv).

Linguists operating within generative theory proceed (essentially deductively and through evaluation procedures) in the development of their theories not only on the basis of sentences that adults can produce, but also on the basis of sentences that adults cannot produce. One kind of data is data that native speakers of a given language produce; another type of data consists of data that native speakers do not produce, although they can be produced by native speakers of other languages[xiii]. Finally, there is data that linguists may call into question, namely grammaticality judgements about sentence structures such as contrasting sentences or paraphrase relations. Investigating linguistic competence (or language knowledge) involves the use of negative data (that is grammatical judgements and ungrammatical sentences), as well as positive data (correct samples of

sentences).

2.2 The 'projection problem'

Children cannot discuss theories of language. Nevertheless, it will take them only a few years to master their language. The type of evidence used by linguists is not actually the one children use when acquiring their first language: children, in fact, are not 'little linguists', able to make subtle reasonings of the sort made by linguists, who try to make explicit the universal set of principles underlying their linguistic competence. Nevertheless, they will know perfectly well that in English the following sentence

*John tried Bill to see Mary

is ungrammatical, whereas

John wants Bill to see Mary

is grammatically correct[xiv]. From this viewpoint, the child is smarter than the linguist insomuch as he "makes use of far less information than does the linguist" (Eubank, 1991: 9). The traditional view in the generative framework is that the child resorts to his innate linguisitic knowledge:

> "The gap between available experience and the child's eventual knowledge is closed by innate, specifically-linguistic knowledge that the child brings to the task. The gap is known in the literature as the projection problem" (ib.)[xv].

The poverty of stimulus argument and the projection problem have been lately complemented by the analysis of the input data which are necessary for the process of language learning to proceed.

2.3 Evidence available to first language learners

2.3.1 Direct positive evidence

This consists of the grammatical constructs the child actually hears in his environment. It is the type of evidence the child uses as opposed to the one used by linguists. The overwhelming majority of data the child gets is of this type. For instance, Italian and English differ as regards the 'prodrop' parameter: whereas English is a [-prodrop], Italian is a [+prodrop] language. Assuming that the child has already learned to compound words into phrases and he/she understands the meaning of verbs and noun phrases, then, the type of data necessary to set prodrop parameter correctly is immediately available from the sentence structure[xvi]. Of course, this is an oversimplified example of what actually acts as a 'trigger' in language

acquisition.

Some linguists support the idea that first language acquisition may proceed on the basis of positive evidence only. Eubank observes that:

> "a restriction to the use of positive evidence brings on a host of difficulties to any theory of learning. ...The essential problem is that the learning mechanism, provided a certain amount of information about what sentences are included in a language, but denied access to information about what sentences are excluded must somehow come to know both types of information. Now, on the assumption of a richly deductive theory of UG, much of the problem can be solved. The learner knows what is excluded in the language precisely because of the massive amount of 'hard-wired' knowledge brought to the task" (Eubank, 1991: 17-18).

that is, if first language acquisition relies on positive evidence only, then, a cognitive language-specific mechanism leading the acquisition process must be assumed. This is a strong hypothesis which bears a host of difficulties to those researchers who try to specify the content of the language-specific mechanism.

2.3.2 Indirect negative evidence

According to some linguists, positive evidence cannot be sufficient for the child to deduce the grammatical complexity of the language to be acquired. Thus, another plausible view is with

indirect negative data. The child is waiting to be reinforced about some kind of structure,

> "If certain structures or rules fail to be exemplified in relatively simple expressions, where they would be expected to be found [possibly the unmarked form], then a (possibly marked) option is selected excluding them [the other structures] in the grammar, so that a kind of "negative evidence" can be available even without corrections, adverse reaction, etc" (Chomsky, 1981b: 9).

Chomsky (ib.) considers this type of evidence as being the most relevant in language acquisition. The emergence of certain type of structures over others in the input data will help the child to select the appropriate options and to avoid others deductively. In this way, a certain degree of indirect negative evidence is indeed available to the child. If this is not so, assuming that the set of sentences that the child can produce at a given stage is Y (containing ungrammatical sentences), how does he retreat from Y to X, the adult language? Several critiques have been raised on this point. Eubank (1991: 10), for instance, remarks that

> "there are several difficulties with this view, however. One is that the learner may have to remember particular sentences, possibly a large number of them. The problem here is that humans apparently remember not particular sentences but propositions... . Moreover, if indirect negative evidence is used, one is then bound to determine exactly how children accomplish such a feat, a task that may require more cognitive machinery that one is willing to accept".

Indirect negative evidence might be available for preventing certain structures manifesting themselves in the language, but not every aspect of syntactic knowledge can be reasonably determined by this type of evidence.

2.3.3 Direct negative evidence

Is negative evidence clearly available to all children? Despite the variety of (economical, social, educational) conditions in which the learning process may take place, normal children acquire the same degree of knowledge of language. Eubank (1991, p. 11) remarks that

> "If [negative evidence] were available to most learners of a common language, but not to all, then one would predict that those not provided with the crucial negative evidence would not share common linguistic knowledge with those who were provided with the negative evidence. ...One must ask whether negative evidence is unambiguously available to all children."

Moreover, when parents correct their children, they do not correct them on the basis of grammaticality judgements, but rather on the basis of truth judgements, which has no bearing on the learning of a language. Thus, "children are ordinarily not corrected for whatever grammatical mistakes they make, so when they do make a mistake they do not know that they are wrong or how

they are wrong...". Bloom (1991: 10).

Chomsky's attack on Skinner's behaviourism leads to the assertion:

> "it seems quite beyond question that children acquire a good deal of their verbal and nonverbal behavior by casual observation and imitation of adults and other children. It is simply not true that children can learn language only through 'meticulous care' on the part of adults who shape their verbal repertoire through careful differential reinforcement, though it may be that such care is often the custom in academic families" (1959: 42).

Lightfoot (1991: 10), on the other hand, points out that

> "it is true that some zealous parents correct certain aspects of their child's speech and so provide negative data, but this is not the general basis for language development. First such correction is not provided to all children, and there is no reason to suppose that it is indispensable if language growth is to take place. Second, even when it is provided, it is typically resisted, as many parents will readily attest".

A well-known demonstration in the literature was provided by McNeill (cited in Crystal, 1987: 234). A child asked several times to repeat a given pattern sentence and continued repeating his own version:

Child: Nobody don't like me

Mother: No, say "nobody likes me."

Child: Nobody don't like me

(eight repetitions of this dialogue)

Mother: No, now listen carefully; say "nobody likes me."

Child: Oh, nobody don't likes me.

At this stage of learning the child proves unable to imitate correctly the pattern, as he "was clearly not ready to use the 'single negative' pattern found in this dialect of English" (Crystal, 1987: 234). It is by no means clear that the correction by adults (direct negative evidence) has any bearing on the acquisition of language. Furthermore, the example shows that language acquisition "is more a matter of maturation than of imitation" (Crystal, ib.)[xvii]. Finally, Eubank (1991: 12) observes:

> "Obviously, no one in generative linguistics is advancing the claim that caretakers do not provide negative evidence. What is claimed is that negative evidence appears to play no significant role in the acquisition of grammatical knowledge constrained by UG".

2.3.4 Explanatory evidence

At this point, Cook (1988) adds another type of evidence, which she calls the 'explanatory evidence': the explanation of

grammatical rules (though in my opinion these involve a certain cognitive maturity and can be considered a kind of negative evidence, obviously not available to very young children).

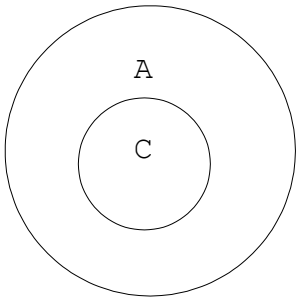
Thus, there is common agreement with the idea that direct negative evidence has no relevance in the acquisition process. After having considered the input, it is necessary to provide an explanation of the acquisition process compatible with the data accessible to the child. Two main positions can be outlined in the generative framework. One position considers positive evidence as the only source of information necessary (and available) for language learning to proceed; the other view also considers the role of indirect negative data.

2.4 Input data and learnability conditions

The general hypothesis assumed in the previous chapter is that the child in developing his/her syntactic competence relies almost entirely on positive data. Furthermore, language acquisition responds to certain restrictions imposed by UG. In developing his/her grammar, certain logical hypotheses are never entertained by the child. Nevertheless, "it is still possible in principle for the child to arrive at incorrect hypotheses for the target language" (White, 1989: 141). Assuming this view, how can these incorrect hypotheses be disconfermed on the basis of positive evidence only? There are three potential logical possibilities. Let us consider them in more detail.

2.4.1 The superset condition

The adult language 'A' may represent a superset of the sentences 'C' the child uses in acquiring the language. In other words, the language of the adult language involves a wider set of possibilities than the child language



The new forms encountered by the child will be integrated into previous knowledge through positive evidence only, for instance (Paola Benincà, personal communication):

ADULT: E' puntiglio (to the child or to another adult)

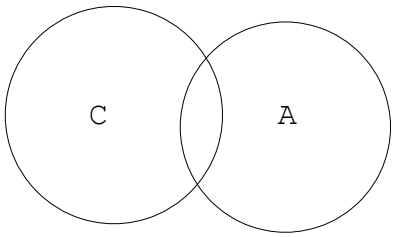
CHILD: *Sono puntiglio!

ADULT: Il tuo è solo puntiglio

In this way, positive evidence may prove effective for the child's restructuring of his current grammar in that it allows for certain peculiar forms to be added in the under-represented current grammar. There is a restructuring from the more restricted type of language to the actual adult language.

2.4.2 Intersecting sets/disjoint sets

Another possibility is that early child grammar 'C' and adult grammar 'A' are not in a relation of proper inclusion but they form intersecting or disjoint sets. In some areas the two sets are related, in some others they are not.



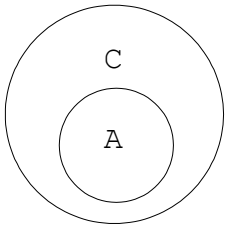
Here, too, "there will be input data which are inconsistent with the child's current grammar" Hyams (1986: 24, n.7). Take for instance the overgeneralization of certain kinds of forms such as past tense. Given positive data, the child encounters irregular forms such as went or brought (data inconsistent with his current grammar). He might think that the irregular form coexists together with the regular form, which is not the case[xviii]. In Syntax, the incorrect hypothesis is prevented by Uniqueness (Wexler, 1980: 521 n.8):

> "for a base phrase-marker there is at most one surface sentence".

In this way, the learner is able to come up with the correct type of grammar on the basis of positive evidence only.

2.4.3 The Subset Condition and the Subset Principle

Given two languages - the language to acquire and a language allowing a wider set of sentences - these are in such relation to one another that the one constitutes the subset of the other. The adult language is composed of a more restricted set of possibilities than early child language. This is the 'Subset Condition':



If children have access to positive evidence only, what would count as discomfirming evidence to prevent ungrammatical sentences, although acceptable in some other language, from being realized in the adult language? How is the child ever going to learn that 'A' is the right set and 'C' is not part of the adult language? In this case, we have a paradox, since data cannot provide stimulus to the most conservative language, the adult language[xix]. In other words, in Eubank's work (1991: 19), "if the child initially assumes X+Y [i.e. A+C] and the particular language includes only X, then no amount of positive evidence will suffice to cause the child to retreat from X+Y to X". There is no positive evidence which could prevent wrong hypothesis from being

formulated.

In order to resolve a potential problem "the learner should hypothesize languages in such a way that positive evidence can refute an incorrect guess" (Berwick, 1985: 37). Children "are assumed to start out with the most conservative hypothesis compatible with the input" (White, 1989: 144). In other words, certain forms will not be adopted by the learner until he receives explicit evidence of their existence (see also section 3.3). The learner "will not start out with overgeneral hypotheses which need subsequently to be disconfirmed by negative evidence" (White, 1989: 145).

This kind of conservativism finds its explicit formulation in the 'Subset Principle'. First proposed by Berwick (1985): "the Subset Principle implies that the acquisition procedure should pick the narrowest possible language consistent with evidence seen so far". Manzini and Wexler (1987: 414) clarify the same concept in the following terms:

> "given two languages, one of which is a subset of the other, if both are compatible with the input data, the Subset Principle will state that the learning function must pick the smaller one".

White (1989: 146) remarks that "the subset principle is neutral about whether an acquisition stage will be found during which the child learning an (X) adult language nevertheless exercises the (Y) choice. Since positive evidence of (X) will be available, it could be that the switch to the superset grammar

will occur immediately". The Subset Principle and the Subset Condition operate jointly. In fact, "the Subset Principle will determine the choice between two or more values of a parameter just in case the languages they generate are ordered by proper inclusion; the Subset Condition ensures that they always are" (Manzini and Wexler, 1987: 414). Obviously, the subset relation holds for 'nested' parameter values as in prodrop or strict adjacency parameter, but not for parameters which involve a binary choice as with head parameter.

2.5 Summary

The child proceeds in developing his grammar on the basis of positive and indirect negative data. In fact, the type of evidence used by linguists to discover linguistic competence differs from that used naturally by the child learning the language. More precisely, linguists assume that the child does not make use of negative data. The mismatch between the impoverished data accessible to the learner and the complexity of language knowledge actually attained by normal children constitutes the so-called 'projection problem'. The solution is to posit the existence of an innate, biologically determined, language faculty at work (i.e. UG). Indirect negative evidence is in fact provided by UG, which independently prevents certain syntactic configurations and syntactic phenomena from arising in the language (the same is true of morphological and phonological rules). On the other hand, the Subset Principle provides an explanation of the acquisition process in presence of positive evidence only. Moreover, the

Subset Condition is assumed: the language the child produces is a subset of the adult language. These notions represent a completion of the arguments in support of the existence of the LAD postulated by Chomsky (1968).

