1 Universal Grammar and language acquisition

1.1 Introduction

This book will be concerned with characterizing and explaining the linguistic systems that second language (L2) learners develop, considering in particular the extent to which the underlying linguistic competence of L2 speakers is constrained by the same universal principles that govern natural language in general. Following Chomsky (1959, 1965, 1975, 1980, 1981a, b, 1986b, 1999), a particular perspective on linguistic universals will be adopted and certain assumptions about the nature of linguistic competence will be taken for granted. In particular, it will be presupposed that the linguistic competence of native speakers of a language can be accounted for in terms of an abstract and unconscious linguistic system, in other words, a grammar, which underlies use of language, including comprehension and production. Native-speaker grammars are constrained by built-in universal linguistic principles, known as Universal Grammar (UG).

Throughout this book, non-native grammars will be referred to as *interlanguage grammars*. The concept of interlanguage was proposed independently in the late 1960s and early 1970s by researchers such as Adjémian (1976), Corder (1967), Nemser (1971) and Selinker (1972). These researchers pointed out that L2 learner language is systematic and that the errors produced by learners do not consist of random mistakes but, rather, suggest rule-governed behaviour. Such observations led to the proposal that L2 learners, like native speakers, represent the language that they are acquiring by means of a complex linguistic system.

The current generative linguistic focus on the nature of interlanguage has its origins in the original interlanguage hypothesis. Explicit claims are made about the underlying grammars of L2 learners and L2 speakers, the issues including a consideration of the role of UG and the extent to which interlanguage grammars exhibit properties of natural language. Such questions will be explored in detail in this book. It will be suggested that the linguistic behaviour of non-native speakers can be accounted for in terms of interlanguage grammars which are constrained by principles and parameters of UG. At the same time, it will be recognized

that interlanguage grammars differ in various ways from the grammars of native speakers, and some of these differences will be explored.

1.2 Universal Grammar in L1 acquisition

A major task for the first language (L1) acquirer is to arrive at a linguistic system which accounts for the input, allowing the child to build linguistic representations and to understand and produce language. UG is proposed as part of an innate biologically endowed language faculty (e.g. Chomsky 1965, 1981b; Pinker 1984, 1994), which permits the L1 acquirer to arrive at a grammar on the basis of linguistic experience (exposure to input). UG provides a *genetic blueprint*, determining in advance what grammars can (and cannot) be like. In the first place, UG places requirements on the form of grammars, providing an inventory of possible grammatical categories and features in the broadest sense, i.e. syntactic, morphological, phonological and semantic. In addition, it constrains the functioning of grammars, by determining the nature of the computational system, including the kinds of operation that can take place, as well as principles that grammars are subject to. UG includes invariant principles, that is, principles that are generally true across languages, as well as parameters which allow for variation from language to language.

Throughout this book it will be presupposed that UG constrains L1 acquisition, as well as adult native-speaker knowledge of language. That is, grammars of children and adults conform to the principles and parameters of UG. The child acquires linguistic competence in the L1. Properties of the language are mentally represented by means of an unconscious, internalized linguistic system (a grammar). As Chomsky (1980: 48) puts it, there is : 'a certain mental structure consisting of a system of rules and principles that generate and relate mental representations of various types'.[1]

UG constitutes the child's initial state (S_0), the knowledge that the child is equipped with in advance of input. The primary linguistic data (PLD) are critical in helping the child to determine the precise form that the grammar must take. As the child takes account of the input, a language-specific lexicon is built up, and parameters of UG are set to values appropriate for the language in question. The grammar (G) may be restructured over the course of time, as the child becomes responsive to different properties of the input. In due course, the child arrives at a steady state grammar for the mother tongue (S_S). This model of acquisition is schematized in figure 1.1.

As linguistic theories such as Government–Binding (Chomsky 1981a), Minimalism (Chomsky 1995) or Optimality Theory (Archangeli and Langendoen 1997)

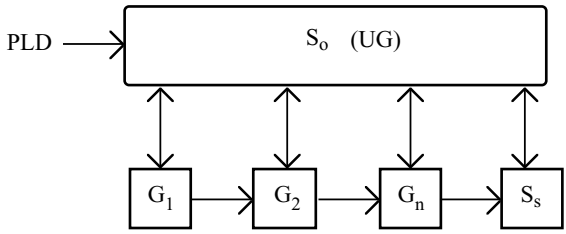

Figure 1.1 *Model of L1 acquisition*

have developed, there have been changes in how universal principles and parameters have been formalized, in other words, changes in what UG is assumed to consist of. For example, the numerous and very specific principles of the early days of generative theory, such as many of the original *Island Constraints* (Ross 1967), have been replaced with more general, invariant economy principles (e.g. Chomsky 1991), as well as computational operations, such as *Move* and *Merge* (see Marantz 1995). Parameters have gradually become more constrained, now being largely associated with the lexicon: properties of items that enter into a computation, for example, may vary in feature composition and feature strength, with associated syntactic consequences.

