The Split IP Parameter
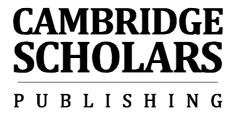# in Second Language Learning

The Split IP Parameter
in Second Language Learning

By

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CAMBRIDGE
SCHOLARS
P U B L I S H I N G

To my family

TABLE OF CONTENTS

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LIST OF ABBREVIATIONS

adv	adverb
Agr	agreement
AgrO(P)	object agreement (phrase)
AgrSP	subject agreement phrase
Asp(P)	aspect (phrase)
Aux	auxiliary
C(P)	complementizer (phrase)
DO	direct object
D(P)	determiner (phrase)
DSC	double subject construction
fq	floating quantifier
FP	functional projection
FTFAH	Full Transfer Full Access Hypothesis
IO	indirect object
I(P)	inflectional (phrase)
Infl	inflection
L1	first language
L2	second language
L2er	second language learner
Ls	students in English language and linguistics
NLs	subjects who are not students in English language and linguistics
N(P)	noun (phrase)
NPRH	No Parameter Resetting Hypothesis
OSC	object shift construction
OV	object verb
PF	phonetic form
PLD	primary linguistic data
SVAdvO	subject verb adverb object
SAdvVO	subject adverb verb object
SLA	second language acquisition
SIP	split IP parameter
SMA	sentence-medial adverb
SOV	subject object verb
SVO	subject verb object
TEC	transitive expletive construction
T(P)	tense (phrase)

UG	Universal Grammar
V2	verb second
V3	verb third
V-to-I	verb to inflection
VO	verb object
VOA	verb object adjacency
V(P)	verb (phrase)
XSVO	X subject verb object
XVS	X verb subject

INTRODUCTION

The present book is based on my doctoral thesis defended at the University of Bucharest in September 2012. The book aims to contribute to the description of the mental representations underlying second language learning within the generative grammar framework, i.e. it aims to provide a possible answer to one of the major questions in second language research, namely what cognitive structures and abilities underlie the L2 learner's use of his/her L2 (Ritchie & Bhatia 1996).

One of the major tenets of generative theory is that first language acquisition is accounted for by the interaction between the input and Universal Grammar, an innate component of the language faculty, with Universal Grammar providing "a blueprint" for acquisition, a set of general principles and specific possibilities (parameters) underlying all languages, which guide the child in the process of acquisition. Additionally, there is a set of other factors that come into play and interact with the first two: non-language specific factors, which comprise both learning principles and other non-language specific principles such as principles of data analysis, structural architecture and developmental constraints (Chomsky 2005). So, overall, in current generative theory, there are three factors involved in "language design": genetic endowment (Universal Grammar and computational limitations), experience (input) and non-language specific factors (Chomsky 2005).

With respect to second language learning, the main assumption is that it should be possible, in principle, to account for it in the same way as for first language acquisition. So the more general research question explored in this book is related to the interaction of the three factors above in *second language design*. Do these factors operate/interact in a similar way in L2? Do they have the same importance/contribution as in L1? Are there any other factors that interfere, e.g. what is the role of L1? While I provide tentative answers to all these questions, I focus on the role of the first factor, namely that of UG, and in particular that of UG parameters. Since L1 acquisition is defined mainly as the process of parameter setting on the basis of the input, we expect parameter setting to be at the core of L2 learning as well. However, in the literature it has often been argued that one of the most important differences between L1 and L2 acquisition is related precisely to this process.

The parameter that I look at is the Split IP parameter (Bobaljik & Thráinsson 1998). This parameter distinguishes languages with a richer

functional structure of the inflectional phrase (IP), such as Romanian, from languages with a simpler structure of the IP, such as English. In the former, the IP is split into an Agreement Phrase and a Tense Phrase while in the latter, there is a simple, unsplit IP. This fact has a series of consequences related to word order and multiple subject positions: Romanian is (+ split IP) and it allows a more flexible word order and several subject positions, while English is (-split IP). A Romanian learner of English as L2 would have to (re)set the positive value of this parameter to the negative one in L2 learning. Thus there appears the question of whether L2 learners set the correct negative (-) value from the very beginning or whether they first transfer the positive (+) value of the parameter and then undergo a process of resetting; furthermore, the success of the resetting is also investigated.