3. LANGUAGE ACQUISITION AND THE THEORY OF PARAMETERS

3.1 Universal Grammar theory

3.1.1 Principles and parameters

According to Chomsky (1981b: 7), UG "is taken to be a characterization of the child's pre-linguistic initial state". It consists of "a system of principles with parameters to be fixed, along with a periphery of marked exceptions" (Chomsky, 1986a: 150-151). The "core grammar" entails a set of universal principles, which apply in all languages, and a set of parameters which may vary from language to language. By contrast, the "peripheral grammar" is made up of quirks and irregularities of language. The theory of UG must observe two conditions:

> "on the one hand, it must be compatible with the diversity of existing (indeed possible) grammars. At the same time, UG must be sufficiently constrained and restrictive in the options it permits so as to account for the fact that each of these grammars develops in the mind on the basis of quite limited evidence...[i.e. the logical problem]. What we expect to find, then, is a highly structured theory of UG based on a number of fundamental principles that sharply restrict the class of attainable grammars and narrowly constrain their form, but with parameters that have to be fixed by experience" (Chomsky, ib.: 3-4).

On the role of parameters in syntactic theory Wexler and Manzini (1987) remark:

> "parameters have been introduced into linguistic theory as a solution to the fundamental problem of linguistics: the tension between the existing variety of natural languages and the necessity of explaining how children can actually learn the grammars of their particular languages".

The parameters being part of a 'higher' principle, the set of principles is not increased by their presence (modularity of the model). In this sense, parameters permit the description and explanation of linguistic phenomena, which otherwise would have to be explained by a number of redundant rules; furthermore, the introduction of parameters accounts and limits the range of linguistic variation across languages.

3.1.2 Subtheories of grammar

The explanation of linguistic phenomena is not the outcome of one single principle but rather the result of the interaction of several principles and parameters. A recent development in syntactic theory which underlies UG is 'Government-Binding Syntax' (Chomsky, 1981b, 1986). The name 'Government-Binding' (henceforth GB) originates from two primary aspects of the overall theory:

> "bounding theory poses locality conditions on certain processes and related items. The central notion of government theory is the relation between the head of a construction and categories dependent on it. θ-theory is concerned with the assignment of thematic roles such as agent-of-action, etc. [...] Binding theory is concerned with relations of anaphors, pronoun, names and variables to possible antecedents. Case theory deals with assignment of abstract Case and its morphological realization. Control theory determines the potential for reference of the abstract pronominal element PRO" (Chomsky, 1981b: 6).

Each 'module' of the theory is a subcomponent of the general theory: the theory of government deals with the assignment of cases together with the case theory, or it accounts for the referential possibilities in the sentence together with the binding theory; bounding theory limits the distance that an item may move. The range of variation across languages is defined by parameters which can be fixed either to the negative or the positive value of each single language.

UG theory is closely linked to the learnability issue. In order to have an idea of what UG may consist of and the relevance for language acquisition, some of its meaningful principles and parameters formulated by linguists will be mentioned.

3.1.3 Structure-dependence

Structure-dependence is a universal principle holding across all syntactic categories of language. There is no language in the

world which contravenes this principle:

> "grammatical transformations are necessarily structure-dependent, in that they manipulate substrings only in terms of their assignment to categories" (Chomsky, 1965: 55).

Chomsky (1975: 30-31) illustrates the functioning of structure-dependence in the adult language with the following example:

> the man is tall-is the man tall?
>
> the book is on the table-is the book on the table?

The interrogative form of declaratives is obtained by moving the first verbal element to front position. Apparently, this type of movement relies on the linear order of words. However, linear order is not sufficient to describe appropriately the type of operation involved, as in the following example (Chomsky, ib.):

> the man who is tall is in the room-*is the man who tall is in the room?
>
> the man who is tall is in the room-is the man who is tall in the room?

The movement of the first verbal element to front position yields a wildly ungrammatical sentence. The right result, in this case,

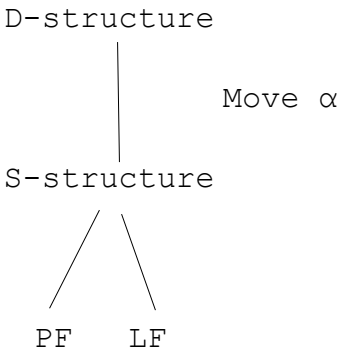
is obtained by moving into first position the second verb of the sentence. Crucially, Chomsky's definition of structure-dependence predicts that this type of linear movement (i.e. based on the sequence of items) is not allowed since it would move a single element rather than a category, breaching thus the principle of structure-dependence. Therefore, building the appropriate construction of the yes/no question in English requires the innate knowledge by native speakers of syntactic category: in this case, only the auxiliary element that follows a subject NP can move to front position.

The validity of the principle also applies to language acquisition. Early hypothesis about possible grammatical components are "defined on sentences of words analyzed into abstract phrases" (Chomsky, 1975: 32). During the course of language acquisition, children do not produce sentences violating the principle of structure-dependence (see Lightfoot, 1991: 4).

3.1.4 Levels of representation

The Government-Binding framework entails two basic levels of representation, namely, the d-structure level and the s-structure level. Two additional levels are the Phonetic Form, which provides the representation of sounds, and the Logical Form level, which essentially offers the logical interpretation of operators and variables. The relation between the d-structure and s-structure level is fixed in terms of movement of syntactic categories. Grammatical functions (i.e. subject, object) are determined

configurationally, namely, they are defined by their position in the structure but they are not affected by movement of the elements they are assigned to



A description of constituent phrases at d-structure level (a proper subpart of a string or a structure consisting of one or more words which can be, however, less than a clause) is supplied by the 'X-bar theory'. Within current generative theory, sentence structure presents an asymmetrical disposition of the basic nominal constituents, namely, it is divided into NP and VP rather than NP, V and NP. For instance, in Italian, subject and verb agree in number and gender, whereas verb and object do not. This feature of language structure is "supported by cross-linguistic evidence of varied types" (Chomsky, 1986a: 59); furthermore, it must be innate: "UG must restrict the rules of phrase structure so that only the VP analysis is available at the relevant level of representation" (ib.: 62).

3.1.5 The lexicalist hypothesis

The 'lexicalist hypothesis' is based on the lexical semantics of words. It relies on the priciple of structure-dependence: the lexical features of categories 'projects' a specific type of structure at every level of representation. This concept is exemplified in the projection principle:

> "lexical structure must be represented categorially at every syntactic level" (Chomsky, 1986: 84).

The lexicalist hypothesis is supported by the theories of 'c-selection' (i.e. category selection) and 's-selection' (i.e. semantic selection).

C-selection. The elements which obligatorily depend on the structure are called 'arguments'. Thus, the lexical entry eat specifies that it must be followed by an argument NP, as in the following sentence:

John eats an apple

The lexical entry eat also assigns two semantic roles: the external 'agent' role John and the internal 'patient' role an apple.

S-selection. θ-theory handles the assignment of semantic roles to the elements within a sentence. The principle involved is

the 'θ-criterion':

> "each argument bears one and only one θ-role and each θ-role is assigned to one and only one argument" (Chomsky, 1981b: 36).

D-structure is the level of representation at which there is a one-to-one correspondence between thematic relations and grammatical functions. Thus, in the following active sentence

John reads the book

the grammatical subject is also the agent, the object the patient. In the corresponding passive form

the book was read by John

the NP argument the book is the grammatical subject although it is not the agent of the sentence, apparently breaching the principle of θ-criterion. However, in the d-structure, the elements appear in their original position

e was read the book by John

At this level of representation, the NP the book is in the original correct object position. A feature of passivization hinders case assignment. The movement to subject position of NP

the book is made necessary by the requirement of assigning (nominative) case to it. The general principle involved is the 'case filter':

> "every phonetically realized NP must be assigned (abstract) case" (Chomsky, 1986a: 74).

3.1.6 Empty categories

'Surface structure', i.e. the phonetic form, represents a different aspect from the S-structure: whereas the former is the sentence actually heard, the latter contains no audible syntactic elements such as 'traces' ('t' in the text) and 'empty categories':

> the book was read t by John
>
> 'the book was read by John'

Traces are elements which signal that certain categories have been displaced from their original position in the d-structure. Although traces are not heard, their presence has been indirectly observed in some instances. In English, psycholinguistic evidence in favour of the existence of traces is the 'wanna-contraction rule'. Thus, in the following sentence the contraction of 'want to' is permissible:

Who do you want to see t

'Who do you wanna see?'

On the other hand, in the case where the trace interposes between preposition and verb, the contraction is not admitted:

Who do you want t to see Mary

*Who do you wanna see Mary.

Empty categories are elements which are not determined by the movement of some syntactic categories but are already present at the d-structure level. There are different types of empty categories, one of these is 'pro' (also: 'little pro'), the element occurring in subject position of [+prodrop] languages like Italian. Its interpretation is provided by the pronominal features of verb inflection:

piove

(pro) piove

'it rains'

Another empty category is 'PRO' (also 'big pro'), the empty subject of infinitival clauses. In the following sentence:

Giovanni favorisce Maria

'Giovanni favours Mary'

according to θ-theory, the lexical entry favorire requires two θ-roles (agent, patient). The argument NP Giovanni receives the θ-role 'agent', whereas the NP Maria receives the θ-role 'patient'. The existence of an empty category such as the grammatical subject of infinitival clauses is deduced from the following example:

permetto a Maria di favorire sè stessa

(pro) allow Maria of to favour herself

'I allow Maria to favour herself'

Thus, according to θ-theory there must be an argument that receives the θ-role agent which, at first sight, might be representend by the NP object of the matrix sentence Maria. However, this interpretation seems to violate both θ-criterion (i.e. there is a one-to-one correlation between arguments and roles) and principle A of Binding Theory (i.e. an anaphor is bound in a local domain), unless we postulate the presence of a functional element 'PRO' which coindexes with the anaphor, in fact,

permetto a Maria [di PRO favorire sè stessa]

i i i

The presence of 'PRO' as subject of infinitival clauses is also

provided by the Extended Projection Principle (EPP), to the effect that sentences need grammatical subjects at all levels of syntactic representation (Chomsky, 1982).

3.1.7 Head parameter and German verb placement

An appropriate description of head parameter requires structure-dependence principle and the notion of constituent phrases: in some languages, 'heads' of constituents precede complements; in other languages, complements precede heads. The configuration of this parameter has two settings: 'head-first' (Italian, English) or 'head-last' (Japanese). The configuration of head parameter extends across all syntactic categories within a language. English and Italian are head-first languages, whereas Japanese is head-last. Languages with the parameter set head-last normally have 'postposition phrases', languages set head-first have 'preposition phrases', etc.

In German, VP constituent is set head-last. As a whole, verb placement in German occurs at surface-structure (i.e. the Phonetic Form) with the following distribution:

Ich trinke ein Bier (SVO)

'I drink a beer'

Ich habe ein Bier getrunken (SIOV)

I have a beer drunk

'I have drunk a beer'

Ich moechte, daß [wir ein Bier trinken] (SOV)

I would that we a beer drink

'I would like us to drink a beer'

In main clauses, verbs occur in second position; in compound verb clauses, the auxiliary/modal verb fills the second position, whereas the finite verb occupies the final position; in embedded clauses, the verb follows the object showing a head-last order of VP. Despite this occurrence, at d-structure level German VPs follow head-last order; the other orders are accounted for via a 'finfronting' rule that moves the non-finite verb leftwards into second position, namely in CP (among others, Thiersch, 1978; Clahsen, 1986). Thus, main inflected verbs rises to CP, in main clauses, but not in embedded clauses, where COMP position has already been filled by the complementizer 'daß'.

3.1.8 The null subject phenomenon

Italian is a [+prodrop] language that allows 'null subject' sentences. By contrast, English is a [-prodrop] language and requires overt subjects where Italian does not:

ha cinquanta libri

*has fifty books

'he/she has fifty books'

Full subject sentences are also possible in Italian with certain discourse restrictions, namely, for emphatic purposes or to avoid ambiguity:

Lui lavora più di me

'He works more than me'

Whereas English requires expletives, in Italian they are not allowed:

è tardi

*is late

'it is late'

piove

*rains

'it rains'

Lastly, [+prodrop] languages permit subject-verb inversion in certain contexts:

cade la notte

*falls the night

'the night falls'

parla il presidente

*speaks the president

'the president is speaking'

These and other related syntactic features characterize prodrop parameter at surface level. Under GB framework, the difference between the Italian and the English setting is accounted for by the Empty Category Principle:

> "(ECP): a nonpronominal empty category must be properly governed" (Chomsky, 1986b: 17).

In [+prodrop] languages such as Italian, the IP contains pronominal features (i.e. verb inflection) which license 'pro' and assign nominative case to it[xx]. Conversely, English, a [-prodrop] language, has no proper lexical governor in IP. Thus, 'pro' cannot be properly governed and null subject sentences are not allowed.

3.1.9 The adjacency condition on Case assignment

A parameterized principle of UG requires that the accusative case in English be assigned under adjacency:

> "one principle of Case theory is a principle of Case adjacency requiring that where Case is not morphologically realized, a Case-marked element must be adjacent to its Case-assigner (with some variation), so that if a verb takes an NP and a PP complement, the former will be closer to the verb ("put [the book] [on the table]," *"put [on the table] [the book])" (Chomsky, 1986: 82).

Languages which do not have a rich morphological case system (i.e. English and Italian as opposed to Latin) must observe some parametric restrictions on case assignment. Some degree of variation among languages is expressed in terms of a parameter with two values.