Such ongoing changes in the definition of UG are a reflection of development and growth within linguistic theory. Nevertheless, regardless of how UG is formalized, there remains a consensus (within the generative linguistic perspective) that certain properties of language are too abstract, subtle and complex to be acquired without assuming some innate and specifically linguistic constraints on grammars and grammar acquisition. Furthermore, there is fairly widespread agreement as to what these problematic phenomena are. This issue will be considered in more detail in the next section.

1.3 Why UG? The logical problem of language acquisition

The arguments for some sort of biological basis to L1 acquisition are well-known (e.g. Aitchison 1976; Chomsky 1959, 1965, 1981b, 1986b; O'Grady 1997; Pinker 1994): the language capacity is species specific; ability to acquire language is independent of intelligence; the pattern of acquisition is relatively uniform across different children, different languages and different cultures; language is acquired with relative ease and rapidity and without the benefit of instruction; children show creativity which goes beyond the input that they are exposed to. All of these observations point to an innate component to language acquisition. However, it

is conceivable that an innate capacity for language acquisition could be general rather than domain specific and that cognitive principles not unique to language might be implicated (for relevant proposals, see O'Grady 1987, 1996, 1997, 2003). Thus, it is important to understand the arguments in favour of an innate component that is specifically linguistic in character.

UG is motivated by learnability arguments: the primary linguistic data underdetermine unconscious knowledge of language in ways which implicate specifically linguistic principles. In other words, there is a mismatch between the input (the utterances that the child is exposed to), and the output (the unconscious grammatical knowledge that the child acquires). This mismatch gives rise to what is known as the problem of the *poverty of the stimulus* or the *logical problem of language acquisition*. Given such underdetermination, the claim is that it would be impossible to account for the L1 acquirer's achievement without postulating a built-in system of universal linguistic principles and grammatical properties (Baker and McCarthy 1981; Hornstein and Lightfoot 1981). UG, then, is proposed as an explanation of how it is that language acquirers come to know, unconsciously, properties of grammar that go far beyond the input in various respects. The idea is that such properties do not have to be learned; they are part of the 'advance knowledge' that the child brings to bear on the task of acquiring a language.

The child's linguistic experience includes what is known as *positive evidence*; that is, the primary linguistic data include utterances that in some sense reveal properties of the underlying grammar (but see chapter 5). *Negative evidence*, or information about ungrammaticality, is not (reliably) available. Nevertheless, children come to know that certain sentence types are disallowed; furthermore, they acquire knowledge that certain interpretations are permitted only in certain contexts (see section 1.3.1). This kind of knowledge is acquired even though children are not taught about ungrammaticality, explicitly or implicitly.

1.3.1 An example: the Overt Pronoun Constraint

As an example of abstract knowledge which children successfully acquire despite an underdetermination problem, we consider here subtle interpretive phenomena relating to subject pronouns. It will be suggested that these properties could not be acquired solely on the basis of input; rather, a universal linguistic principle is implicated.

Languages differ as to whether or not subject pronouns must be phonetically realized, that is whether pronouns are overt or null (Chomsky 1981a; Jaeggli 1982; Rizzi 1982). In languages like English, known as [−null subject] languages, pronouns must be overtly expressed, as can be seen by comparing (1a) and (1b).

However, in *null subject* or *prodrop* languages (in other words, [+null subject] languages), pronouns may be null, taking the form of an empty category, *pro*. Typical examples are Romance languages like Spanish and Italian, as well as East Asian languages such as Chinese, Japanese and Korean. The Spanish example in (1c) and the Japanese example in (1d) illustrate this point. (Spanish examples in this section are drawn from Montalbetti (1984); Japanese examples come from Kanno (1997).)