In Chapter 1, *How many factors in second language design?,* I present arguments in favour of access to Universal Grammar in L2. First, I present the three factors for first language acquisition (Chomsky 2005), i.e. genetic endowment, input and non-linguistic principles, and then I discuss them in relation to L2; in particular, I focus on the differences between how they operate in L1 and L2. Among the three factors, the role of UG has been the focus of much research in second language theory and chapter one presents the most relevant approaches to the question of whether or not there is still access to UG in L2. Failure to attain success in L2 has been attributed to maturation of the language faculty, and subsequently to the lack of access to UG. However, there is evidence for UG operation in L2; this evidence is presented in chapter one, in particular the evidence related to the operation of UG principles.

In Chapter 2, *Parameter (re)setting in L2*, I focus on the analysis of UG parameters and parameter setting/ resetting theories with the aim to present the most important approaches to this issue, among which the hypothesis that is tested here. This hypothesis is the Full Transfer/Full Access hypothesis proposed by Schwartz and Sprouse (1996) according to which L2 learners transfer the entire L1 grammar in the beginning of L2 learning, so the initial state is the L1, and then they go through a process of parameter resetting to the L2 values, via full access to UG. This process is claimed to be successful overall and the possible resetting failures are associated with insufficient input data needed to trigger the restructuring. The hypothesis was confirmed, among many other studies (Yuan 1998, Slabakova 2000), in a study of English learners of Afrikaans as L2 by Conradie (2005), i.e. learners who reset the (-) value of the parameter to the (+) one in the L2. This study is presented in Chapter 4.

Chapter 3, *On the Split IP hypothesis in English and Romanian*, provides an analysis of the value of the split IP (SIP) parameter (Bobaljik & Thráinsson 1998) for Romanian. The properties of this parameter are related to lexical verb movement, verbal morphology and specifier positions. In (+SIP) languages, such as Icelandic, there can be distinct markers for agreement and tense on the verb and, consequently, there are two functional projections corresponding to these markers; the lexical verb raises to Agreement. Because there are two functional projections in the inflectional domain, there are also multiple specifier positions for subjects and objects. This leads to the possibility of transitive expletive constructions (TECs) and object shift constructions (OSCs). By contrast, in (-SIP) languages, such as English, there are no distinct markers for agreement and tense on the verb and there is a simple, unsplit IP; there is only one specifier position for the subject and one position for the object.

The split IP parameter was put forth by Bobaljik & Thráinsson (1998) based on data from Germanic languages, which are all V2 languages. For such languages, we cannot say whether the verb V which is in the complementizer domain at the left periphery of the clause, in the complementizer head C, was previously in the IP or in the verb phrase VP, i.e. we have no real evidence in favour of V to I movement. So far, to my knowledge, there has been no study which analyzes a (+SIP) language which is not of the V2 type, i.e. a language in which one can see whether there is V to I movement. Romanian is one such language and the present book provides an analysis of the properties of the split IP parameter for this language. Romanian is argued to be (+SIP) as it has distinct markers for agreement and tense, it is a language in which the lexical verb undergoes movement to higher functional projections (above Agreement, according to Cornilescu 1997) and it has multiple specifier positions, i.e. several positions for subjects. The data indicate that there may not be several positions for objects in Romanian, although there are some structures which point to the existence of such positions, in particular object clitic constructions. In terms of multiple specifiers, Romanian is shown not to allow TECs or OSCs. Even so, as Bobaljik & Thráinsson (1998) state, transitive expletive constructions and object shift constructions are 'possibilities' and a positive setting of the parameter is a necessary but not sufficient condition for these constructions; there are interpretive constraints associated with them in the languages which have such constructions, such as Icelandic. The central property of this parameter is related to the availability of a split IP, i.e. two functional projections in the inflectional domain and consequently, verb movement for feature checking; this central property is evinced by Romanian.