English observes [+strict adjacency] and the assignment of the accusative case to the object of the verb may be blocked by the interposition of additional words. Italian, a [-strict adjacency] language, allows the insertion of an adverbial element between verb and object:

*John loves (really) Mary

(it.) Gianni ama veramente Maria

'John loves Mary really'

*John eats happily an apple

(it.) Gianni mangia allegramente una mela

'John eats an apple happily'

Some adjacency restrictions, however, are imposed on the Italian language as well, for example in the sentences

Marco guarda la valle-*Marco la contento osserva

Marco looks at the vale-*Marco it looks at gladly

'Marco looks at the vale-Marco looks at it gladly'

the assignment of the accusative case to the object clitic 'la' is barred by the insertion of the adverb element contento.

3.2 Parameter-setting model of language acquisition

3.2.1 Introduction

In developing the 'parameter-setting model' of language acquisition, Hyams (1986: 4) points out:

> "the formulation of UG as a system of parameters implies a particular view of the acquisition process. In particular it makes a strong claim about the role played by the input data. At the initial state, the child is

> endowed with a set of universal principles, each of which has a predetermined set of possible values. In order to arrive at the adult grammar, the child must 'fix' each of the parameters at the value which is correct for his language. Various material in the input data will act as 'triggers' to fix the parameters at one or another of the predetermined values".

The type of data the child actually uses is positive and/or indirect negative data: marked operations or features are not supposed to be possible in a language unless positively observable by the 'learner'. In the parameter-setting model of acquisition, positive data act as 'triggers' and allow the setting of parameters according to the specific language; consequently, the child will acquire effortlessly the correct setting in accordance with the specific parameter-setting of his/her language. For instance, positive evidence indicates to the learner directionality of case assignment, namely, which of the two mutually exclusive directions (right if prepositions, left if postpositions) is the correct one in the language to acquire. Of course, as Lightfoot (1991: 10) observes, not every experience is a trigger. In order for the triggering to take effect, a 'robust' input (in terms of frequency and saliency) has to be supplied. This avoids the possibility that children, in presence of contradictory input, swich from one value to another of the same parameter, the 'pendulum problem'.

Parameters normally appear as a clustering of properties. The choice of a particular parameter-setting may have proliferating effects on other parameters. "Parameter-setting as a theory of grammar allows certain phenomena which might otherwise be

individually and separately accounted for to be grouped together and seen as the outcome of one abstract property of the language" (Valian, 1990: 120).

The arduous task of determining the mechanism governing the parameter-setting model of acquisition is expressed by Eubank (1991: 13) in the following passage:

> "It would be easy enough to say that grammmar 'learning' involves only determining just which of the parametric options allowed by UG obtains for the particular language in question... learning still involves a number of related epistemological, ontological, set theoretical, and neurobiological issues that go far beyond such a simple view".

Different aspects of language learning are accounted for by different parts of the overall theory. The theory of parameters is a piece of the complex set of relations between UG and other related areas such as language perception, language processing.

Radford (1990: 8) critically remarks how "the [principle-and-parameters] model provides more questions than answers, so its contribution might be seen as methodological rather than empirical". Given the uncertain status of parameters in linguistic theory, he proposes a complementary way of investigating early child grammars in terms of an analysis of the actual development of syntactic categories used by children.

3.2.2 The 'instantaneous model' of language acquisition

In Chomsky's view (1986a),

> "the language faculty is a distinct system of the mind/brain, with an initial state S°... . Given an appropriate experience, this faculty passes from the state S° to some relatively stable Ss, which then undergoes only peripheral modifictions".

Furthermore, only by investigating the final steady state is it possible to achieve important insights into the nature of UG:

> "We do not, for example, say that the person has a perfect knowledge of some language L, similar to English but still different from it. What we say is that the child or foreigner has a 'partial knowledge of English' or is 'on her way' toward acquiring knowledge of English, and if they reach this goal, they will know English" (ib: 16).

In this context, language learners do not reflect the idealized speaker-hearer of a homogeneous speech community. It is the final state, rather than intermediate levels of knowledge, that counts in the development of linguistic theory.

The apparent ease and uniformity in the acquisition process finds its theoretical formulation in the 'instantaneous model of language acquisition' (1981a: 35). The idealization of language acquisition as an instantaneous process is justified by the fact that

> "the explosive growth of language in the child makes it impossible to investigate the cognitive state attained by the methods of data collection and analysis characteristic of developmental psychology, requiring model of analyses of the sort appropriate for the investigation of adult knowledge, with the added difficulty that the system is in transition and that it is generally impossible to elicit judgements with any confidence" (Chomsky, ib.).

According to this view, the instantaneous model reflects pure UG knowledge, putting aside all factors concerning the 'channel capacity', that is, the general problem-solving abilities and maturational factors. Wexler (1980: 95) observes that "the conception of learning as instantaneous, though false, will nevertheless imply the correct principle that a theory aiming for explanatory adequacy must prefer a class of grammars G over a superset of G, assuming both satisfy descriptive adequacy".

The relevant type of evidence needed to fix a parameter is available to the child right from the start. For instance, the amount of structure necessary to fix, let us say, head parameter (head-first or head-last) could be made up of a few sentences containing the correct setting. If all parameters are of this sort, it might well be that the relevant type of (positive) evidence appears immediately. The delay in learning linguistic structures is then due to the limits imposed by maturational constraints.

3.2.3 The 'continuity hypothesis'

Hyams (1986: 168) remarks that language acquisition "is not an instantaneous process and hence we have the other face of the problem, that of explaining the developmental sequence which ultimately terminates in an adult grammar. We might refer to the latter problem as 'the developmental problem of language acquisition'". Hyams employs the notion 'continuous development' according to which "the grammatical development is a 'continuous process' in that it is constrained by principles and parameters of UG" (1986: 169). The 'continuity hypothesis' was first proposed by Pinker. He formulated the assumption that "the cognitive mechanism of children and adults is identical... the continuity assumption should apply not only to the child's cognitive mechanism but to his or her grammatical mechanism as well" (1984: 7).

Hyams partly alters the significance of continuity in the acquisition process. She assumes that "the hypothesis of continuous development does not require that all principles of UG be specified [although latent?!] at the initial state. Rather, we expect the early grammar to be constrained by those principles which are specified" (Hyams, 1986: 169). From this point of view, although data are available in the environment, "they are irrelevant prior to a particular maturational point" (Hyams, 1986: 169).

3.2.4 The 'maturational hypothesis'

The alternative view contrasting the 'instantaneous model' considers the problem of cognitive maturation. The maturational view assumes that

> "not all of the principles of UG are immediately available to the child; rather, the various principles may be subject to a general 'maturational schedule', one that controls all aspects of development linguistic and otherwise. First articulated by Felix (1984) and in somewhat later by Borer and Wexler (1987), the idea is that the observed temporal ordering of developmental stages in L1 acquisition requires either specifically-linguistic assumption about the way that the principles of UG interact with each other or general, non-linguistic assumption about the unfolding of the genetic program. According to Borer and Wexler, the non-maturational view, known as the 'continuity hypothesis' (Pinker, 1984) may require assumptions that violate the hallmark of linguistic hypothesization: empirical motivation" (Eubank, 1991: 20-21).

It might be that certain universal principles programmed genetically become available to the child only at a certain point in cognitive maturation. If there is maturation in cognitive development, it may well be that not all principles of UG are immediately accessible to the child. Chomsky does not fail to remark that

> "...there are many complicating factors: e.g., processes of maturation may be such as to permit certain unmarked structures to be manifested only relatively late in language acquisition, frequency effects may intervene,

etc" (Chomsky, 1981b: 9).

From this point of view, first language acquisition is the outcome of UG plus maturation. In her experimental study, Radford (1990: 289) also adopts the maturational view. The absence of functional categories (essentially CP and IP) in early child speech is due to the only partial availability of UG to very young children[xxi].

3.3 Markedness and the theory of parameters

Considerations of markedness are relevant in the context of a parameter-setting model of language acquisition. In the traditional view, the fixing of parameters are supposed to be "guided perhaps by a structure of preferences and implicational relations among the parameters of the core theory" (Chomsky, 1981: 7). The theory of markedness plays a central role in linguistic theory. It "serves two functions: it imposes preference structure on the parameters of UG, and it permits the extension of core grammar to a marked periphery. Experience is necessary to fix the values of parameters of core grammar. In the absence of evidence to the contrary, unmarked options are selected" (ib.: 8). Once the parameters are fixed, they are an example of a core grammar. From this viewpoint, at the very initial level there might be two equally unmarked options for the same parameter. Thus, the core of English is such that, of the two options representing the subject as null and overt, the core of English takes the latter option, whereas the core of Italian takes both. The role of input data is

to provide a triggering experience for the build-in parameter setting.

A slightly different view looks at the internal status of parameters. In fact, it appears that some parameters may have a marked and an unmarked value. Marked parametric options are those which require specific positive evidence to be set. Thus, the question arises as to what constitutes the original, 'default' (unmarked) setting (if there is one or more than one) of parameters, in other words, "which of two [or even more] possible arrangements of the initial state of learning would allow the child successfully to learn either one language or the other in absence of negative evidence" (Eubank, 1991: 18). One strong version of this position assumes the default value (or parameter-setting) as the one that does not need input data to be set. In this case, not only universal principles and parameters, but also the default, unmarked values of these parameters would be part of the core grammar. In this view, the role of input data is complemented by a computational mechanism, stemming from the innate language faculty. One would not have to learn the default value, rather it would exist as part of UG. Some linguists are sceptical about the innateness of default, 'preset' values of UG. In fact, if default values of parameters really exist, it would be very difficult to tap them from experimental/naturalistic studies (very young children cannot be relied on to give linguistic judgements about default values of parameters!).

Another way of looking at markedness theory is to assume that the unmarked setting of a parameter is the one which is acquired before the marked one, or else, whose results are performed in

absence of positive evidence. Thus, the direction of learning is from the unmarked setting of a parameter to the marked one. The child will initially adopt the 'preset' value of a parameter irrespective of the final setting of that parameter in that language. However, it is not entirely clear how and why the initial setting of a parameter should be the unmarked value compared to the final setting. Some linguists dissociate the problem of the initial value from markedness considerations[xxii]. They explain the direction of learning in terms of complexity relations.

The complex relation betweeen markedness theory and language acquisition is exploited by Wexler and Manzini (1987) in the following passage:

> "...the setting of the values of parameters is not as clear and simple a process as it seems. How is it that learners set the values of the parameters of their various languages given linguistic experience? Are there independent orderings of the values of parameters (that is markedness hierarchies) such that the learner tries certain values first? Or doesn't it matter? Is linguistic experience such that the parametric values can be set in an obvious way with almost no structure being built into the learner?".

What possible connections are there then between markedness and the theory of parameters? One possible answer to the problem is "to assume a computational principle that calculates for parametric values of UG which (if any) is the most restrictive" (Eubank, 1991: 19).

3.3.1 Parameter values and the Subset Principle

In spite of the critical remark mentioned above, the idea of default settings as part of the initial state of UG has been under investigation for some time. The application of the Subset Principle to the theory of parameters has important consequences on the theory itself and on the learnability problem. One significant observation concerns the distinction between aspects of language which require parameter values to be mutually exclusive (e.g. head parameter) and aspects of language where parameter values are 'nested' (e.g. prodrop parameter, strict adjacency parameter).

If the internal values of a parameter are mutually exclusive, then the problem of the original value of parameters does not arise: given the achievement of a certain degree of cognitive maturation, the child will select (or 'reset') the correct setting on the base of a very small amount of triggering experience irrespective of a default setting (see section 3.2.2). By contrast, nested parameters have a different internal status, and they bring a host of difficulties if one tries to provide answers about the way they are learned.

One position is that "a learning-theoretic consideration of nested parameter values shows that the learning mechanism must assume the more restrictive hypothesis if learning is to proceed at all" (Eubank, 1991: 19).

Case Adjacency parameter. Languages with adjacency parameter

set on [-strict adjacency] (French, Italian) value generate a superset of sentences allowed by the [+strict adjaceny] value (English). In other words, as far as this particular property is concerned, languages like French or Italian are more general than English. In learning his/her first language the child, compatibly with the Subset Principle, will first adopt the most restrictive grammar compatible with the input, namely, the one observing [+strict adjacency]. The Subset Principle prevents the child from producing sentences which are not allowed in the native language. According to another interpretation, this parameter does not even exist. Thus, adjacency might derive from other abstract properties of language yet unknown.

Prodrop parameter. Languages like Italian allow both null subject sentences and full subject sentences, whereas languages like English allow the second option only. Let us assume the Subset Principle to be guiding acquisition. One consequence is that the final setting of languages like English [-prodrop] represents the default setting, namely, the most restricted value compatible with the grammar to be acquired; on the other hand, languages like Italian need definite evidence to adopt the other setting [+prodrop]. The formulation of the subset is made effective if another principle is at work, that is, the 'Independence Principle' (Wexler and Manzini, 1987: 415):

> "the subset relations that are determined by the values of a parameter hold no matter what the values of the other parameters are. Thus, the markedness hierarchy, and the order of learning, will be determined for a particular parameter independently of all other

parameters".

If the Independence Principle is not operating, "the subset relationship between the two settings of a single parameter may fail to hold with parameters considered jointly" (Berwick, 1985: 237). Moreover, Manzini and Wexler (ib.: 414) formulate the Subset Principle and condition in terms of 'autonomous learning component':

> "we develop a modular theory of parameter setting - modular in the sense that markedness hierarchies are not built into Universal Grammar [that is, simply 'try the unmarked value first'] but rather are derived from the interaction of Universal Grammar and an autonomous learning component".

While the Subset Principle is thought to be distinct from the parameters provided by UG, it is nonetheless assumed to be specific to the acquisition of grammar. That is, it is not part of some general-problem solving mechanism. They see, therefore, the Subset Principle as separate from Universal Grammar, although interacting with it.

In contrast with this view, Hyams' (1986) developmental study on child language acquisition demostrates that children initially produce subjectless sentences [+prodrop], adopting the Italian setting, and only at a later point of development will they produce full subject sentences [-prodrop] in overt contrast with the Subset Principle (a very clear analysis is provided by

Lightfoot, 1991: 12-13). Eubank remarks that "a computational mechanism like the Subset Principle cannot replace UG... such a principle must be assumed to exist along with a richly structured UG" (Eubank, 1991: 19-20). In other words, Subset Principle and the properties of UG and of input cannot be considered independently.