(1) a. John believes that he is intelligent.
b. *John believes that _ is intelligent.
c. Juan cree que _ es inteligente.
John believes that is intelligent.
'John believes that (he) is intelligent.'
d. Tanaka-san wa _ kaisya de itiban da to itte-iru.
Tanaka-Mr TOP company in best is that saying-is
'Mr Tanaka says that (he) is the best in the company.'

It is not the case that null subject languages require all pronouns to be unexpressed: both overt and null subject pronouns are possible. However, as described below, overt and null pronouns do not occur in identical contexts and there are subtle restrictions on their distribution.

The particular restriction at issue here relates to pronominal subjects of embedded clauses, as in (1). There are interesting differences between [± null subject] languages in terms of what can serve as a potential antecedent for the pronoun, in other words, limitations on what the pronoun may refer to. In particular, there are restrictions on when it is possible for a pronoun to have a quantified expression (such as *everyone, someone, no one*) or a *wh*-phrase (e.g. *who, which*) as its antecedent.

In the following examples, the lower, or embedded, clause has a pronoun subject, with the main clause subject serving as a potential antecedent of that pronoun. In English, an overt pronoun in an embedded clause can be interpreted as coreferential with a referential NP in the main clause. As shown in (2), the subject of the embedded clause, *she*, refers to the matrix clause subject, *Mary*. (Where expressions are coindexed with the same subscripts, coreference is intended; different subscripts indicate disjoint reference.)

(2) [Mary$_i$ thinks [that she$_i$ will win]]

It is also possible for the pronoun subject of the lower clause to have a quantified phrase in the main clause as its antecedent, as in (3a), or a *wh*-phrase, as in (3b).

(3) a. [Everyone$_i$ thinks [that she$_i$ will win]]
b. [Who$_i$ thinks [that she$_i$ will win?]]

To get the relevant interpretations, imagine a room full of women about to take part in a race. In (3a), every person in the room thinks herself a likely winner: *she*, then, does not refer to a particular individual. The same thing applies in (3b): there can be many people, each of whom thinks herself a likely winner. In such cases, the pronoun is said to receive a *bound variable* interpretation.

In the examples so far, the pronoun in the embedded clause is interpreted in terms of some other NP within the same sentence, either a referential NP, as in (2), or a quantified expression or *wh*-phrase, as in (3). In addition, a pronoun can refer to some other person in the discourse altogether. This is true whether the matrix subject is a referring expression or a quantified expression, as shown in (4), where the pronoun subject of the lower clause refers to another individual, *Jane*.

(4) a. Jane$_j$ is a great athlete. [Mary$_i$ thinks [that she$_j$ will win]]
b. Jane$_j$ is a great athlete. [Everyone$_i$ thinks [that she$_j$ will win]]
c. Jane$_j$ is a great athlete. [Who$_i$ thinks [that she$_j$ will win?]]

Note that, in principle, a sentence like *Everyone thinks that she will win* is ambiguous, with *she* being interpretable either as a variable bound to the quantifier *everyone* (as in (3a)) or as referring to a particular person, such as *Jane*, as in (4b). Similarly, *Mary thought that she would win* is ambiguous, with *she* referring to *Mary* or to some other individual. Usually, the context will favour one of the potential interpretations.

To summarize so far, embedded subject pronouns in [−null subject] languages like English can have referential or quantified NPs within the same sentence as antecedents, as well as being interpretable with discourse antecedents. In [+null subject] languages, on the other hand, it is not the case that any embedded pronominal subject can take a quantified antecedent: overt and null pronouns behave differently in this respect, as described below.

Embedded null subjects in [+null subject] languages behave very similarly to English overt subject pronouns. That is, the null subject of an embedded clause can take either a referential or a quantified expression in the main clause as its antecedent; in other words, a null pronoun can be interpreted as a bound variable.[2] This is illustrated in (5) for Spanish and in (6) for Japanese; the (a) examples show referential antecedents and the (b) examples show quantified/*wh*-phrase antecedents.

(5) a. [Juan$_i$ cree [que *pro*$_i$ es inteligente]]
John$_i$ believes that (he$_i$) is intelligent
b. [Nadie$_i$ cree [que *pro*$_i$ es inteligente]]
Nobody$_i$ believes that (he$_i$) is intelligent

(6) a. [Tanaka-san$_i$ wa [*pro*$_i$ kaisya de itiban da to] itte-iru]
Tanaka-Mr$_i$ TOP (he$_i$) company in best is that saying-is
'Mr Tanaka says that (he) is the best in the company.'
b. [Dare$_i$ ga [*pro*$_i$ kuruma o katta to] itta no?]
Who$_i$ NOM (he$_i$) car ACC bought that said Q
'Who said that (he) bought a car?'