In Chapter 4, *The Split IP Parameter in L2. Predictions for Second Language Learning*, I focus on the split IP parameter in second language learning. First, I look at the relevance of parameters for language acquisition and of the Subset Principle both in L1 and L2 and then I present Conradie's (2005) analysis of this parameter in L2. She investigates the setting of the split IP parameter in an L2 context where the L2 learner moves from the negative value of the parameter to the positive one: the case of speakers of a (-SIP) language, English, learning a (+SIP) language, Afrikaans. Her analysis confirms the FTFAH, it is shown that the learners transfer the negative value of the parameter from their L1 in the beginning of L2 learning and it is argued that the advanced learners reset (-SIP) to (+SIP) in Afrikaans L2. The analysis focuses on TECs and OSCs, as lexical verb movement per se cannot be diagnosed in Afrikaans and, in addition, this language has poor morphology. Verb movement is the central property of the split IP parameter (Bobaljik & Thráinsson 1998). The present analysis looks at Romanian L1, a language in which verb movement is easily visible and there is rich morphology, both in terms of agreement and tense. Another important difference from Conradie's (2005) thesis is that in the present study, learners move from the positive value (+) to the negative one (-), arguably from a Superset, more permissive grammar, to a Subset, more restrictive grammar (from Romanian to English), i.e. without clear positive evidence in the L2 that would help them rule out the (+SIP) structures, at least in terms of the structures that are not explicitly taught. This chapter presents the predictions made by the FTFAH with respect to transfer and parameter (re)setting of the split IP parameter by Romanian L1 learners of English as L2, in terms of the properties associated with the SIP parameter, i.e. verb movement, TECs and OSCs.

Chapter 5, *Two studies investigating L2 initial and final states*, provides an analysis of the SIP parameter in the case of adult speakers of a (+SIP) language learning a (-SIP) language, i.e. Romanian learners of English. The predictions of the FTFAH are tested on data coming from adult Romanian learners of English as L2 in a formal instruction environment, in terms of the SIP properties. In particular, the following questions are addressed:

(i)   Is there Full Transfer of the positive value of this parameter in Romanian to English as L2 or is there parameter setting in the L2 just as in the L1, exclusively on the basis of input?

(ii) Is there Full Access to UG in L2?

(iii) Is parameter resetting possible in L2?

In terms of transfer, there is a further question related to the properties of the parameter. Assuming that Romanian only displays a subset of the properties of the SIP parameter, i.e. without TECs and OSCs, another goal is to investigate whether what transfers is the entire abstract set of properties associated with the parameter or only the strict L1 value, i.e. only the properties instantiated in Romanian (strict L1 value transfer).

The present investigation relies on two main studies: a longitudinal study (with further experimental data provided by tasks focusing on verb movement) and an experimental one. The longitudinal study tests the full transfer part of the hypothesis, so it provides an analysis of whether the interlanguage of beginner learners of English shows evidence of (+SIP) structures or (-SIP) structures. The data come from a longitudinal corpus of English as L2 in a Romanian as L1 context. Three Romanian adults who began studying English as L2 were recorded 4 hours per week during English classes for a period of 8 months (a total of approximately 115 hours). Most current studies which test hypotheses related to the initial state rely on experimental data (Conradie 2005, Tsimpli & Dimitrakopoulou 1997, Hawkins & Chan 1997, etc). But in most cases, these studies can only offer a snapshot of the interlanguage of elementary/advanced L2ers at a specific point in their learning process, after having learned the language for at least 5 or 6 months. We believe that longitudinal data have the advantage of offering a more wide-ranging perspective on L2 development from stage zero. The analysis focuses on the properties of the SIP and in particular on the central property of verb movement; but it also points out several related transfer and second language development issues, such as question formation and the early use of lexical and pronominal subjects.

If beginner learners are shown to have (+SIP) structures in L2, this is evidence in favour of the 'full transfer' part of the FTFAH, while if they are shown not to have (+SIP) structures but rather (-SIP) ones, this is evidence that they set the L2 value from the very beginning, with no L1 interference, supporting direct access hypotheses (e.g. Epstein et al. 1996). The longitudinal study also looks at whether beginner learners of English make errors that are similar to those made by English L1 learners. If evidence is found both for transfer and for L1-like acquisition errors/phenomena, this might provide further support for the idea that the process of second language learning is – up to a certain extent – similar to first language acquisition and that, perhaps, the initial state may be represented by more than full L1 transfer. The data in the longitudinal study show that this is indeed the case, i.e. there are transfer errors but there are also errors characteristic of English L1 acquisition, which leads