Recently, some linguists have advanced the idea that pro-drop may not even be a 'genuine' parameter of UG, but the consequence of some other more abstract principle. On the one hand, they observe, according to the theory, the English setting for pro-drop is the unmarked one, whereas the Italian setting requires positive evidence to be set. Apparently, however, as experimental studies demonstrate, at early stages English children use pro-drop sentences. On the other hand, if the Italian setting were the 'default value', no positive evidence can induce the learner to adopt the marked setting (i.e. non-pro-drop), as the presence of a pronoun is not enough to suppose its absence to be ungrammatical.

The relationship between parameters is another crucial issue. It happens that one single parameter has many apparently unrelated effects on grammar:

> "in a tightly integrated theory with fairly rich internal structure, change in a single parameter may have complex effects, with proliferating consequences in various parts of the grammar. Ideally, we hope to find that complexes of properties differentiating otherwise similar languages are reducible to a single parameter, fixed in one or another way" (Chomsky, 1981b: 6).

However, depending on the view adopted there are different consequences. In fact,

> "on the view that parameters may be linked, acquisition process is seen as an economical process whereby rapid progress can be made on the basis of limited input triggers... [therefore] it will be essential for the crucial input to be analyzed correctly; on the other hand, given unlinked parameters, accuracy in data analyses will be less central, but more input will be needed" (Frazier, 1990: 2).

3.3.2 Prodrop parameter and language acquisition

There are different proposals regarding what the initial value of this parameter along the acquisition process may be. Different interpretations of prodrop parameter can be given depending on the theoretical viewpoint one adopts.

Hyams' proposal (1986) is for the initial default value [+prodrop]. According to her analysis based on longitudinal studies, she finds that all children begin with a [+prodrop] grammar. On the basis of the incoming positive data which act as triggers (categorization of expletive pronouns 'there' and 'it') the child grammar will adopt the correct final setting (either [+prodrop] or [-prodrop]).

A contrasting view is offered by Radford (1990: 47). His basic assumption is that very young children "make no productive use of functional constituents at all". Therefore, if projections of functional constituent are missing, no phenomena regarding

those elements will occur. Thus, the null-subject problem does not arise. In fact, IP, the functional constituent containing the empty category 'pro' (expletives as well) in a pro-drop language, at this point of linguistic development is not operative. Similarly, Bloom (1990: 24) observes that "children have a fuller understanding of the constituent structure of sentences than is actually realized in the sentences they say". The developmental phenomenon of null-subject sentences in young children is then accounted for by the fact that acquiring new or more complex structures will require of the child an extra cognitive effort: "children omit the subject when their cognitive processing abilities are exceeded, for example, when they use new verbs, nouns, or pronouns or add negation or attribution to the sentence" (ib.: 25).

3.3.3 The isomorphism principle

In earlier models of transformational grammar, universals of language acquisition were established in terms of order of acquisition and of complexity. The theory of markedness follows this path. One element can be considered unmarked either if it appears first in the developmental sequence of acquisition (though one has to consider maturational factors as well), or if it is easier to acquire than another element.

As White reports (1982: 19), according to the derivational theory of complexity (henceforth D.T.C.), the complexity of a sentence depends on the number of transformations necessary for

its derivation from the d-structure to the s-structure. For example, in English, passive sentences include a greater number of transformations than active sentences and, therefore, are more complex to acquire. The D.T.C. failed since it involved too many transformations which could not be motivated theoretically. In fact, earlier models of generative grammar involved a great deal of transformations. "In the transformational model the child's task is to figure out which of these many possible transformation types actually occur in his or her language" (Lasnik and Uriagereka, 1988: 6). This raised an explanatory problem. "How could the child possibly have picked out exactly these transformations from all the ones available?" (ib.). Nowadays, the various types of transformations and complexity rules have been replaced by a single principle, 'Move-α', which accounts for various types of movement across all syntactic categories within general constraining principles (i.e. subjacency, θ-theory, Case theory, etc.) and certain parametric restrictions. The D.T.C. has been revised by Hyams (1986: 162), who proposes the 'isomorphism principle':

> "all else being equal, the least complex grammatical system is the one which allows for the greatest degree of isomorphism between the various levels of representation, d-structure, s-structure, PF, and LF".

Crucially, the difference between the two theories lies in the notion complexity. In the D.T.C., the complexity of a sentence is the outcome of the number of transformations involved in the derivation; by contrast, the complexity of a sentence involved in

the isomorphism principle is defined in terms of levels of representation.

The question of the original value for prodrop parameter is accounted for by considering the issue of complexity and of isomorphism principle: the [-prodrop] option represents the more complex option since it "forces a process of lexicalization which results in an s-structure which is not isomorphic to d-structure... The [+prodrop] option, on the other hand, permits isomorphism between the two levels in that it licenses a 'pro' at the s-structure" (Hyams, 1986: 163). In other words [-prodrop] languages such as English force a process of lexicalization of subject at s-structure level, whereas [+prodrop] languages like Italian do not; this makes [+prodrop] the more accessible of the two options.

3.4 Conclusion of part I

Do the same arguments explored in first language acquisition research still hold for second language aquisition? What differences arise in the context of second language acquisition in comparison to primary language acquisition? All these points will be discussed in the next section.

PART II: SECOND LANGUAGE ACQUISITION

4. LINGUISTIC THEORY AND SECOND LANGUAGE ACQUISITION

4.1 Introduction

The learning of a second language has attracted the attention of linguists for centuries, but the consideration of second language acquisition as an autonomous field of linguistic inquiry is a very recent discovery. In the past, the issue of second language acquisition was intimately related to that of second language teaching. The primary interest of researchers working in this area was more in the pedagogical aspect than in the nature of the process involved in second language acquisition. Their goal was a practical one, namely, that of attaining the most effective method for teaching a foreign language.

A former approach to second language acquisition from a scientific perspective in this century is provided by 'Contrastive Analysis' (henceforth CA), a theory derived from behaviourism in psychology and structuralism in linguistics. CA consisted of the systematic comparison between native and foreign languages in order to predict areas of learning difficulty. Within CA, learning a second language means to acquire, one by one, a fixed set of habits through a process of imitation and reinforcement. Moreover, first language experience plays a crucial role in the course of second language acquisition. In fact, one of its basic tenets claims that learners will tend to transfer elements from their native language to the second language. Similarities between the two languages will result in 'positive transfer':

> "individuals tend to transfer the forms and meanings, and the distribution of forms and meanings of their native language and culture to the foreign language and culture" (Lado, 1957: 2).

On the other hand, differences between the two languages will cause 'negative tranfer' (i.e. 'interference') and difficulties in learning:

> "the student who comes in contact with a foreign language will find some features of it quite easy and others extremely difficult. Those elements that are similar to his native language will be simple for him, and those elements that are different will be difficult" (ib.).

Predictions made by contrastive analysis in the realm of syntax did not find empirical validation. Disconfirming evidence came both from the area of experimental linguistics and psychology. "CA theories of L2 acquisition are based on certain theoretical foundations that are not well developed psychologically and linguistically" (Flynn: 1987). In the early stages of L2 development "not only did learners fail to exhibit the errors predicted by negative transfer, but many cases of positive transfer did not appear" (Weiberger and Newmeyer, 1988: 35)[xxiii] Chomsky's attack on Skinner's behaviourism (1959) marked the disrepute of behaviourism and the partial fall of CA hypotheses. Language acquisition was not intended as a 'habit-formation'

process only, but as a creative activity, as well. The idea that general cognitive functions play a central role in first and second language acquisition became the dominant paradigm in linguistic theory. Second language learners use their cognitive abilities to work out the hypothesis about the structure of a second language. The acquisition process is represented by a series of transitional structures or 'interlanguages' (Selinker, 1972). Some errors produced by second language learners are not attributable to linguistic transfer from the native language, nor to confusion of target language properties of grammar, rather, they are consistent with every single level of interlanguage.

During the 1970s, it became clear that second language acquisition studies may evolve independently from pedagogical concerns (sse also section 6.6). The major theoretical position in this decade is Creative Construction (henceforth CC). According to an early formulation of CC theory, first language acquisition and child second language acquisition are independent and creative processes which ensue from the same set of universal properties. In this framework, experimental evidence (Dulay and Burt, 1974a) shows that all children present similar developmental patterns towards second language acquisition regardless of their primary language; furthermore, the similarity of errors produced by all second language learners "provide a strong indication that universal cognitive mechanisms are the basis for the child's organization of a target language" (ib.: 52)[xxiv]. Although CC theory was initially intended as an account of child second language acquisition, Bailey, Madden and Krashen (1974) provide evidence of its applicability to adult second language

acquisition, as well. Their experimental study confirmed the existence of important similarities between child and adult second language development. In the acquisition of 8 English functors, "children and adults use common strategies and process linguistic data in fundamental and similar ways" (ib.: 235). Flynn and O'Neil (1988) provide a strong critique to CC theory. They observe how "the nature of the deep principles argued to determine L2 acquisition are never specified" (Flynn and O'Neil, 1988: 6). Moreover, Flynn (1987: 4) remarks that

> "when empirical work is conducted, proponents of this theory have traditionally focused on language in the manner dictated by structuralist theories; that is, they focused on surface structure properties of language. Evidence used to argue for the theory is, as a result, non explanatory and inconclusive".

A first attempt to provide a testable and predictive theory of second language acquisition is Krashen's 'Monitor Theory' (1981). Initially intended as a theory of adult second language performance, it soon extended to include second language acquisition as well. Although Krashen's Monitor Theory is not at issue in this work, nevertheless some of its basic tenets will be mentioned, when needed, in the course of later discussion[xxv].

Finally, in the late eighties progress in the theory of first language acquisition gradually increased, and the explanatory potential of UG was recognized. The issue of the application of UG theory to second language acquisition has grown considerably. Gass and Schachter (1989: 3) observe how second language acquisition

has become in principle "an autonomous discipline with its own set of questions and issues and its own research agenda and goals". The fundamental problem linguists focus on in this area is whether second language acquisition obeys the same type of restrictions assumed to be guiding first language acquisition.

According to Flynn and O'Neil (1988: 7), any explanatory theory of second language acquisition must observe a mimimal set of criteria:

- the theory must be viable both psychologically and linguistically;
- the theory must account for the constructive component of L2 learning, as suggested by creative construction theory;
- the theory must account for the role of experience in the L2 learning process.

The following pages are devoted to some traditional issues in the field of second language acquisition. They provide a starting point for a further analyses of empirical research issues dealt with in later chapters. Two complementary approaches to second language acquisition studies can be outlined as the 'generative' approach and the 'typological' approach.

4.2 Generative and typological approach to L2A

4.2.1 Language universals and L2A

Within generative grammar theory, universal principles are claimed to be part of the LAD. The idea of a language-specific and biologically determined system at work in first language acquisition has lead linguists to hypothesize the existence of the same mechanism in second language acquisition. The search for formal universal in second language acquisition research focuses on the current hypothesis that the UG might be equally available to second language learners, though strong limitations reduce its effectiveness and availability.

From a typological perspective, language universals are not intended as "a static set of principles, but rather relational and diachronic" (Greenberg, 1991: 41). Universal principles might participate in second language acquisition together with other external factors:

> "the varying social conditions under which second language acquisition takes place, the accidental facts of individual experience, and other variables mean that the process is not one of mechanical application of principles to clearly analyzable situations, but rather the disentangling of a complex web of simultaneously acting causal factors" (ib.).

However, as a matter of fact, adults who are involved completely in the environment of the foreign language will never achieve a native-like competence in that language, regardless of any external influence.

4.2.2 Interlanguage systems

According to Selinker (1972: 214), an interlanguage grammar consists of "a separate linguistic system based on the observable output which results from a learner's attempted production of a target language norm". An interlanguage grammar represents a coherent system, separate from the first language, with its own set of rules. Interlanguage grammars and primary language developing grammars involve two distinct processes. In fact, the former implies the activation of the 'latent psychological structure', the latter the 'latent language structure' (ib.: 211, 230). The activation of the latent psychological structure, however, hardly leads to mature native speaker grammars. Moreover, unsuccessful attempts to target language production give rise to 'fossilization' phenomena:

> "fossilizable linguistic phenomena are linguistic items, rules, and subsystems which speakers of a particular NL will tend to keep in their IL relative to a particular TL [i.e. target language], no matter what the age of the learner or amount of explanation and instruction he receives in the TL" (Selinker, 1972: 214).

As regards the link between typology and generative theory, both frameworks hypothesize that "universal generalizations formulated on the basis of evidence from primary languages are capable of being extended to interlanguages" (1988: 419).

The typological approach maintains that "universals

generalizations about the surface representations of primary languages will hold for interlanguages, whereas the rule system that generated these representations may be different" (Eckman, 1988: 422). This type of research aims to

> "test the explanations used for language-typological facts on language acquisition data... Should the outcome of this research satisfactorily indicate a parallelism between typological facts and language acquisition facts, it would seem feasible to use language typology directly in the prediction of acquisitional patterns" (ib.: 68).

This view is criticized by Gregg (1989: 33), who complains of "the absence of a theoretical explanation for the acquisition of typological distinctions". By contrast (ib.),

> "the UG theory claims that, with respect to universal generalizations, interlanguages and primary languages will be identical not only in terms of their superficial representations but also in terms of their core rule systems".

The presence of a well-developed theory of UG allows linguists to make precise predictions on the occurrence of formal properties of language in second language developmental grammars.

4.2.3 Markedness and language transfer

An early application of markedness theory to second language acquisition is to be found in Eckman's Markedness Differential Hypothesis (1977), a refinement of the Contrastive Analysis Hypothesis which combines the notion of typological markedness with that of language transfer. In both typological and generative frameworks, the underlying common idea is that in early stages of second language development "all language learning, whether of L1 or L2, follows the order 'unmarked' before 'marked', regardless of the data available to the learner" (White, 1986: 311).

Gass and Ard (1982) test predictions based on Accessibility Hierarchy[xxvi] in second language acquisition, whereas Hyltenstam (1986) focuses on the relation between typological patterns with various syntactic structures such as sentence negation and interrogation. On the other hand, within generative framework, the point at issue concerns the application of markedness theory to the acquisition of peripheral and core grammar rules of a second language (see section 6.4).

The interaction between the native language and the target language is a major issue in second language acquisition studies. Ellis (1985: 201) remarks on how "the role of linguistic universals in second language acquisition is more complicated than in L1 acquisition. This is because SLA involves [at least] two languages - the target language and the learner's native language". Thus, it may be that universal principles of first language acquisition are subject to language transfer into a second language grammar along with prior first language experience.

"Typological facts have been used to arrive at a more

restricted view of what language phenomena are subject to transfer from the native language" (Hyltenstam, 1986: 64). 'Typological transfer' of linguistic structures from primary languages to interlanguage grammars deals with surface level representations and with language use. On the other hand, within generative framework, transfer phenomena involve deep-structure properties of language: unmarked properties of language will be more likely to be transferred rather than the marked ones (see section 6.4). The implicit assumption in the latter framework is that interlanguage grammars are 'natural' languages in that, for principled reasons, they obey the same type of restrictions imposed on primary languages.

4.3 The 'Critical Period Hypothesis'

Almost all adults fail to achieve native-like competence in learning a second language; furthermore, primary acquisition proceeds faster than adult second language acquisition. Lenneberg (1967: 176) advanced a biological explanation for these age differences, the so-called 'Critical Period Hypothesis':

> "Most individuals of average intelligence are able to learn a second language after the beginning of their second decade, although the incidence of 'language-learning-blocks' rapidly increases after puberty. Also automatic acquisition from mere exposure to a given language seems to disappear after this age, and foreign languages have to be taught and learned through a conscious and labored effort".

Lenneberg compared the difficulties of recovering language functions[xxvii] with the completion of brain lateralization. He maintained that by the time the language function had definitively seated itself in the left brain hemisphere, at around the onset of puberty, "there was no longer any neural 'plasticity' which would enable the right hemisphere to take over the language function if the left hemisphere was damaged" (Crystal: 263). Assuming that most L2 acquisition occurs after the critical period (i.e. the early teens), it is possible, in principle, that L2 learners may have to depend on cognitive processes or mechanisms other than the language faculty, which becomes inoperative. For instance, in adult language acquisition the LAD might be replaced by a 'general problem-solving' ability[xxviii].

Evidence of various nature seem to undermine Lenneberg's hypothesis. Firstly, neuropsychological evidence shows that brain lateralization "occurs long before the onset of puberty, perhaps during the first year of life" (Flynn and Manuel, 1991: 130). Secondly, the similar developmental patterns observed in child and adult language acquisition are in contrast with the idea that different processes take place in the two types of learning. Finally, Klein (1986: 10), from a sociolinguistic perspective observes that

> "the biological explanation can be replaced or supplemented by arguments of a social nature. It may well be, for example, that the adult is much less willing to give up his well-established social identity"[xxix].

Sociolinguistic factors and orientations on the learner's part (motivation, interest) may influence the rate of learning of a second language.

Two opposing views are commonly associated with the Critical Period Hypothesis: 'the Fundamental Difference Hypothesis' and the 'Fundamental Identity Hypothesis'. The two hypotheses will be used as guidelines in the following sections.

4.4 The 'Fundamental Difference Hypothesis'

This view claims that the nature of the process involved in second language acquisition is radically different from primary language acquisition. Whereas the former process involves a language-specific faculty, the LAD, the latter observes a more general problem-solving skill, also typical of adult learning in various fields other than language[xxx]. Bley-Vroman's specific proposal is

> "that the function of the domain specific acquisition system is filled in adults (though indirectly and imperfectly) by this native language knowledge and by general abstract problem-solving system. I shall call this proposal the Fundamental Difference Hypothesis" (1989: 50).

In support of this claim, he reports nine areas of learning difficulties among adults such as lack of success, general

failure, variation in success, fossilization, which make adult second language learning acquisition more similar to general adult problem-solving than to child language development[xxxi]. A different view is suggested by Felix (1982). In his 'competition model', the language faculty does not cease to operate in adult second language acquisition, rather it competes with the newly acquired General Problem Solving System:

> "Mit dem Eintritt in die abschließende kognitive Entwicklungsphase verfügt der Jugendliche somit über zwei hinsichtlich ihres Aufgabenbezuges unterschiedlich geartete Fähigkeiten zu abstrakt-logischem Denken, d.h. zur Durchführung abstrakt-formaler Operationen. Auf der eine Seite besizt er eine in seiner biologischen Struktur verankerte, auf ganz spezifische Aufgabenstellung beschränkte Sprachfähigkeit (language faculty), die im präpubertären Lebensabschnitt vor allem für den Spracherwerb verantwortlich ist und die kreative Verwendung von Sprache steuert. Auf der anderen Seite verfügt der Jugendliche im allgemein-kognitven Bereich über eine abstrakt-formale Denkfähigkeit, die es ihm gestattet, bei der Lösung allgemeiner Erkenntnisprobleme per Hypothesenbildung vorzugehen und abstraktformale Beziehungen zu erkennen bzw. zu verwerten" (ib.: 279).

The raising of an adult problem-solving ability is coterminous with the passage from the stage of 'concrete operations' to the stage of adult 'formal operations' described by Piagetians. The contrast between the two systems (i.e. the language faculty and adult problem-solving system) is the cause of imperfect second language learning.

Lastly, Krashen's Filter Hypothesis deals with the idea that the inability to acquire a second language completely is due to the existence of an 'affective filter' (its components are, among others, aptitude, attitude, motivation, self-esteem), which prevents grammatical input from being processed. Thus, the LAD is still available to second language learners, though the affective filter hinders its regular functioning (1981: 110).

4.5 The 'Fundamental Identity Hypothesis'

This hypothesis is consistent with the idea that the same language-specific mechanism guiding L1 acquisition may be involved in L2 acquisition as well. Although very seldom, some adult second language learners achieve native-speaker competence, and this fact requires an explanation. It might well be that the LAD is available to second language learners well beyond the critical period:

> "Put simply, Dulay and Burt (1974a), Bailey, Madden, and Krashen (1974), d'Anglejan and Tucker (1975) and others found that second language acquisition <u>is</u>, in crucial respects, like first language acquisition, and the same theoretical constructs can be invoked to explain both. As they showed, developmental L2 errors tend to mimic those committed by the L1 learner, and, with respect to the morpheme studies, the order of acquisition of certain morpheme in L2 mirrors that in L1 (for L1 order of acquisition studies, see Brown, 1973; de Villiers and de Villier, 1973). Although the L2 morpheme acquisition studies are not unproblematic (see Rosansky, 1976),

> they, along with other evidence, resulted in a new consensus about L2 acquisition, namely that UG may not shut off at puberty. At the same time, evidence mounted that an L2 learner's grammar, far from being a mere hodge podge of deviant forms, itself obeys the crucial properties of naturally occurring human languages, subject to the same principles of organization and constraints (for evidence to this effect from syntax, see Adjémian, 1976 and Ritchie, 1978; from phonology, see Eckman, 1981)". (Newmeyer and Weinberger, 1988: 38-39)

Additional evidence in favour of the Fundamental Identity Hypothesis is supplied by the application of the generative grammar theory to second language acquisition. Thus, similar developmental sequences in first and second language acquisition receive an account in terms of analogous deep properties of language operating in both types of learning. On the pure linguistic ground, that is, putting aside neurological considerations, recent developments in second language acquisition studies indicate in child versus adult, rather than L1 versus L2, the crucial variable between primary and second language learning. Schwartz presents evidence in favour of the Fundamental Identity Hypothesis by comparing acquisition sequences of child and adult second language learners who share a similar language background. "The result of the comparison between the developmental sequences of adult and child L2A lend support to the hypothesis that linguistic-specific mechanisms do drive nonnative grammar construction" (Schwartz, 1992: 15). Some linguists, however, observe that such variable (i.e. similar language background in child and adults) may be less important if second language

learning is 'parasitic', at least in part, on L1 learning: second language learning may be supposed to 'append' to the residual UG and to L1 in a fairly complex way. For instance, UG might be still available with respect to a language usage which 'parses' the new structures by relying on foregoing language knowledge of the native language.

5. THE LOGICAL PROBLEM OF SECOND LANGUAGE ACQUISITION

5.1 Introduction

In the first part of this work, the learnability issue has been considered from primary language perspective. The 'logical problem of acquisition' and the 'poverty of stimulus' argument lead to the well-known idea of an innate language faculty at work. The natural extension of these arguments to non-primary acquisition is thus formulated by Felix (1988: 278):

> "given that the process of L1 acquisition is heavily guided and controlled by a task-specific cognitive module called the language faculty (or UG), is it the case that also L2 learners use the same module to acquire the formal properties of the language they are exposed to, or do L2 learners use a different module (or several different modules) to accomplish essentially the same task?".

Some arguments in support of the existence of the language faculty in primary acquisition can be usefully employed in second language acquisition research; on the other hand, first and second language acquisition present several differences in several respects, which makes a comparison between the two processes an arduous task. The first step in trying to make explicit the relationship between L1 and L2 processes is to restate the issue in UG terms.

5.2 Second language knowledge

What constitutes (adult) second language knowledge? First and second language acquisition may differ in both the initial and final state of knowledge. As opposed to young children, adult learners already have access to specific developed grammars, namely their native language. Moreover, in contrast to child language acquisition the study of adult second language acquisition concerns people who have achieved maturity in terms of their overall cognitive development. On the other hand, hardly any second language learner achieves the final 'steady state' typical of primary language acquisition. In fact, the proficiency level attained by adults in learning a foreign language may vary slightly from one learner to another. Moreover, in the course of second language development, fossilization may occur (see section 4.2.2). Fossilization may affect specific aspects of second language development (phonology, morphology, syntax). It happens that some second language learners will stop at different points in language development without being able to continue any further. The causes of fossilization are not well established, however it might be reasonably assumed that motivational factors and the type of input second language received play an important role. The differences between L1 and L2 end states are not sufficient to rule out the role of UG in second language acquisition:

> "the argumentation to support such a conclusion must precisely demonstrate that UG does not constrain an

> adult learner's hypotheses about the new target grammar and not simply that the end-states attained differ between adults and children" (Flynn and Manuel, 1991: 134).

Furthermore, most studies concerning child-adult differences

> "focus on surface aspects of second language knowledge connected to a 'periphery' of language knowledge (e.g., lexical or language-specific agreement phenomena) rather than to the more abstract subsystem of principles and rules of UG" (ib.: 131).

Within a UG perspective, second language studies focus primarily on those structures which could form evidence of language knowledge in L2. One interesting issue in this research area is whether second language grammars conform at least to some fundamental universal principles of language such as structure dependence, ECP, etc.

Language knowledge represents the internalized mental grammar of native speakers in an idealized homogeneous community, i.e. competence. Language competence is only one component in a theory of language use (also: performance) which relies upon other aspects of language such as pragmatics, processing strategies, social variable rules, etc.:

> "language use by an L2 learner will not only reflect the currently internalized competence, the ILG, but will also reflect performance variables which are not part of the competence, although they may interact with it"

(White, 1989a: 36).

Gregg (1989: 20) observes that in second language research the competence vs. performance dichotomy "has too often been blurred, with a concomitant loss of clarity and coherence". For instance, Ellis (1985: 76) advances the idea of a 'heterogeneous competence model' which includes communicative and pragmatic competence as well: in learning a second language adult learners might be using their developed pragmatic competence. However, UG-based studies in second language acquisition still observe the traditional competence vs. performance distinction. In this research area, the linguists' interest focuses primarily on the competence component, namely, on the deep-structure properties of language rather than on surface and promiscuous processes of language use which underly a communicative and pragmatic competence.

5.3 Second language development and UG

How does second language knowledge develop? In the first part of this work, the notion of 'continuous development' has been considered. According to it, every stage of the child's developing grammar conforms to UG. Sharwood Smith (1988: 176) advances a similar notion, the 'Developmental Conformity Hypothesis', which equally applies to both first and second language acquisition:

"Developmental Conformity Hypothesis: All stages in the development of a target grammar conform to UG".

As a matter of fact, however, most interlanguage grammars never achieve mature states. The cause of persistent nonconformity is

> "a consequence of forces external to LAD such as impoverished input (foreign talk) or a package of internal and affective factors [i.e. Krashen's 'affective filter'] that conspire to partially or totally suppress the acquisitional processes" (ib.: 178).

Moreover, as White remarks, "although an interlanguage grammar (ILG) differs in a number of respects from the grammar of a native speaker, it nevertheless represents knowledge of the language, in that it accounts for the learner's interim competence by means of an abstract rule system" (1989a: 36). Despite the fact that interlanguage grammars may not conform to UG, as 'fossilized' forms of language will readily attest, there is nonetheless a natural tendency towards conformity with UG:

> "The (revised) Developmental Conformity Hypothesis: Developing grammars will tend towards conformity with UG: while the acquisitional processes are still operative, structural non conformity will not persist" (Sharwood Smith, 1988: 178-179).

Sharwood Smith's conclusion is that "L2 developmental grammars may deviate from UG in varying degrees for plausible reasons that are not at odds with the notion of ultimate conformity". In other

words, although in various points interlanguage grammars may not conform to UG, the final attainment of UG conformity is always possible in principle. The fundamental difference between first and second language acquisition could be accounted for in terms of input differences and not only in consideration of cognitive development issues. A sensible description of this issue in second language acquisition requires a detailed look at the type of data available to second language learners.

5.4 L2A and 'the poverty of stimulus' argument

In first language acquisition, the deficiency of the data available to children is compared with the complexity of mature state grammars. Does the poverty of stimulus argument still apply to second language acquisition?

Degeneracy. In first language acquisition, the type of data children are exposed to is not always grammatical. A careful consideration of positive data available in second language acquisition shows that they are formed by a mixture of grammatical and ungrammatical sentences. In this context, 'foreigner-talk', 'interlanguage-talk', are the typical forms of communications used between native and non-native speakers (cases of 'code switching' between natives and non-natives must be kept apart).

Underdetermination. Although children are exposed to a finite set of sentence types, they are able to use language creatively, far beyond the content of input they actually receive. Second language learners use their ILs productively as well, though some

of the sentences they produce may be ungrammatical for a native speaker. The problem of underdetermination of data in second language acquisition is so expressed by White:

> "even if the L2 learner's grammar is not native-like, it can often be highly sophisticated and complex, revealing linguistic properties which could not have been induced directly from the input data... that is, knowledge is attained on the basis of impoverished input, and this requires an explanation" (1989a: 39).

Negative data. Children do not get explicit correction for the mistakes they make. Despite this fact, they all invariably end up with a well-developed knowledge of language, namely, with the ability to give judgements on the correctness of grammatical constructs of their native language. On the contrary, most adult learners are supplied with direct negative evidence, in the form of grammatical correction/explanation, especially in classroom environment. Although the results of empirical studies on the efficacy of correction are not conclusive (see section 5.5.1), adult second language learners "do have precise intuitions about grammaticality contrasts which are neither learnable on positive evidence nor transferable from corresponding structures of the learner's mother tongue" (Felix, 1988: 285). In other words, regardless of the mother-tongue influence or of negative correction, adult learners possess some knowledge of language on complex grammar constructs.

Sharwood Smith (1988: 185) remarks that "learners seem to behave in a systematic fashion in ways which cannot be explained

from an analysis of the input characteristics". Despite this scepticism, some observations on the type of data available to second language learners seem appropriate for the point at issue, that is, the type of data actually employed by adult second language learners in the process of second language grammar construction.

5.5 Evidence available to second language learners

5.5.1 Direct negative evidence

It is reasonable to assume that most second language acquisition occurs in presence of direct negative evidence. There are two sources of direct negative evidence, namely, explicit correction of ungrammatical forms and explanation of grammatical rules Both types of evidence are more likely to occur in guided learning than in spontaneous learning, where they are limited or even unavailable.

There is agreement among linguists that negative evidence is provided to adult learners, at least in classroom environment in the form of correction or explanation of grammar rules, though there is less consensus on the role they assume in the acquisition process. Moreover, the effective use of this type of data in second language grammar construction (i.e. second language competence) is an open question. In fact,

"it has been observed that the provision of negative

> feedback (i.e. corrections) does not appear to lead to more accurate performance, at least not immediately. Even when the negative feedback is provided in the course of ordinary conversation (i.e. in the form of expansions and paraphrases serving as confirmation checks and requests for clarification), there is still no evidence to suggest that learner amend his hypothesis immediately" (Ellis, 1985: 174).

Second language learners do not appear to have control over their mistakes, nor can they make use of correction in grammar construction. Furthermore, a comparison between guided and spontaneous learning demonstrates that in both contexts second language learners will follow a common route of development irrespective of the type of input they receive (Ellis: 1985: 202). In other words, correction of ungrammatical forms does not seem to alter in any way the process of acquisition nor does it seem to rule out the role of UG in second language acquisition. On the other hand, the fact that empirical studies on the efficacy of correction have not proved conclusive, "do not mean that correction plays no role in language learning" and that one may expect that further research "may also uncover specific situations in which error correction may be effective". (Dulay, Burt and Krashen, 1982: 36).

The role of 'explanatory evidence' is another questionable source of grammar construction in second language acquisition. The nature of grammar rules involved in formal instruction is greatly dissimilar from the type of unconscious language knowledge which characterizes UG. "The teaching of language... can (positively) affect language acquisition [i.e. second language competence] in

an indirect way only" (Schwartz, 1987: 312). In principle, explanatory evidence is of no use. In fact,

> "there are many areas in the grammar of any given language about which even the most capable second language teacher could not inform the learner since linguists themselves cannot claim to have provided a satisfactory account of even the most thoroughly described languages in the world" (Sharwood Smith, 1988: 185).

Given that many UG properties of language are highly abstract, it is not plausible to assume that they can be taught via explicit instruction (see, however, section 6.6). On the other hand, the use of certain arbitrary structures of language already 'lexicalized' such as prepositions and phrasal verbs can be learned only through repeated instruction.

5.5.2 Indirect negative evidence

If certain types of unmarked sentence structures construction fail to occur in the input data when they are expected to appear, this may constitute indirect evidence of the existence of a marked property in the target language grammar. Schwartz (1987: 282) considers this type of data as the relevant one in second language grammar construction. In fact, whereas direct negative data

> "imputes to the language faculty the questionable

> capacities of comparing grammatical with ungrammatical sentences or simply making use of metalinguistic knowledge in its computations, indirect negative evidence does not".

In other words, if UG plays a role in second language acquisition, indirect rather than direct negative evidence is the proper type of data second language learners rely on.

5.5.3 Simplified registers

The direct counterpart to motherese in second language acquisition is 'teacher-talk' or 'foreigner-talk', depending on the situational and environmental context in which they appear. Although simplified, these two forms of adjusted input are used, respectively, by teachers and natives. Crucially, they do not contain ungrammatical simplifications, but they share some common surface properties: slow speech rate, shorter utterances, preference of co-ordination over subordination, use of recurrent forms. Their main function is to facilitate communication and comprehension with foreign language learners. However, as opposed to motherese, which contributes to the developement of grammar knowledge, "no direct causal relation between teacher- and foreigner-talk and L2 grammatical knowledge exists" (Schwartz, 1987: 199). Additional sources of positive input are normally provided in guided learning, namely, sample reading and classroom lectures among others.

Schwarz (1987: 199-219) suggests that both fossilization and

individual variation in the attainment of competence in second language acquisition might be the result of 'imperfect target language input', with which second language learners provide each other, namely, 'interlanguage talk'. The interaction between this type of ungrammatical input and the LAD leads second language learners to follow the wrong developmental path, which gives rise to a 'not natural' grammar or a grammar deviating from the target language system. On the other hand, some successful second language leaners attain a native-like competence in the target language grammar, at least at syntax level. The difference between successful and unsuccessful learners rests precisely on the fact that, whereas the former receive some perfect (i.e. grammatically correct) L2 input, the latter are submitted to a greater amount of degenerated input in the form of interlanguage talk. Some linguists point out that, actually, first language learners sometimes get degenerated input as well. Recent studies in child language acquisition demonstrate just the opposite: motherese is not a form of degenerate input.

5.6 Conclusion

All in all, despite the differences between first and second acquisition processes, the consideration of the poverty of stimulus argument seems to hold true in second language acquisition process as well. On the reasonably fair assumption that much L2 knowledge is underdetermined, two equally possible solutions to the logical problem of second language acquisition can be formulated, which correspond to the Fundamental Difference

Hypothesis and Fundamental Identity Hypothesis:

1) UG is no longer available to adult second language learners, though they may tap first language competence in second language grammar construction. Second language acquisition is the product of some general problem-solving mechanism which proceeds on a basis of trial and error. This view is supported, among others, by Bley-Vroman (1989: 53)

2) adult second language learners do have (partial) access to UG, namely, they still use actively the language faculty in second language acquisition. Furthermore, they are also supposed to have access to first language abstract properties of language (Flynn, 1988: 179; Clahsen and Muysken, 1989: 23).

In the following chapters the second solution is supported. In fact, implicit in the parameter-setting view of second language acquisition is the idea that UG principles and (perhaps) parameters are still an active force, though reduced, in second language grammar construction.

6. SECOND LANGUAGE ACQUISITION AND THE THEORY OF PARAMETERS

6.1 Introduction

According to Chomsky's 'instantaneous model' of language acquisition, it is the final state rather than intermediate states of grammar that really counts in devising linguistic knowledge. Nevertheless, the theory of end-state grammars

> "may be usefully extended to the study of developmental stages in L1 and L2 grammars: very precise empirical questions may thus be formulated concerning the constraints on the shape of DGs [i.e. developmental grammars] and how they match those obtaining in mature grammars" (Sharwood Smith, 1988: 182).

A serious attempt to provide an explanatory theory of second language acquisition is provided by Flynn (1987). The essential requirement of the parameter-setting model of second language acquisition is that its claims "must be articulated in such a way that they can be precisely and empirically tested" (ib.: 28). This view of second language acquisition allows the linguist to make predictions on some aspects of second language acquisition:

> "...it is reasonable to assume that UG should also underly L2 acquisition. If so, there are certain testable predictions that fall out from such a claim: that hypotheses in L2 acquisition are structure dependent and that experience plays a role in parameter

> setting. More specifically, we would expect that in spite of the fact that L2 learners already have a fully developed grammar for the L1 and that they are more advanced cognitively, they will not apply astructural processing strategies to the learning of the L2... but rather analyze the L2 in terms of abstract phrases configurationally organized as has been shown for L1 acquisition" (Flynn, 1987: 57).

Although the parameter-setting model has been initially applied to syntax, other domains of linguistic inquiry have been considered as well. Thus, the effectiveness of some UG constraints or 'filters' (i.e. negative constraints) concerning phonological rules can be also tested in second language acquisition.

6.2 The availability of UG principles to L2 learners

The first step to ascertain the presence of UG in second language developmental grammars is to present evidence showing that universal principles of UG are operating in the second language. Linguists have focused primarily on the deep-structure properties of language which, in the first place, characterize primary language acquisition: structure-dependence, θ-criterion, case filter, subjacency etc. The type of evidence used by linguists in this context consists mainly of learner's intuitions about target language production or elicited responses in grammatical exercises. Felix (1988) presents evidence that German students learning English as a second language do follow UG constraints, in that their interlanguage grammars do not present

violations of formal principles of language.

In setting an experimental study, particular attention is devoted to determining the level of proficiency attained by second language learners. "Learners might violate a universal not because of the non-availability of UG, but because the structure in question is beyond their current capacity, and they are just stringing words together in an arbitrary fashion" (White, 1989a: 61). In other words, the relevant principles might not have been triggered yet. Moreover, on some occasions, the use of learners' intuitions as evidence of language knowledge in second language acquisition may result improper. In this regard, Felix (1988: 286) observes that

> "if a subject judges a grammatical sentence as ungrammatical, then there is no principled way of knowing whether the judgment is motivated by, say, stylistic consideration or simply indicates inaccessibility of UG. That is, factors other than UG-generated knowledge may be responsible for this judgment. If, in contrast, an ungrammatical sentence violating UG-principles is judged as grammatical, then this suggests that the subject has, in fact, no access to UG, since other factors are simply irrelevant in this case".

That is to say, second language learners might be judging sentences according to pragmatic and semantic criteria rather than syntactic ones. Another problem is the influence of prior language knowledge on second language acquisition (i.e. language transfer). White (1989a: 61) remarks that

> "if a particular principle operates in both the L1 and L2, and if it turns out that L2 learners observe this principle, this does not provide clear evidence for the operation of UG; it might just be due to transfer of L1 knowledge".

In this context, if we think of meaning as a very subtle set of features, having very precise effects on syntax (among others, Clahsen, 1991), it is possible in principle that L1 knowledge of meaning on lexical and functional elements may interfere with L2 grammar construction.

The potential influence of prior language experience on second language grammar construction can be eliminated throughout in experimental studies if peculiar aspects of language in very different languages are compared. For example, English vs. Japanese for structure-dependence: Japanese is a rigid SOV language and no movement of syntactic elements occurs; English, on the other hand, relies on structure-dependent movement of syntactic elements, as in the case of the formation of questions. An interesting point tested by Otsu and Naoi (cited in White, 1989a: 64) is whether native Japanese speakers, learners of L2 English, form questions correctly with subjects of relative clauses. The results of the experiment seem to confirm the initial claim, namely, that Japanese learners of English as a second language perform questions formation correctly, in that they observe structure-dependence. Of course, the mere fact that Japanes is different from English does not necessarily imply that general principles applying in Japanese are different as well.

So far, the writer's leading assumptions are: (1) UG guides primary acquisition; (2) end-state theory of grammar may be applied to interlanguage grammars; (3) second language learners have at least some partial access to UG, which may be obse3 through first language grammar.

6.3 The availability of parameters to L2 learners

Parameters, unlike non-parameterized aspects of language, are subject to some degree of variation, are fixed according to each language structure given an appropriate triggering experience. Assuming that second language learners have indeed access to some relevant UG principles, the question arises as to the possibility that they may have access to parameter 'resetting' as well. Researchers in this area focus their attention on two major aspects of the problem, namely on (1) whether second language learners operate language transfer of parameter settings from their native language; (2) whether parameters are still open to second language (re)setting[xxxii].

A consideration of the two aspects suggests the opportunity of a comparison between languages with different settings of one parameter in order to test the effects produced by first language setting on second language acquisition. Two alternative proposals are at issue: the more conservative position is assumed by Clahsen and Muysken (1989), who claim that neither transfer nor resetting of parameter values occurs in second language acquisition. On the other hand, the analysis offered by Tomaselli and Schwartz (1990)

and Schwartz and Tomaselli (1990) in terms of principle and parameters model makes strong predictions on the availability of open parameters in second language acquisition. Various syntactic aspects of language are the object of analysis by linguists in this area. Most notably, however, German verb placement/agreement and null subjects phenomena are considered, which in turn involve, respectively, head parameter and pro-drop parameter. Some critical remarks concern the type of data used by reseachers in the assessment of second language knowledge. In this type of research, linguists use mainly spontaneous speech production. However, complex structures simply might fail to occur in the corpus examined by the experimenter. Furthermore, production data might reflect production strategies rather than internalized properties of language[xxxiii].

6.3.1 German verb placement and L2A

The parameter typically involved in the study of German verb placement is head parameter (see section 3.1.7). Earlier stages of German child language development (Clahsen, 1982: 60) are characterized by the presence of verbal elements in final position (SOV order). In contrast to primary language acquisition, however, all adult L2 learners of German, regardless of their language background, pass through an early stage of development during which they all place verbs in a post-subject position (SVO order) (Clahsen, 1984, 1986). Much of the present-day debate focuses essentially on the way successful adult learners of German come to acquire the correct SOV order in later stages of development.

Clahsen and Muysken (1989: 23) claim that, although some non-parameterized universal principles are indeed available to adult learners, other parameterized aspects of UG remain totally inaccessible to them:

> "the observed differences between L1 and L2 learning can be explained by assuming that child first language acquisition falls under the parameter theory of language development, whereas the acquisition strategies used by adults in L2 development may be defined in terms of principles of information processing and general problem solving".

The developmental sequence of second language learners of German observed in Clahsen's studies (1984, 1986, 1988) is not consistent with a parameterized model of language acquisition. In German first language acquisition, two apparently unrelated developmental phenomena at surface level such as the raising of verb agreement and correct verb placement occur approximately at the same time, and they are covered by UG theory; on the other hand, in German second language acquisition, the two phenomena develop independently and cannot be accounted for in parameterized terms. Adult learners do not get to the correct verb placement by resetting head parameter, but rather via general learning principles, non language-specific. Furthermore, Clahsen and Muysken (1989n2) argue against the possibility that transfer of parameter settings may occur in second language acquisition. According to them, this hypothesis makes a wrong prediction in the case of learners having the same setting for head parameter in

both L1 and L2 as with Turkish learners of German. To sum up, Clahsen's position is compatible with the following three assumptions: (1) second language acquisition analysis is not compatible with a parameterized model of language acquisition; (2) general problem-solving strategies explain successful second language acquisition for the relevant aspects in question (i.e correct verb placement); (3) neither transfer nor resetting of parameters takes place in second language developmental grammars.

A constrasting view is offered by Schwartz and Tomaselli (1990) and Tomaselli and Schwartz (1990). Their position is consistent with the 'Fundamental Identity Hypothesis'. They analyse the developmental sequence of adult second language learners of German within a parameterized theory of grammar. Moreover, they provide evidence that not only are parameters transferred in the course of second language development, but they are also reset for the correct target language value (Schwartz and Tomaselli, 1990: 266)[xxxiv].

6.3.2 The null subject parameter and L2A

Some useful insights into the availability of parameters to second language learners may come from the study of the null subject phenomenon. One of the prominent features which characterize pro-drop languages as opposed to non-pro-drop languages is the production of null subject sentences and some other related properties. Most studies in this area look at the acquisition of English, that is, a non-pro-drop language, by

native speakers of Spanish, a pro-drop language, and vice versa (Phinney, 1987). The following two questions were considered by researchers:

1) whether the parameter value of the primary language will be transferred in the IL grammar, as predicted by traditional CA theory[xxxv];

2) whether resetting of pro-drop parameter for the correct target language value takes place in second language acquisition.

In general, the results of the experiments show the occurrence of linguistic transfer of the L1 parameter setting, and in some cases the resetting to the correct L2 value. However, The English learners of Spanish L2 were able to reset the parameter relatively quickly in comparison to Spanish learners of English L2. Thus, although CA hypothesis predicts linguistic transfer of parameter values in the IL grammar, it cannot account for the reason why rapid parameter resetting does not take place in all instances. A more detailed analysis of why, in some cases, parameter resetting does not take place involves a consideration of markedness. Moreover, according to some linguists, it is necessary to acquire a better comprehension of the status of null subject parameter, which careful analysis indicate as the effects at surface level of more general and abstract properties of language (this parameter involves considerations of learnability, for instance).

6.4 Markedness and language transfer

Within current generative framework, core grammar represents the whole set of universal principles and parameters the child has to fix along the acquisition process. Peripheral grammar, on the other hand, is made up of quirks and irregularities of language. Core grammar is available to the child almost from the start, provided that there is a minimum amount of triggering experience; peripheral grammar is acquired at a later stage in language development.

The application of markedness theory to second language acquisition involves either the relation between marked and unmarked properties inside the core of grammar (i.e. 'core markedness') or the relation between core grammar and peripheral grammar (i.e. 'CP-markedness'). Furthermore, two lines of approach to markedness theory can be briefly outlined: the 'contrastive-transfer' and the 'developmental' approach (Gair, 1988: 237). The former employs markedness theory to justify transfer of unmarked over marked structures of language (Liceras, 1989), the latter predicts, in various ways, acquisition orders (Mazurkewich, 1988).

Experimental studies focus on the effects of markedness on interlanguage grammars. "In all cases, the assumption is that unmarked properties will somehow prevail over marked, that ILG will favour unmarked rules or parameter settings" (White, 1989a: 121). Other applications of markedness theory to second language acquisition analyse the complex relation between markedness and language transfer[xxxvi].

Mazurkewich (1988: 127) adopts 'CP-markedness', namely, she focuses on the relation between core and peripheral grammar. Her claim is that in learning a marked construction of the target language, second language learners will first adopt the unmarked equivalent. In her experimental study, she looks at the acquisition of English by native speakers of Inuktitut, a language belonging to the Eskimo-Aleut family. "Inuktitut is quite different compared to English and the question of transference in their acquisition of English does not arise" (ib.: 130). The result confirms her initial hypothesis, in that Inuit students in the early stages of L2 acquisition of English show a preference for the unmarked English infinitive construction which will prevail over the corresponding marked English gerund construction (ib.: 137). As observed by White (1989a: 122), despite the resemblance to Krashen's 'Natural Order Hypothesis' (see Krashen, 1981: 51), Mazurkewich's account "differs crucially in that specific predictions are made in advance of the data... so that her hypothesis is empirically testable, in contrast to the natural order hypothesis which is entirely post hoc".

Liceras (1989) considers the issue of language transfer in relation to 'core markedness'. She hypothesizes that L2 learners are sensible to the degree of markedness of structures so that unmarked properties of the L1, although non-persistent, will be more liable to be transferred rather than marked. In her experimental study, she focuses on the acquisition of Spanish L2 (pro-drop) by natives of English (non-pro-drop). On the controversy about the status of pro-drop parameter in first language acquisition, she assumes that "even if it were the marked

option, the pro-drop parameter setting would be extremely easy to set in L2 acquisition" (ib.: 112). In support of her claim, Liceras (1988) provides evidence that pro-drop option in the case of English speakers learning Spanish is well established both at the acceptance and production level. She finds that "most Spanish L2 learners do not start with the L1 setting in case of null subjects. Namely, the English non-pro-drop option is seldom transferred into the interlanguage" (ib.: 129). Since the non-pro-drop option is not transferred, this constitutes evidence in favour of the unmarked status of the pro-drop option in language acquisition.

Phinney (1987) assumes that language transfer of the first language parameter setting will take place in second language acquisition. She further claims that resetting of parameters in agreement to the new target language value follows a precise direction of learning, in that it will be easier to reset from marked L1 to unmarked L2 than from an unmarked L1 to marked L2 setting. In order to test her claims, she focuses on the acquisition of Spanish L2 (pro-drop) by natives of English (non-pro-drop) and vice versa. The results of her experimental study confirm her claims, in that

> "the cost of resetting the parameter from Spanish to English is high... [on the other hand] the data from the English speakers learning Spanish clearly show that the pro-drop parameter is easy to acquire, even when the L1 utilizes the non-pro-drop setting" (ib.: 234).

6.5 The Subset Principle and adjacency condition in L2A

An important feature of L1 acquisition concerns the absence of negative data in the child's linguistic environment. As a consequence, the only way for the acquisition process to continue in the presence of positive data alone is to assume a conservative hypothesis: the Subset Principle. The Subset Principle prevents the child from generating an overinclusive grammar which would require negative evidence for disconfirmation. The relation between the Subset Principle and UG is briefly summarized by White (1989b: 139) in the following passage:

> "there are two possible ways in which the Subset Principle may interact with UG. One is that UG is so constructed that principles and parameters are ordered within UG via markedness, with the unmarked value generating the subset and the marked value the superset. In this case, the Subset Principle is an instruction to try the unmarked value first. Alternatively, markedness can be removed from UG and parameters within UG can be unordered, leaving the Subset Principle to compute the markedness hierarchies, a position argued by Manzini and Wexler (1987) and Wexler and Manzini (1987)".

White, in agreement with Manzini and Wexler's proposal, claims that "learning principles and UG may be in different 'modules', allowing for the possibility that these modules no longer interact effectively in second language acquisition" (1989a: 148). The Subset Principle might cease to operate in second language acquisition giving rise to "certain cases of mother tongue influence and also fossilization" (White, 1989b: 135).

White's experimental studies (1989a, 1989b) deal with the application of the Subset Principle Hypothesis to second language acquisition. She focuses on the acquisition of English L2 by native speakers of French. English and French differ as far as one property of language is concerned, that is, the adjacency condition on Case assignment. The French setting of this parameter, [-strict adjacency], allows for a wider set of sentences than the English setting, [+strict adjacency]. In fact, whereas the French setting admits verb-object interruptions, the English setting does not[xxxvii]. In setting the experiment, she advances two hypotheses. The 'subset hypothesis' predicts that the Subset Principle applies to second language acquisition data. No violations on adjacency condition will arise in the interlanguage grammar produced by second language learners of English whose native language is French. By contrast, the 'transfer hypothesis' predicts that the Subset Principle does not apply to adult second language acquisition any longer. French learners of English will be influenced by their primary language so that under the erroneous assumption that English is a [-strict adjacency] language like French, they will produce adjacency violations in the interlanguage grammar. The results of the experiment seem to support the latter hypothesis. In fact,

> "many of the learners assume English to be like French in allowing adjacency violations. These results are not consistent with the subset hypothesis; if the Subset Principle had been applied, subjects should have totally rejected adjacency violations in English, contrary to what was found here" (White, 1989b: 153).

Despite the non-applicability of the Subset Principle in second language acquisition, UG remains effective:

> "L2 learners might be still constrained by UG in terms of the types of interlanguage grammars that they come up with, without any longer being constrained in terms of the order in which different hypotheses are tried out" (1989b: 139).

In White's view, interlanguage grammars are still constrained by UG. Crucially, the difference between first and second language acquisition is determined by the application of the Subset Principle in the former type of acquisition. In reviewing White's results, Clahsen (1989: 26) remarks:

> "if one can find a way to integrate the subset principle into UG as the principle structuring parameter theory, then White's position, assuming the non availability of the subset principle to L2 learners, and ours, claiming that parameter setting is not available to L2 learners, are not as different as might be supposed at first sight".

In this context, the presence of negative data in adult second language acquisition assumes a particular relevance. In fact, they can be seen as a means to 'counterbalance' the absence of the Subset Principle in second language grammar construction. According to Schwartz's analysis (1987: 292), however, "the

relation of English and French with respect to the Adjacency Principle is not a superset-subset proper relation but rather an overlapping set relation". She concludes:

> "although the (adult) L2er seems to initiate L2 grammar construction by relying on the L1 grammar construction by relying on the L1 grammar, options of values of parameters in UG (i.e., subset grammar values with respect to the L1) are accessed. Without permitting a direct access to UG, we are left without an explanation for how seemingly subset values are ever acquired" (ib.: 312).

Finally, assuming that Case Adjacency arises as the consequence of some abstract properties of language other than the Subset Principle, it might well be that adult second language learners are not able to recover this property any longer in second language grammar construction. Actually, in this case different analysis of data lead to rather different conclusions.

6.6 UG and (second) language instruction

As new discoveries in the field of theoretical linguistics appear, the question of their application to other research areas is an obvious consequence. An important research area is the application of linguistic theory to (second) language teaching.

From a UG perspective, linguistics aims to provide an insight into the general functioning of the human language. The aim of

researchers in this field is to discover the general universal principles, biologically determined, which underly the 'knowledge of language'. Cinque (1991) appears sceptical about the application of UG theory to (second) language teaching:

> "alcune linee di sviluppo più specifico della teoria linguistica vanno, in un certo senso, nella direzione opposta rispetto ai bisogni più fondamentali dell'insegnamento delle lingue... . Se è vero che tali principi, data la loro astrattezza, sono plausibili candidati per quella dotazione innata che abbiamo chiamato facoltà del linguaggio, non può avere molto credito l'idea che essi debbano o possano essere oggetto di insegnamento specifico. Si può dire, estremizzando, che i fatti più interessanti per la teoria linguistica sono i meno interessanti per le esigenze dell'insegnamento, tanto che spesso essi vengono taciuti".

There is no point in teaching universal principles of language if they are inborn as part of human genetic endowment! UG properties of language may result too complex and abstract to be taught effectively. As regards the 'Critical Period Hypothesis' and second language acquisition, he furthermore remarks (Cinque, ib.):

> "ove si abbia a che fare con allievi che hanno già superato la soglia critica della pubertà un metodo naturale o di immersione nei dati della lingua seconda non garantisce necessariamente dei risultati migliori di quelli che può fornire un metodo più tradizionale... Insegnamento che spesso si è rivelato un'utile scorciatoia in assenza delle condizioni naturali di

sviluppo della lingua".

Despite the fact that very abstract principles of UG theory cannot be usefully employed in (second) language teaching, nevertheless it may well be that on certain occasions an UG-based explanation of syntactic phenomena may prove very useful. For example: the 'double movement analysis' of the verb and of a constituent into 'topic' position (Thiersch, 1978; Clahsen, 1986: 96) appropriately adapted for pedagogical purposes may account for sentence construction in German in a very intuitive way. Thus, an express application of specific UG principles to concrete grammatical contexts can be a most effective device in second language teaching.

There is no doubt, however, that "sound pedagogical practice must be anchored in in-depth knowledge of the capabilities of second language learners and the processes and strategies that they need for language learning to take place" (Gregg: 1989: 3). In other words, in order to make language teaching most effective, teachers should not obstruct the general principles which underly language acquisition.

7. CONCLUSION

The initial purpose of the writer in this work was to provide the reader with a review of current research issues in second language acquisition studies. It soon became clear, however, that in the field of generative grammar, to gain a better understanding of second language acquisition issues a necessary prerequisite was a careful consideration of primary acquisition studies. The vast amount of studies in this field imposed a selection of topics neither too numerous nor too restricted to specific technical issues. Thus, this work may have two readings: from the more general to the more restricted, from the more simple to the more complex.

The first chapter is mainly concerned with what linguistic theory has to say about primary acquisition, with special reference to generative theory of syntax. The core notion is that language acquisition is a biologically determined process governed by the 'language faculty' (i.e. LAD). In chapter two, the existence of the language faculty receives an account on the basis of external evidence (the logical problem of language acquisition). The third chapter offers an overview of some relevant UG principles and parameters and introduces the 'parameter-setting model' of language acquisition (Hyams, 1986). A review of current linguistic theory applied to second language acquisition is presented in chapter four. The leading idea throughout the chapter is the consideration of second language issues irrespective of pedagogical concerns. Chapter five demonstrates that the 'logical problem of language acquisition'

can still be applied to a second language. Finally, chapter six considers some UG-based studies which provide competing analysis on the (non) availability of UG to second language learners, and advances the question whether UG principles may be taught. The review of the theoretical positions assumed by linguists in the field of language acquisition suggests the following observations:

1) There is in act a general tendency on the linguists' part to analyse language acquisition data within the Principle and Parameters framework. In this respect, the contribution of Universal Grammar theory is essential since it offers a predictive model of acquisition empirically testable, which can be usefully employed as a valid reference point for a wide range of phenomena, including non-primary acquisition. This is not surprising because one of the main concerns of generative grammar has always been to provide an explanatory account of language acquisition. Thus, although initially generative theories of grammar apply to an 'ideal speaker-hearer in an homogeneous speech community', it might turn out that some of its tenets might be equally applied to a situation of languages in contact, pidgin formation, etc.

2) Second language acquisition process stands out as a very complex phenomenon, which can be viewed as the result of many interacting factors including, among others, native and target language influence, markedness conditions, learnability conditions. One of the main topics exposed in this work concerns the thorny question of whether Universal Grammar is also available to adult language learners. Although various types of experimental evidence prove controversial in this regard, nevertheless many aspects of second language acquisition seem compatible with an

analysis within a Principle and Parameter model of language acquisition. Moreover, further advances in the comprehension of the topic seem to be forthcoming from the careful comparison of specific aspects of language in various languages.

3) Although not always effective in the short period, the exposition to grammatically correct input is a necessary condition for both first and second language learning to take place. Furthermore, experimental evidence in primary acquisition (among others, Radford, 1990; Antelmi, 1992) support the idea that language acquisition is not an 'instantaneous process', but that language structures 'grow' in the mind according to a 'maturational schedule' biologically determined.

4) The exposition to second language data beyond the so-called 'critical period' dramatically reduces the chances of achieving ultimate success in second language learning. If so, learning difficulties will mainly affect the phonological and the pragmatic level, which immediately show their limits, whereas the syntactic level seems to offer to second language learners good margins of improvement.

This work aims, above all, at drawing attention to those areas on which research has been recently concentrated, and which appear to promise further studies in which the problems and possibilities of carrying out experimental checks are stated precisely. Thus, it is to be hoped that an experimental type of application follows some of the theoretical remarks dealt with in this survey.

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NOTES TO CHAPTER I

[i].In this regard, Gregg (1989: 24) remarks that "in comparison with attempt to construct a theory of acquisition in the domain of grammar, any attempt to construct a theory of acquisition in the domain of pragmatics or communication is going to be handicapped by the lack of a well-articulated formal characterization of the domain".

[ii].A defense of this model is provided by Greenberg in that "physical science at certain stages must be satisfied with approximations, which are very much like the exceptions that we find in the study of language universals... [therefore] We should not abandon an insightful generalization which accounts for a large body of facts and relates well to the rest of our knowledge because it does not work perfectly. Nor, on the other hand, should we abandon the attempt to discover additional variables which may ultimately account for such deviations (1991: 42).

[iii].Chomsky's viewpoint (1977: 72) about sociolinguistic inquiry is so formulated: "The study of various dialects certainly falls squarely within linguistics. But I do not see in what way the study of ghetto dialects differs from study of the dialects of university trained speakers, from a purely linguistic point of view. On the theoretical level that is much the same thing. In fact, there are some who claim at times that there are certain theories concerning the study of language in society. Perhaps so, but I have not as yet seen such theories, or any specific account of the principles involved. Very few theoretical proposals have been made about these questions, to my knowledge".

[iv].See Labov (1981): he recognizes that changes of the neogrammarian type are out of reach of the sociolinguistic model.

[v].Emphasis in the present work has been placed on explanatory adequacy rather than on descriptive adequacy, in an attempt to limit the scope of the inquiry in a more precise and circumscribed manner.

[vi].Fodor (1988: 69) gives the following definition of the term 'hardwired' (from the Italian translation): "Il sistema computazionale [della mente] è hardwired, nel senso di essere associato a dei meccanismi neurali specifici, localizzati e strutturati in modo complesso".

[vii].Note that the term 'modularity' may also be used in quite a different sense. In fact, within UG-framework, the term refers essentially to the interaction of the various subcomponents or 'modules' of the grammar, e.g. X-bar Theory, θ-Theory, Case Theory, etc, whose output results in the formation of grammatical sentences conforming to these principles.

[viii].A very clear analysis of this distinction is provided by Ramat (1986, ch. 1).

[ix].Chomsky (cited in Palmarini, 1991: 75) makes the point explicit (Italian transl.): "non ho esitato a proporre un principio generale della struttura linguistica sulla base dell'osservazione di una sola lingua".

[x].Accessibility Hierarchy (AH) concerns the universal properties of relative clauses. By comparing about fifty languages, Keenan and Comrie (1977: 66) found that "languages vary with respect to which NP positions can be relativized, and that the variation is not random", rather, there exist an implicational hierarchy, from the less to the more marked, based on positions which can be relativized. Moreover, "strategies that apply at one point of the AH may in principle cease to apply at any lower point". Thus, for instance, every language 'must be able to relativize subjects', whereas there are comparatively few languages which can relativize genitive positions.

[xi].One might speculate that the answer would be the same, if the question expressed under the same circumstance were 'who bit Fido?'.

NOTES TO CHAPTER II

[xii].The type of language used by parents when they begin to talk to their children is the so-called 'motherese' or 'baby talk'. Its nature is rather controversial, (see Crystal, 1987: 235). Many will claim that despite the level of misery many children suffer, children will be able to learn a language. Note, however, that although degenerated input might affect phonological, lexical levels of language, or impoverished lexical complexity, it does not touch those formal properties of language which are claimed to be in fact available.

[xiii].Both types of data consist of elicited judgements on

grammaticality.

[xiv].The difference between the two sentences is accounted for in Standard Theory in terms of exceptional case marking (ECM): the lexical subject of infinitival clauses in English exceptionally receives accusative case from a precise set of verbs governing the infinitival clause.

[xv].The same concept is expressed by Chomsky: "it is reasonable to attribute to UG those aspects of these rules or principles that are uniformly attained but underdetermined by evidence" (1981b: 6).

[xvi].The question however is not so straightforward: Italian children easily get positive evidence that a prodrop sentence is grammatical; by contrast, English children need evidence that prodrop sentences are not grammatical (i.e. they need negative evidence). Alternatively, children might be assumed to act as 'conservative learners', in that they will adopt the most restrictive grammar compatible with the input, see also section 3.3.1.

[xvii].Along the acquisition process children make two types of mistakes: normative mistakes, something that seems to violate the core of the language. For instance '*John the dog hit' instead of 'John hits the dog' is a possible mistake in child language acquisition. In this regard, Eubank (1991: 11) remarks that "the difference between malformed sentences that children do not generate and those that they do is that the former are assumed to be violations of UG, whereas the latter comprise language particular variations specifically allowed by UG". Children do sometimes make mistakes in the periphery of language as well, such as overgeneralizations of structures like "*goed" instead of "went".

[xviii].In morphology, double choices are attested but only at a 'learned' speech level, for example udrei/udirei, dettero/diedero, tra/fra.

[xix].Hyams (1986: 24, n. 7) states that "there would be no positive discomfirming evidence for the child since his language includes all of the sentences of the adult language and then some".

NOTES TO CHAPTER III

[xx]."The membership of the set of licensing heads defines a parameter whose values range from the empty set (no licensing head, hence no occurrence of 'pro' is allowed by the

grammatical system, which is probably the case of contemporary English) to, in principle, the set including all Case-assigning heads" (Rizzi, 1986: 546).

[xxi] See Antelmi (1992) for an application of the 'maturational hypothesis' to child language development.

[xxii]."It is entirely possible, a priori, that a parameter is initially set at some value (or a rule initially formulated) for reasons entirely independent of markedness" (Hyams, 1986: 158).

NOTES TO CHAPTER IV

[xxiii].A modern definition of language transfer is provided by Selinker (1992: 208): "Language transfer is best thought of as a cover term for a whole class of behaviours, processes and constraints, each of which has to do with CLI [=Cross Linguistic Influence] i.e. the influence and use of prior linguistic knowledge, usually but not exclusively NL knowledge. This knowledge intersects with input from the TL and with universal properties of various sorts in a selective way to help build IL".

[xxiv].This assumption has been partly disconfirmed: in a related experimental study some differences between first and second language acquisition orders have been observed (see Dulay and Burt, 1974b). However, given the 'Critical Period Hypothesis' (see section 4.3), these differences are expected.

[xxv].The general model articulates into five interrelated hypotheses: (1) Acquisition-Learning Distinction, (2) Natural Order Hypothesis, (3) Monitor Hypothesis, (4) Input Hypothesis, (5) Affective Filter Hypothesis. Krashen analyses these hypotheses extensively and persuasively. In Krashen's Monitor Theory, a substantial distinction is made between conscious language 'learning' (or learning through the Monitor) and subconscious language 'acquisition'. For the purpose of this work, the terms 'acquisition' and 'learning' will be used as synonyms. Any specific use of the two terms will be specified in the text.

[xxvi].Keenan and Comrie, 1977 and Comrie and Keenan, 1979 (see section 1.4).

[xxvii].Lenneberg's hypothesis demonstrates its validity in other domains of cognition.

[xxviii].At the phonological level, [* -back, +round], exclude configurations corresponding to [y, ø, œ, Y].

Unless [y, ø, œ, Y] is heard by the end of the critical period the parameter is fixed (i.e. the filter becomes part of the steady grammar), and the adult would be hard put to violate the filter when learning a foreign language such as French, for instance.

[xxix]A very particular case is represented by pidgins, languages learned by adults in exceptional conditions.

[xxx].As regards the characteristics of the general problem-solving mechanism, Bley-Vroman (1989: 54) observes that it "must... be goal oriented. It must have ways of utilizing feedback and instruction. There must be some way of understanding explanations. A variety of mechanisms must clearly be available, including distributional analysis, analogy, and hypothesis formation and testing. The indeterminate intuitions of adult learners suggest something vaguely probabilistic and non-monotonic. There ought to be some way to move from controlled to automatic processing".

[xxxi].In this regard, White (1989a: 175) observes that "it is not sufficient to point to error-ridden second language performance and argue that this is evidence against the operation of UG".

NOTES TO CHAPTER VI

[xxxii].On the use of the word 'resetting' White (1989a: 80) remarks: "when researchers speak of parameter resetting in second language acquisition, the idea is not that L2 learners have to lose the L1 parameter setting for the L1 [sic]. Rather, if their initial assumption for the L2 was that the L1 setting was appropriate, this has to be reset for the L2, while the original setting is maintained for the L1".

[xxxiii].The point is treated extensively by White (1991: 172) in the following passage: "where production data suggest that there are acquisition orders, these data may reflect the order in which different rules are added to the grammar or they may reflect use of rules because of other factors to do with production mechanism. Even if it can be shown that production data directly reflect properties of the grammar, it is not clear whether they can tell us anything about how the grammar was learned".

[xxxiv].They consider phenomena such as IP structure and verb placement in German. Their analysis is rather technical and specific and does not always correspond to Clahsen's from a methodological viewpoint. An accurate comparison between the

two analyses and the data they rely on will be necessary to reach a unitary comprehension in this area, which appears as as a very interesting and meaningful one for linguistic theory.

[xxxv]. White points out how it is difficult to test the case with native speakers of English learning L2 Spanish. In fact, the production of full subject sentences in Spanish cannot constitute evidence that native speakers of English have failed to reset pro-drop parameter for the Spanish setting. Rather, the non-occurrence of correct null subject sentences may be due to their inability to command the discourse or pragmatic constraints which govern the use of lexical pronouns in subject position.

[xxxvi].In this regard, White (1986: 311) observes that "when markedness is considered in terms of parameters of UG or structures requiring specific positive evidence, there will be times when L1 does have an effect. In particular, the order of acquisition will not invariably be 'unmarked' before 'marked'". See also White's article on Gass and Schachter 1992.

[xxxvii].Some exceptions concern the 'double object construction' such as John gives Mary a book, or sentences where the direct object is moved rightwards for reason of focus as in John kissed impetuously Mary who could not resist his charm.