Overt pronouns in [+null subject] languages, on the other hand, are more restricted than null pronouns; furthermore, they are more restricted than overt pronouns in [−null subject] languages. In particular, while an overt pronoun subject of an embedded clause in Spanish or Japanese can take a sentence-internal referential antecedent, it cannot have a quantified expression or *wh*-phrase as its antecedent. In other words, an overt pronoun cannot receive a bound variable interpretation. This contrast is shown in (7) for Spanish and in (8) for Japanese.

(7) a. Juan$_i$ cree [que él$_i$ es inteligente]
John$_i$ believes that he$_i$ is intelligent
b. *Nadie$_i$ cree [que él$_i$ es inteligente]
Nobody$_i$ believes that he$_i$ is intelligent

(8) a. Tanaka-san$_i$ wa [kare$_i$ ga kaisya de itiban da to] itte-iru
Tanaka-Mr$_i$ TOP he$_i$ NOM company in best is that saying-is
'Mr Tanaka is saying that he is the best in the company.'
b. *Dare$_i$ ga [kare$_i$ ga kuruma o katta to] itta no?
Who$_i$ NOM he$_i$ NOM car ACC bought that said Q
'Who said that he bought a car?'

In both Spanish and Japanese, overt and null pronouns can refer to someone else in the discourse, just like overt pronouns in English.[3] Thus, a sentence with a quantified expression as the main-clause subject and with a null subject in the embedded clause is potentially ambiguous; the null subject may either be bound to the quantifier, as in (5b) or (6b), or may refer to some other individual in the discourse. In contrast, a sentence with a quantified phrase as the main-clause subject and an embedded overt-pronoun subject is not ambiguous, since the bound variable interpretation is not available (see (7b) and (8b)); only an antecedent elsewhere in the discourse is possible.

The relevant differences between languages like Spanish and Japanese and languages like English are summarized in table . Crucially, overt subject pronouns in [+null subject] languages cannot take quantified antecedents, whereas null subjects can, as can overt pronouns in [−null subject] languages. In other respects, overt and null pronouns behave alike, permitting referential and discourse antecedents. Adult native speakers of [+null subject] languages unconsciously know

Table 1.1 *Antecedents for embedded subject pronouns*

	[+Null subject] languages		[−Null subject] languages
	Null pronouns	Overt pronouns	Overt pronouns
Referential antecedents	yes	yes	yes
Quantified antecedents	yes	no	yes
Discourse antecedents	yes	yes	yes

this restriction on antecedents for overt pronouns, that is, they know that overt pronouns cannot serve as bound variables.

The question then arises as to how such knowledge is acquired by native speakers of null-subject languages. This situation constitutes a learnability problem, in that there is a mismatch between the adult knowledge and the kind of data that the child is exposed to. The phenomenon in question is very subtle. The input is surely insufficient to alert the child to the relevant distinction. For one thing, utterances involving quantified antecedents are likely to be relatively infrequent. Furthermore, in many cases, overt and null pronouns permit the same kinds of antecedents (see table 1.1), so it is unlikely that the absence of overt pronouns with quantified antecedents under the relevant interpretation would be detected. A further complication is that there is nothing ungrammatical about these particular surface forms; sentences like (7b) and (8b) are grammatical on the interpretation where there is disjoint reference between the embedded pronoun subject and the main clause subject. What the child has to discover is that sentences like (7b) or (8b) are ungrammatical on the other interpretation. Negative evidence is unlikely to be available; it is implausible that L1 acquirers would produce utterances incorrectly using overt pronouns with quantified antecedents, with intended coreference, and then be provided with implicit or explicit feedback as to their ungrammaticality.