us to believe that it is not only L1 syntax that accounts for the initial stage but also other options made available by UG. Moreover, learners observe UG principles from early on: they do not produce any "wild" structures. This reinforces the claim made in Chapter 1 that UG constrains L2 learning (at all stages), as well. In terms of the SIP properties, there are few transfer errors attested in the longitudinal data. However, as mentioned before, the context of L2 learning which is investigated is that of formal instruction; therefore, the production of language is controlled and there is a lot of correction. This may account for the low number of errors. The picture offered by experimental data is different. The verb movement experiments show conclusive evidence for transfer, especially with structures that are not explicitly taught, i.e. higher percentages of errors are registered in the case of strict verb-object adjacency[1] (which is not explicitly taught during the early stages) than in the case of sentence-medial adverbs[2], whose position is explicitly taught very early. This indicates that explicit instruction plays a significant role in second language learning, i.e. explicit instruction may, apparently, override transfer, in the sense that structures which are explicitly taught seem to be used target-like from the very beginning. However, this evidence comes mainly from elicited production data. In elicited production, subjects may only produce language that they are confident about, i.e. they may avoid using certain structures. This is why a further experiment using both an elicited production task and a grammaticality judgment one was designed. Grammaticality judgments prove to be better instruments for showing what speakers really know in terms of L2 properties.

The experimental study tests both the full transfer and the full access part of the hypothesis, i.e. both with adult beginner and advanced learners. A group of 23 beginners, 35 advanced learners and 11 English native controls participated in an experiment which consisted of a grammaticality judgment task and a sentence manipulation task. The data from the beginners show clear transfer of L1 SIP properties. With advanced learners, we have a more complex picture. Two groups of subjects were tested in order to further explore the issue of explicit instruction revealed by the longitudinal study: a group of 24 students in English language and linguistics (Ls), i.e. students who had extensive explicit instruction, and a group of 11 advanced subjects who were not exposed to such extensive explicit instructions (NLs). Their level was determined according to the Oxford Placement Test (Allan 1994/2004) so that the two groups were similar in terms of their proficiency in English. The results from the Ls

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[1] e.g. *I like very much pizza.
[2] e.g. *I eat often apples.

group were better than the NLs group in terms of their performance on grammaticality judgments. In particular, the results showed that Ls perform similarly to the native controls on the test items, while the NLs still showed evidence of L1 properties in their interlanguage, especially in terms of verb movement. Therefore, explicit and extensive instruction is argued to account for the differences in performance between the two advanced groups. Explicit instruction may compensate for the poverty of the stimulus and boost the process of instructed second language learning.

An important result obtained in terms of transfer of SIP properties is that no TECs or OSCs are attested in the longitudinal study and they are overall rejected in the grammaticality judgments. This indicates that it is only the value of the SIP parameter as instantiated in the L1 that transfers and not the entire abstract cluster of properties (strict L1 value transfer).

In terms of the full access part of the hypothesis, none of the structures produced by the subjects in any study represents a violation of Universal Grammar; all the errors that are attested are possible structures. This adds to the other arguments in favour of UG in L2 and therefore, it is argued that there is full access to UG in second language learning at all stages.

Summing up, in terms of the hypothesis that is tested by this thesis (FTFAH), the predictions are partially confirmed. With reference to the initial stage, the FTFAH predicts that this will only be represented by L1 syntax. Our data show that the initial stage includes both L1 syntax (i.e. there is transfer) and other options made available by UG, i.e. the learners produce errors that are attested in English L1 acquisition as well (stage zero of L2 learning does not include L1 transfer alone). UG is directly available at all stages, stage zero included.

The split IP parameter, as defined in Bobaljik &Thráinsson (1998) includes a set of properties: distinct morphological markers for tense and agreement, two functional projections corresponding to tense and agreement, i.e. a split IP, multiples specifier positions for subject and object. We argue in Chapter 3 that in Romanian the value of the parameter is positive, but not all the properties associated with a positive value of SIP are instantiated in this language. Our L2 data show that only the properties associated with the positive value of the SIP parameter that are instantiated in the L1 transfer and not the entire abstract set of properties associated with it. If our analysis is on the right track, it indicates – more generally – that transfer from L1 does not include transfer of the abstract value of parameters but only of those structures which reflect parameter setting in L1.

With reference to the prediction related to full access in UG, the data show that there are no UG violations at any learning stage and all the

structures produced by L2 learners are UG-constrained both in terms of principles and parameters, even though L1 and L2 parameter values may fluctuate. As a result, the present book argues in favour of full access to UG at all stages of L2 learning.

Related to parameter resetting, we start from the idea that full access to UG should not be necessarily interpreted as entailing parameter (re)setting in L2. If UG is part of our biological endowment, its principles and parameters should be available at all times. Actually, our data indicate that there is direct access to UG at all stages of L2 learning. What may change (possibly due to maturation) is the way in which parameter values are set. The data from the advanced L2 learners show a difference in performance between subjects who have received an important amount of extensive explicit instruction and subjects who have not. Moreover, all advanced subjects perform differently from native speakers in some respects. This leads us to believe that even though the advanced L2 learners produce target-like structures, their knowledge might be different from that of native speakers. The difference is more obvious in the case of grammaticality judgments. The analysis of the experimental data suggests that in L2 learning we may not deal with parameter (re)setting but rather with parameter learning. This idea is not new. The distinction between language acquisition and language learning has often been invoked in the generative literature and it has been argued that parameters cannot be reset in L2 (see Tsimpli and Roussou 1991). What we have tried to focus on is that L2 learning involves direct access to UG at all times but parameter values are not set as in L1 acquisition. The L2 learner fluctuates between the L1 and the L2 value of the parameter. An important finding (which is not actually surprising in any way) is that explicit instruction boosts the process of L2 learning and helps the L2er learn the value of the parameter, often in relation with (a) specific structure(s). However, this does not always lead to native-like knowledge of other structures (which have not been explicitly taught yet) that reflect the same parameter value, as is expected to happen in the case of parameter setting in L1. If in L1 acquisition, once a parameter has been set, the child will use all the structures which reflect the value of that parameter correctly, it seems that, in L2 learning, the L2 learner proceeds 'structure by structure' and, possibly, sets the value of the parameter after having learned all the structures associated with that particular value.

In terms of the more general research question addressed in this study, i.e. whether the three factors argued to be involved in first language design (Chomsky 2005) play the same part in second language design as well, it is shown that the three factors are involved in instructed second language

learning but there are some differences as to how they operate. Firstly, it is shown that genetic endowment, UG, constrains instructed second language learning: the interlanguage of L2 learners is UG-constrained at all stages, both in terms of principles and in terms of parameters. Secondly, in terms of experience, it is shown that this is crucially different from L1 acquisition in several respects, among which the fact that, in this case, experience consists of L2 input and knowledge of L1. Experience also refers to the actual process of learning, so another difference is that instructed second language learning is a conscious process unlike L1 acquisition. Thirdly, third factors (not specific to language) are shown to operate in instructed L2 learning, most notably explicit instruction is shown to impact on parameter (re)setting.

In conclusion, the book argues that there is a coalition of factors that underlie instructed second language learning: genetic endowment (similarly to L1, the L2 interlanguage observes UG principles at all stages; both L1 and L2 parameter options are available simultaneously and this impacts on the process of parameter (re)setting), experience, which crucially includes knowledge of L1 along with L2 input and "third" factors, among which explicit instruction plays a prominent role.

CHAPTER ONE

HOW MANY FACTORS IN (INSTRUCTED) SECOND LANGUAGE DESIGN?

1.1. Introduction

This chapter explores the role of several factors which underlie instructed[1] second language learning. One such factor which has been the focus of much research in the generative tradition is Universal Grammar (UG). This is based on the assumption that since UG is the main factor accounting for first language acquisition, it should play the same/a similar part in second language acquisition too. In particular, UG is claimed to be the initial state of first language acquisition and to provide a general blueprint for acquisition in terms of the principles and possibilities underlying individual languages. As a result, in L2, we may expect UG to operate similarly, i.e. L2 learning should be possible, in principle, solely on the basis of positive input and via access to UG. But L2 learning proceeds *after* the L1 is acquired, thereby introducing a major difference from L1 acquisition. Whether UG is still available in L2, what other factors may play a role and how L1 impacts on L2 learning are some of the issues explored in this chapter.

UG is only one of the three factors involved in "language design" (Chomsky 2005), along with experience and non-language specific principles. In this chapter, I present the "three factors in language design" and then continue with discussing them in the context of L2. The question is whether these factors play the same part in L2 acquisition as in L1 and, moreover, whether there are other factors that interact in L2 design.

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[1] The difference between instructed second language learning and naturalistic second language learning relates to the nature of the input on the one hand and the process of learning/acquisition on the other. While in instructed second language learning we usually deal with classroom environment, in naturalistic second language learning the nature of the input and of the process can be quite different – L1 is not usually present in the input at all any longer and the learner has no explicit instruction.