It is on grounds such as these that linguists have argued that certain properties of grammar must be innately specified. In the present case, knowledge of the distinction between overt and null pronouns is argued to be built in as a universal constraint, a principle of UG. Montalbetti (1984) proposed the Overt Pronoun Constraint in part to account for the differences described above. This constraint holds true of null-argument languages in general, including languages unrelated to each other, such as Spanish and Japanese. The Overt Pronoun Constraint is given in (9) (based on Montalbetti 1984):

(9) Overt Pronoun Constraint: overt pronouns cannot receive a bound variable interpretation (i.e. cannot have quantified or *wh*-antecedents), in situations where a null pronoun could occur.[4]

To summarize, the distinction in the behaviour of overt and null pronouns with respect to the kinds of antecedents that they permit provides an example of a poverty of the stimulus situation: the unconscious knowledge that adult native speakers have of these properties is extremely subtle. It is implausible that the child could induce such restrictions from the input alone. In consequence, it is argued that this knowledge must stem from a principle of UG, the Overt Pronoun Constraint.

This is just one example of the kind of abstract knowledge that is attributed to UG. The linguistic literature is full of many other cases, for example, constraints on the distribution of reflexives (Binding Principle A) (Chomsky 1981a), constraints on the distribution of empty categories (the Empty Category Principle) (Chomsky 1981a), and constraints on *wh*-movement (Subjacency) (Chomsky 1977). As mentioned in section 1.2, linguistic theory has developed over time and the formulation of many of the proposed principles of UG has changed. In this book, we will not be concerned with the precise technical details as to how UG principles have been formulated and reformulated. Rather, the crucial question here is the identification of linguistic knowledge that could not arise from the input alone and that requires the postulation of innate principles.

As we shall see in chapter 2, the same general issue arises in the context of L2 acquisition. That is, it appears that L2 learners are also faced with a poverty of the stimulus, namely the L2 stimulus (Schwartz and Sprouse 2000a, b; White 1985a, 1989), and that their interlanguage competence goes beyond the input that they are exposed to. Hence, the question arises as to whether interlanguage grammars are constrained by UG, an issue which will be a major focus of this book.

1.4 Parameters of Universal Grammar

In addition to universal principles, UG includes principles with a limited number of built-in options (*settings* or *values*), which allow for crosslinguistic variation. Such principles are known as *parameters*. Most parameters are assumed to be binary, that is, they have only two settings, the choices being predetermined by UG. L1 acquisition consists, in part, of setting parameters, the appropriate setting being triggered by the input that the child is exposed to. A central claim of parameter theory, as originally instantiated in the Principles and Parameters framework, is that a single parameter setting brings together a cluster of apparently disparate syntactic properties (Chomsky 1981a). This, for example, was part of the rationale for the Null Subject Parameter, which related the possibility of null subjects to other syntactic and morphological properties found in null subject languages (Chomsky 1981a; Jaeggli 1982; Rizzi 1982, amongst others). The insight behind

the proposal for parameters is that they should severely reduce the acquisition task. Rather than learning a number of seemingly unrelated properties individually, the child has only to discover the appropriate setting of a parameter and a range of associated syntactic properties follows automatically. Some L1 acquisition research has provided evidence in favour of clustering, showing that properties which are argued to be consequences of a particular parameter setting emerge at about the same time (e.g. Hyams 1986; Snyder and Stromswold 1997).

Under current proposals, parametric differences between grammars are associated with properties of lexical items, particularly so-called functional categories (Borer 1984; Chomsky 1995; Ouhalla 1991; Pollock 1989). Linguistic theory distinguishes between lexical categories – verb (V), noun (N), adjective (Adj), adverb (Adv), preposition (P) – and functional categories, including complementizer (Comp or C), inflection (Infl or I) (often split into agreement (Agr) and tense (T)), negation (Neg), determiner (Det), number (Num), as well as others. Functional categories have certain formal features associated with them (such as tense, number, person, gender and case). Functional categories and features form part of the UG inventory.

There are three potential sources of crosslinguistic variation relating to functional categories:

i. Languages can differ as to which functional categories are realized in the grammar. On some accounts, for example, Japanese lacks the category Det (Fukui and Speas 1986).
ii. The features of a particular functional category can vary from language to language. For instance, French has a gender feature, while English does not.
iii. Features are said to vary in strength: a feature can be strong in one language and weak in another, with a range of syntactic consequences. For example, Infl features are strong in French and weak in English (see below), resulting in certain word-order alternations between the two languages.

The lexicons of different languages, then, vary as to which functional categories and features are instantiated and what the strength of various features may be. Such variation has a variety of syntactic effects.

1.4.1 An example: feature strength and movement

In this section, we review the role of feature strength in current accounts of syntax, and consider some examples of parametric variation which depend