Considering some major issues in second language acquisition, such as L1 influence or transfer and affective factors, it can be argued that there may be several other factors playing a part in L2 besides the ones which are relevant in L1. The three factors which are involved in L1 design may be conceived of differently in L2. Since UG is an important factor, I will present the main theories of access to UG in second language acquisition in the generative tradition.

The structure of the chapter is as follows: in section 2 I present the three factors associated with first language acquisition, namely genetic endowment (arguments in favour of UG), experience – the role of the input, the no negative evidence hypothesis, and the role of non-linguistic principles in language acquisition; in section 3 I discuss these factors in L2 learning; in section 4 I provide a review of the main theories related to the operation of the first factor in L2, i.e. access to UG theories; section 5 summarizes the conclusions.

1.2. Three factors in Language Design

In the framework of language as a biological component of the human mind, the language faculty is assumed to have the properties of other biological systems, i.e. the biolinguistic framework (Chomsky 2005). "Language is a state of some component of the mind", whose main task is to generate linguistic expressions. Chomsky (2005) proposes a theory in which the three factors that combine in language design are **genetic endowment**, **experience** and **non-language specific** principles:

> "1. **Genetic endowment**, apparently nearly uniform for the species, which interprets part of the environment as linguistic experience (…)
> 2. **Experience**, which leads to variation, within a fairly narrow range, as in the case of other subsystems of the human capacity and the organism generally.
> 3. **Principles** not specific to the faculty of language."
> The third factor is composed of :
> "(a) **principles of data analysis** that might be used in language acquisition **and other domains**;
> (b) **principles of structural architecture and developmental constraints** (…)." (Chomsky 2005, 6)

Previously, in terms of the third factor above, general learning mechanisms were assumed to play a part in language acquisition:

> "the properties of the mind/brain include several principles of the language faculty: the availability of complex constructions with an embedded

clausal complement, the embedded clause property with its open parameter etc. (…) **There may or may not be general learning mechanisms involved in these processes**.." (Chomsky 1988)

Notably, it is for the first time when other factors, besides genetic endowment and linguistic input are explicitly mentioned as relevant for the acquisition process. Moreover, these factors are, also explicitly, defined as non-language specific. One class of non-language specific factors is the class of developmental constraints. However, one has to mention that these constraints have been explored in the acquisition literature: Chomsky (1965) mentioned "maturational stages", Wexler (1998) and Rizzi (1993), etc. Now the "third factor" is presented as principles not specific to the faculty of language and further decomposed into a set of principles of data analysis and principles of structural architecture and developmental constraints. Previously, it was the interaction of input and the language acquisition device alone that led to language acquisition:

"The interaction of these factors produces a system of knowledge that is represented in the mind/brain, as the mature state of the language faculty. This system of knowledge provides the interpretation of linguistic expressions, including new ones that the child learning the language has never heard." (Chomsky 1988)

This theory is an attempt at answering two of the major questions in the study of language, in particular "Plato's problem" of the underdetermined input, also known as the logical problem of acquisition, and the developmental problem:

1. How can human beings who are exposed to an environmental linguistic stimulus, which is "impoverished, unstructured and fairly random" (Hornstein and Lightfoot 1981,13) acquire a rich system of knowledge which is structured and, by all means, non-random? This problem has been known in the literature as *the logical problem of language acquisition* (Baker and McCarthy 1981, Hornstein and Lightfoot 1981), as *the poverty of the stimulus* or as *Plato's problem* (Chomsky 1986, 1988 in Avram 2002);

2. The *developmental problem* (Felix 1984) which is related to the question of "why natural languages are acquired the way they are, i.e. how can the regularities that have been observed in real-time acquisition processes be explained?" (Felix 1984,133 in Avram 2002).

The three factors which may account for language acquisition have also been formulated as Universal Grammar, *input* and non-language specific mechanisms, all three playing crucial roles in language development. Currently, it is a working assumption that these three factors (with a more complex third one) account for language acquisition.

1.2.1 Genetic endowment

Genetic endowment known as Universal Grammar is the major factor accounting for language acquisition. Rather than conceiving of acquisition as the mere process of copying from the input and replicating the language, the theory of UG offers an account of the poverty of the stimulus problem and of the creativity issue as well, i.e. it helps explain why it is possible to acquire a structured language system on the basis of poor input alone and also why it is possible to produce structures that are not present in the input. Thus, the UG is argued to be innate, part of our genetic endowment, specifically language related:

> "Genetic endowment (…) interprets part of the environment as language experience and determines the general course of development of the language" It also includes "computational limitations which disappear through genetically timed maturation". "Genetic endowment, Universal Grammar is the initial stage of acquisition, a core theory of language, which underlies language acquisition, i.e. it permits the language acquirer to develop a language on the basis of exposure to input. It "must provide, first, a structured inventory of possible lexical items that are related to or perhaps identical with the concepts that are the elements of 'cognoscitive powers'(…); and second, means to construct from these lexical items the infinite variety of internal structures that enter into thought, interpretation, planning…"(Chomsky 2005, 6).

In other words, UG offers the possibilities and limitations of what the target language can and cannot be, helping the child acquire the language effortlessly.

In the Principles and Parameters framework, UG includes invariant principles, that is, principles that are generally valid across languages, as well as parameters, which account for variation from language to language. Such principles include the projection principle, structure dependence, subjacency, etc. Examples of parameters are the null subject parameter or V2.

Among others, UG accounts for certain properties of language which are too abstract, subtle and complex to be acquired without assuming some innate and specifically linguistic constraints on grammars and grammar

acquisition. Such subtle properties of language include the structure-dependence principle or anaphoric relations.

The principle of structure-dependence stipulates that sentences have hierarchical structure and, as a result, syntactic operations are hierarchical, not linear, i.e. they are dependent on structure and not on linear ordering. The example of YES/NO questions illustrates this principle:

(1) a. Bob is clever. / Is Bob clever?
     b. You are hungry. / Are you hungry?
     c. You can follow me. / Can you follow me?
     d. The boy who is passing by is my brother.
     e. *Is the boy who – passing by is my brother?
     f. Is the boy who is passing by my brother?

<div align="right">(examples from Avram 2002)</div>

If one analysed the empirical data "linearly", one would reach the conclusion that in order to form questions in English, one needs to front the first/leftmost verbal element. This is a linear order rule. However, the examples in (d), (e) and (f) clearly show that the rule is actually structure dependent. Experimental data (Crain 1991) show that children observe the structure-dependence principle in experiments, without making mistakes involving linear order rules; the rule is not evident in the input and is not taught either. Therefore it must be part of genetic endowment.

Another construction that seems to be acquired in the absence of experience is "wanna contraction". Consider the following examples:

(2) a. Who$_i$ do you want to see t$_i$?
     b. Who$_i$ do you **wanna** see t$_i$?
(3) a. Who$_i$ do you want t$_i$ to kiss you?
     b. *Who$_i$ do you **wanna** t$_i$ kiss you?

<div align="right">(examples from Avram 2002)</div>

While 2b is grammatical as it involves DO wh extraction, 3b is ungrammatical. The trace left behind by the moved "who" subject blocks the contraction between "want" and "to".

There is experimental evidence (Crain 1991) that children do not make such errors and consequently that they have knowledge of such subtle principles which cannot be explained simply by observing the input and making generalizations and analogies.

Other experimental data (Crain 1991) focusing on backward anaphora also suggest that children do have knowledge of abstract and subtle principles of the language, which cannot be explained by means of

analogy, generalization or other general learning mechanisms. Such data represent evidence in favour of the innate character of the language faculty.

White (2003) provides an overview of the main arguments for a biological basis to L1 acquisition – among the most important, she mentions the fact that the language capacity is species specific and the ability to acquire language is independent of intelligence. Furthermore, the pattern of acquisition is relatively uniform and the process happens with relative ease and rapidity. Moreover, children show creativity which goes beyond the input they are exposed to.

Further arguments in favour of the biological basis of language come from studies which show that infants can make a distinction between linguistically-relevant and nonlinguistic signs (Mehler & Bertoncini 1983 in Avram 2002), they are able to distinguish their mother tongue from other languages (Mehler et al. 1986 in Avram 2002), are sensitive to word-boundaries well before they can actually speak (Gleitman et al. 1988 in Avram 2002), as well as to linguistic stress, vowel duration, rising and falling intonation. The idea that there is a biological programme for language acquisition is also supported by facts about language development: there is an orderly progression of stages, i.e. children acquire structures in a distinct sequence, there is a critical age beyond which our ability to acquire language is significantly impaired or, at least, significantly reduced and it has also been assumed that parameters are subject to maturation. All these facts suggest that language development is analogous to other biologically triggered phenomena.

All of the above conclusively point to an overwhelming role for the genetic factor in L1 along with experience and non-language specific principles. However, the innateness hypothesis that language is part of our biological endowment does not deny the role of experience or environment nor does it deny the contribution of other cognitive principles.

1.2.2. Experience

One of the most important issues with respect to the role of experience in language acquisition is the issue of the input, as it has been shown to be the most crucial among other factors of experience, such as social environment, formal instruction etc.

It has been shown that the linguistic input that children receive consists of primary linguistic data (PLD) which may be limited, incomplete or "deficient". Moreover, children are rarely corrected with respect to

language and more often in terms of content or the truth of their assertions. When linguistic corrections do occur, they are very often without success; children continue to make mistakes (Morgan and Travis 1989 in Avram 2002). Importantly, the same studies reveal that adults simply offer correct versions of the mistakes which children make, so again it is positive evidence which helps children correct their language. Another important point to be made is that the frequency of the "linguistic" corrections is too low and inconsistent to be essential for language acquisition. (Morgan and Travis 1989 in Avram 2002)

In other words, there is no direct information in the input regarding ungrammatical, 'illicit' language. This has been called "the no negative evidence" hypothesis, pointing to the fact that even though linguistic input does not normally or frequently enough or consistently provide information about ungrammatical language, the children somehow "know" that some structures are possible while others are not.

However, it is reasonable to assume that the input provides some sort of 'indirect negative evidence':

> "A not unreasonable acquisition system can be devised with the operative principle that if certain structures or rules fail to be exemplified in relatively simple expressions, where they would be expected to be found, then a (possibly marked) option is selected excluding them in the grammar, so that a kind of 'negative evidence' can be available even without corrections, adverse reactions, etc." (Chomsky 1981 in Avram 2002.)

For example, English children produce sentences like "Eat apples" in the beginning. This would mean wrongly hypothesizing English as a (+ null subject) language. The fact that they will not hear such null subject structures in the adult language constitutes *indirect negative evidence* that the child is using in order to set this parameter according to the target language, i.e. (- null subject).

While input alone cannot explain language acquisition, it is by all means a very important factor and cannot be considered irrelevant. The main role of the input is to offer sufficient positive evidence for the language acquirer to set the correct values of the parameters. The interaction between input and the language acquisition device (together with non-linguistic cognitive principles) will have as a result a system such as a language.

More recently, following Chomsky's (2005) proposal of "experience" as one of the three factors in language design, Yang (2010) proposes that this interaction between input and the language acquisition device can be

viewed as a task of **selection** of the relevant options from UG and **evaluation** of these options against data coming from experience:

> "Learning the target grammar involves the process of **selection** which eliminates grammatical hypotheses not attested in the linguistic environment (…)." Then, "the child's task is one of **evaluation**: decision making processes that determine the scope of inductive generalizations based on the input yet still 'within a fairly narrow range'." (Yang 2010, 1161)

So, it may be argued that input in L1 provides a basis for the process of selection and evaluation by offering positive evidence and facilitating communication.

Besides input, this second factor, experience, will also contain everything that "happens" during the course of acquisition, therefore, we may also include here factors such as environment and opportunities for using the language which are assumed and therefore not under discussion in first language acquisition but not in L2. If it is obvious in L1 that the child will move from exposure to input to using the language actively, the frequency of L2 use by the learner is a potential intervening factor in second language acquisition, with many learners stuck in the exposure phase. Furthermore, L1 may be considered part of this second factor, of experience, in L2. These issues will be discussed further in the following sections.

1.2.3. The role of principles not specific to the language faculty

There seem to be two main types of principles involved, namely principles of data analysis and principles of structural architecture and developmental constraints. Although, in this framework, the acquisition is viewed as the result of the interaction of the three factors, the first two have more to do with the prerequisites for acquisition and the latter with the process itself, the development. This third factor is stated to be non-linguistic as opposed to the other two.

As a result, discussion of the third factor will have to take into account non-linguistic, developmental, learnability issues which have been developed mainly in psychology or at the border between cognitive linguistics and psychology.

What Chomsky (2005) seems to be suggesting is that the learning principles are of a general nature, used in other domains besides language too: