THE CROSSLINGUISTIC STUDY OF LANGUAGE ACQUISITION

Volume 5: Expanding the Contexts

Edited by

Dan Isaac Slobin
University of California at Berkeley

1. INTRODUCTION: BETWEEN UNIVERSALS AND PARTICULARS

The first volume of this series begins with the following statement: "It is the burden of the present collection of studies to demonstrate that crosslinguistic study does more than reveal uniformities of development, because properties of individual languages influence the course of development... One cannot study universals without exploring particulars" (Slobin, 1985b, p. 4). This theme is amply demonstrated in the 35 chapters of these five volumes. However, in recent years, a third term has been added to the old pair, "universal and particular." This term is TYPLOGICAL. It appears explicitly in the title of Ann Peters' chapter in this volume, "Language Typology, Prosody, and the Acquisition of Grammatical Morphemes," and it is implicit in chapters in other volumes: Eve Clark's chapter on Romance languages (Clark, 1985), Kim Plunkett and Sven Strömqvist's chapter on Scandinavian languages (Plunkett & Strömqvist, 1992), Lisa Dasin-
ger's chapter on Finno-Ugric languages (Dasinger, 1997), and Robert Van Valin's chapter on ergative languages (Van Valin, 1992). Underlying all of these chapters is a common position with regard to the limits on linguistic diversity: It is, by now, taken as given that the languages of the world represent a varying collection of exemplars of a single universal pattern. However, it also become evident that the universal pattern allows for systematic constraints on variation. The results of such constraints make it possible to group languages into types, defined by their positions on various parameters or dimensions. This insight is as central to the principles-and-parameters approach as it is to functionalist-typological linguistics.


In a charter statement for the association, Frans Plank and Johan van der Auwera (e-mail, March 1994) succinctly state the central mission as "the charting of crosslinguistic diversity and the empirical determination of its principled limitations." Thus the detailed description of particular languages must also attend to universal principles of variation. These principles, then, become part of the theory of human language. I would phrase the mission of the crosslinguistic study of child language in like terms: THE CHARTING OF CROSSLINGUISTIC DIVERSITY IN LANGUAGE ACQUISITION AND THE EMPIRICAL DETERMINATION OF ITS PRINCIPLED LIMITATIONS. The second clause has important methodological consequences: Any proposed explanation of the course of acquisition of a linguistic system in a particular language must be tested in languages that contrast on dimensions relevant to that system. Furthermore, any predicted replication of the phenomenon in question must be sought in languages that do not contrast on such dimensions. That is, one must determine if the explanation applies to typologically comparable languages only or to a broader range of languages. The status of the explanation in an overall theory of language acquisition will vary accordingly. Some acquisition principles will turn out to have comparable effects across languages—perhaps universally. Other principles will turn out to be sensitive to the type of input provided to the child, with different consequences for different types of languages. One consequence may well be that certain principles are never brought to bear on the acquisition of particular languages.

A typological approach to acquisition requires something of the child and something of the investigator. The child must be sensitive to typologically consistent characteristics of the input language, and the investigator must know how to describe and classify such characteristics in ways that are relevant to acquisition. Let us look briefly at each of these requirements.

These five volumes are full of evidence that children are sensitive to recurrent grammatical patterns in their language. In Volume 2, I summarized this evidence in terms of an Operating Principle for "strengthening": "Whenever an attempted solution succeeds, apply the same strategies to similar problems" (Slobin, 1985a, p. 1193). The evidence, across languages, showed that "the more pervasive a morphological category is in a language, the more readily will it be learned" (p. 1194). A clear example was provided by Berman's (1985) presentation of the acquisition of gender in Hebrew, a language in which gender must be marked in almost every utterance (on verbs, nouns, demonstratives, adjectives, and numerals). Berman generalized this finding to a typological proposal for acquisition (1985, p. 358): "Crosslinguistic consideration of Hebrew data suggests that it might be profitable for each language or language type to establish certain areas of 'language as a formal problem-space for children' (in the sense of Karmiloff-Smith, 1979) as criterial or in some sense particularly central to the task of acquisition." Another example, also from Hebrew, came from children's acquisition of the pervasive morphological pattern of consonant frames with intercalated vowels. I concluded, with regard to the Operating Principle of Strengthening: "Repeated problem solutions along similar lines reinforce the Semitic-speaking child's sense of learning a language of a particular TYPE, thus strengthening and maintaining the typologically consistent characteristics of the language" (p. 1195). My Introduction to Volume 3 (Slobin, 1992) summarizes a number of typological tendencies revealed in the data of that volume; and Ann Peters' chapter in this volume is full of similar examples, which need not be repeated here. On another front, connectionism is providing statistically explicit models of the facilitation of repeated solutions to a class of similar problems.

"Similar problems" can be defined on every level of linguistic analysis. Repeated attention to the distinctive features of PHONOLOGY, RHYTHM, and INTONATION focus the child on language-specific acoustic and temporal patterns, such as the Bantu-speaking child's early segmentation of prefixes, and early attention to vowel harmony in languages such as Finnish, Hungarian, and Turkish. SEMANTIC dimensions underlying morphological choice come to structure the child's space of grammaticized notions, such as aspect in Slavic languages and transitivity in ergative languages. As shown in a large number of GB-inspired studies, children come to organize the SYNTAX in terms of such parameters as dominant branching organization (left versus right) and obligatoriness of explicit subjects. And uses of PRAGMATIC markers, such as Japanese and Korean sentence-final particles, orient the child to language-specific marking of discourse factors.

In order for the investigator to carry out typological developmental analysis, it is necessary to classify languages along dimensions that might be relevant to the proposal at hand. Further research can then determine which particular
dimension or collection of dimensions seem to be relevant to the particular pattern of acquisition.

An instructive recent example comes from Dasinger’s (1995) research on the development of definite referring expressions in Finnish. Earlier investigations had shown a common developmental pattern in English, French, and German—all languages that have definite articles. Finnish provides a useful comparison, in that the language does not have definite articles. Thus there is a typological contrast that might be relevant to the child’s capacity to mark definiteness in discourse. Dasinger found both general and language-specific patterns, studying children aged 3–9 in a referent disambiguation task (like that used by Karmiloff-Smith, 1979, in French) and a narrative task (like that used by Hickmann, 1991, in German and other languages). Overall, Finnish development parallels that of children learning article-bearing languages. Only after about age 5 do children gradually become able to clearly identify referents in discourse, using intralinguistic means; earlier, they rely on referential expressions that are tied, in one way or another, to the extralinguistic context. The typological control thus points to crosslinguistically general factors of conceptual and social development—rather than the availability of particular grammaticalized means of expression—in the development of definite reference. However, Dasinger also found a particularly Finnish pattern. Unlike Karmiloff-Smith’s French-speaking children, Finnish children were less successful in tasks requiring definite reference to one of a group of identical objects, although words like ‘same’ and ‘(an)other’ are available in both languages. Here Dasinger makes a suggestion based on a typological constraint: “The apparent lack of the Finnish-speaking child’s realization of the necessity of explicitly marking intralinguistic relationships in certain situations may very well be the result of the absence of the obligatory expression of definiteness in the language” (p. 283). That is, the repeated grammatical marking of a particular contrast—as in the use of definite articles—may orient the child to the conceptual or discourse dimensions underlying that contrast (as discussed by Berman & Slobin, 1994, with regard to the development of various function relations). Such suggestions, of course, call for further typologically organized research—in this case, attempting to replicate these findings in other languages that do not have definite articles.

To repeat the methodological theme: Studies of a particular phenomenon must be appropriately situated with regard to potentially influential dimensions of language variation. In the Introduction to Volume 3 (Slobin, 1992), I categorized the languages investigated in these volumes with regard to three sorts of classification: genetic language family, geographical area, and Hawkins’ (1983) list of possible types of word-order patterns across grammatical constructions. I pointed to the need for a typologically responsible research program, referring to gaps in those taxonomies where child language data were sparse or nonexistent: “Future investigators of child language would do well to study the gaps . . . in seeking promising new research sites. Our theories of acquisition and learnability need to be challenged by the widest range of typological diversity if they are to lay claim to factors of innateness and universality” (pp. 3–6). That is, of course, still true. However, as Dasinger’s study illustrates, languages can be typologically contrasted on many different dimensions beyond those considered in that Introduction. In her case, the relevant contrast was “article-bearing” versus “non-article-bearing” languages. Other theoretical issues require different classifications. For example, in Volume 3, Van Valin (1992) argues that acquisition theories using parameter setting and semantic bootstrapping as explanatory devices need to attend not only to ergative versus accusative languages, but also to the types of split ergativity within the set of ergative languages. Later in this chapter, I present evidence for the importance of comparing “satellite-framed” versus “verb-framed” languages (Talmy, 1991). And, in fact, every systematic linguistic classification will turn out to have implications for acquisition: topic-oriented versus subject-oriented, head-marking versus dependent-marking, configurational versus nonconfigurational, fixed versus free word order, prefixing versus suffixing, and so on. Every claim in the child language literature can profitably be lined up against relevant typological contrasts and dimensions, such as these. And, if this is done seriously, it will be seen that almost all of our claims should be seen as quite tentative and limited until the necessary controls have been carried out in a sample of typologically appropriate languages for any given claim.

Attention to typology lends itself to two kinds of crosslinguistic methodology, represented by research carried out either within or between defined groups of languages. The first approach takes advantage of typology as a means of holding many factors constant, exploring fine-grained differences between similar languages. I will call this the INTRA-TYPOLGICAL APPROACH, and will present four examples, from Slavic, Germanic, and Bantu languages. The second approach compares languages of different types, seeking universals, on the one hand, and typologically specific factors, on the other. I will call this the CROSS-TYPOLGICAL APPROACH, and will present an extended case study drawn from recent work on spatial conceptualization and narrative discourse in two types of languages.

2. THE INTRA-TYPOLGICAL APPROACH

In the intra-typological approach, one selects a group of languages that share a collection of typological features, thus making it possible to focus on variation along specified dimensions. By selecting languages that belong to one typological grouping, it is often possible to pull apart features that co-occur in any particular language of the type. That is, one hopes to hold most factors constant in order to explore the role of variation on a particular dimension. In other cases, one might succeed in holding all relevant factors constant, thus testing for replication of a developmental pattern across languages. Most typically, the languages are genetically related, though they need not be. Where common ancestry has led to similar,
but slightly varying patterns, we can often make use of such variation to our advantage in studying mechanisms of acquisition. The Slavic and Germanic case studies presented below demonstrate the role of variation within types, while the Bantu example demonstrates replication within a type category and variation across types. (What is important about a language family, is, of course, the historical fact of common ancestry, but the contemporary remainder of that common ancestry in the form of common typological features across languages, along with slightly different solutions to common problems.)

2.1. Slavic Case-Inflectional Paradigms

Perhaps the best case study in intra-typological research is Magdalena Smoczyńska's comparison of the acquisition of the case inflectional paradigms of Russian and Polish in Volume I (Smoczyńska, 1985). The paradigms look almost identical on paper. In an early summary of Russian acquisition (Slobin, 1966), I had found that it takes children a very long time to differentiate all of the grammatical forms of each case suffix. There are six cases and three genders, with different forms in singular and plural, and with special forms for some types of animate nouns (not to mention a host of irregularities and exceptions). Russian children go through many stages of simplification and overgeneralization of the paradigm from about age 2 to 5 years (El'konin, 1958; Gvozdev, 1949; Zakharova, 1958). I had suggested that the Slavic paradigm was difficult to acquire for at least two types of reasons: (1) There is a great deal of homophony—for example, the suffix -u is not only a singular feminine accusative, but also a dative and a locative for other genders. (2) Gender and animacy are irrelevant to notions of case; therefore, such distinctions should pose a problem in separating out the semantic and formal aspects of case forms in a language like Russian. Similar problems seemed to occur in the acquisition of the Serbo-Croatian case paradigm (Mikes, 1967; Mikes & Vlahovic, 1966; Radulovic, 1975); and so I made a general claim about the course of acquisition of this type of system—on the basis of limited intra-typological evidence (Slobin, 1982).

Subsequently, Smoczyńska carried out the first detailed comparison of the acquisition of two Slavic languages: Polish and Russian. The Polish case-inflectional paradigm is almost identical to the Russian paradigm, and should present the same problems to children—but it does not. When Polish children acquire grammatical cases, they tend to use the correct form for each gender and case from the very beginning, without the kind of massive overgeneralization that one finds in Russian children. This is an ideal example of the value of intra-typological comparison, because it makes it possible to isolate the specific variables that seem to be involved.

As a demonstration, Table 1.1 presents a limited comparison of the two systems, showing only the nominative/accusative contrast for the most frequent forms of singular nouns. The words are given in their orthographical form, with stressed vowels indicated by boldface. Russian and Polish look identical: except for irregulars, masculine nouns end in a consonant, feminine nouns end in -a, and neuter nouns end in -o. In both languages there are distinct accusative forms for masculine animate and feminine, but not for masculine inanimate and neuter. However, Smoczyńska noted a critical phonological factor: unstressed vowels are reduced to schwa in Russian, but not in Polish. Thus, for example, feminine róza and neuter jablko have perceptually distinct final vowels in Polish, but the corresponding Russian words do not: roza and jablapa. The decenensional paradigms that look identical on paper are not identical in the ears of the child. The Polish child is immediately given a way to identify the gender of a noun, because masculine, feminine, and neuter nouns have perceptually different endings. The Russian child has a more difficult task. Because feminine and neuter nouns are often not phonologically distinguished, it is necessary to attend to factors that correlate with gender, such as: the forms of accompanying adjectives, the gender of the pronoun that corresponds to a particular noun, and the overall patterning of the forms of a noun in the paradigm. This is obviously a more difficult task (see Pinker's procedures for inflectional paradigms [1984, pp. 180–192]; Slobin's Operating Principle for Morphological Paradigms [1985, pp. 1214–1219]). Comparing the two languages, Smoczyńska (1985, p. 65) comes to the following conclusion about the “apparently minor fact” of vowel reduction:

While most of the nouns ending in -a to which Polish children are exposed are regular feminine nouns, the input to the Russian child contains different declension and agreement patterns [for nouns ending in schwa] . . . Such an inconsistent input makes it impossible for the Russian child to discover the criteria of grammatical gender, while Polish children can tolerate the limited amount of inconsistency to which they are exposed, simply regularizing irregular instances according to the tripartite gender distinction.

What is especially important in this analysis is not the fact that Russian is difficult, but that Polish is easy. We have here a clear demonstration that an
inflectional paradigm based on arbitrary phonological criteria can be acquired by 2-year-olds if the criteria are transparent and consistent. Evidently, every distinction in form does not have to correspond to a distinction of meaning. This is an important theoretical finding, and it came from detailed comparison within a typological category of languages—in this instance, both genetic (Slavic) and inflectional (fusional) classifications. As Peters points out in her chapter in this volume, typological comparisons present a wealth of potential case studies of this sort.

2.2. Scandinavian Verb-Particle Constructions

Models of the acquisition of grammatical morphemes pay close attention to factors of acoustic salience (see discussion and references in Peters' chapter in this volume). An ongoing "inter-Nordic project" makes it possible to examine such factors in beautiful detail (Strömqvist et al., 1995). The mainland Scandinavian languages—Swedish, Danish, and Norwegian—all have verb + particle constructions, but with systematic differences in word order and prosody (Plunkett & Strömqvist, 1992). The basics can be seen in Table 1.2, using examples of locative particles. In Swedish and Danish, the particle is prosodically prominent, whereas in Norwegian, it is the verb that is prominent. In Danish and Norwegian, the particle is in final position, separated from the verb, whereas in Swedish, it is in medial position, contiguous with the verb. As the inter-Nordic researchers point out, these variations make it possible to test the roles of both prosodic prominence of a particle and its placement in relation to the verb. Preliminary results show that these variations have differing effects on acquisition (Strömqvist et al., 1995; Strömqvist, personal communication, 1995). In Danish, the postposed, stressed particles emerge early as one-word utterances (as they do in English, also). In Swedish, the particles emerge later, and in amalgams with verbs, reflecting their syntactic position following the verb. And in Norwegian, it would seem that verbs first emerge as separate items, with later development of particles. All of the data are not in yet, but it is evident that intra-typological comparisons of this sort are powerful means of establishing the roles of operating principles and perceptual strategies that deal with perceptual salience and placement of linguistic elements.

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<thead>
<tr>
<th>Properties of PRT</th>
<th>Swedish</th>
<th>Danish</th>
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<tr>
<td>Prosodic prominence</td>
<td>+</td>
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<td>Contiguity to V</td>
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2.3. Semantics of Spatial Prepositions in English, Dutch, and German

Intra-typological comparisons can also help to reveal the conceptual dimensions used by children in establishing the semantics of grammatical morphemes. For example, it has long been known that notions of containment and support are among the first locative notions to receive linguistic expression across a wide range of languages (e.g., Johnston & Slobin, 1979). More recently, however, Melissa Bowerman and several co-workers have found important cross-linguistic variation in the organization of semantic space underlying locative morphemes (Bowerman, 1993; Bowerman, 1996a, 1996b; Bowerman & Gentner, in preparation; Bowerman & Pederson, 1992; Choi, this volume; Choi & Bowerman, 1991). The child must not only attend to the relevant grammatical forms, but must also learn how those forms relate to language-specific meanings. Consider one example from the realm of locative prepositions in several Germanic languages.

Bowerman (1993) discusses spatial situations such as those described by the English preposition on. She notes that in English, on is used for various types of support, regardless of the means of support or the type of attachment; for example: a cup on a table, written words on a page, a handle on a door, a coat on a hook, and even a fly on a wall. In German and Dutch, by contrast, the same semantic range is divided between two prepositions: auf and an in German, op and aan in Dutch. Table 1.3, from Bowerman and Pederson (1992), gives a summary of the differences. German and Dutch are "more concerned" about means of support than is English. In both German and Dutch, for example, a hanging object is described by a different preposition than an object that is resting on a surface with gravitational support—compare, for example, Dutch op de tafel on the table versus aan de muur on the wall. Taking a very fine-grained approach, there are even differences between the uses of German an and Dutch aan. In Bowerman and Pederson's summary to their table, they note that German is especially concerned about whether the ground object is vertical or horizontal, whereas Dutch is more concerned about whether the attachment is at a point or over a more extended area.

This kind of detailed intra-typological analysis shows that syntactically and acoustically comparable forms present different problems for semantic analysis. Bowerman (1993, p. 11) reports that she and Gentner, in a production task, found that children under age 3 could easily distinguish containment—encoded by in in all three languages—from all of the other situations. And English-speaking children correctly contrasted in and on across a range of situations. Dutch children, however, learned op more easily than aan, and sometimes overextended op to other support relations, though not to containment relations. (Data have not yet been reported for German-speaking children.) The cross-linguistic comparison thus shows that the overall containment/support distinction seems to be readily accessible to children, while the more particular distinctions marked by Dutch (and probably also German) take more time to acquire. Given the simi-
ularities between the three languages on many other relevant dimensions, this kind of **INTRA-typological analysis** can clearly reveal the role of semantic features in the acquisition of locative prepositions. And, more generally, the method is a valuable tool for revealing the meanings that children assign to grammatical morphemes.

2.4. Passives in Bantu

Demuth (1992), in Volume 3, discusses the exceptionally early acquisition of passives in Sesotho, in comparison with English and other languages. She suggests that a typological factor is at work in this case. Sesotho is a topic-oriented language (by contrast with subject-oriented languages, like English). That is, the subject position is restricted to old or given—that is, topical information. There are several important syntactic and discourse consequences of this restriction. For example, a subject must be questioned in a passive or a cleft construction—the equivalent of, for example, “The food is wanted by who?” or “It’s who that wants the food?”. Dative and accusative objects can passivize; consequently, most verbs can passivize. Demuth concludes that in languages with topic-oriented subjects, “the passive will be a more canonical rather than a marked construction. Thus, whereas the passive in languages such as English is used for certain pragmatic purposes of demoting agency, the passive in languages such as Sesotho is used to maintain the topicality of subjects” (Demuth, 1992, p. 612). This proposal calls for both intra-typological replication and cross-typological disconfirmation, and Demuth presents both kinds of evidence. Another Bantu language, Zulu, is also topic-oriented, and Demuth cites Sutman’s (1985, 1987, 1991) similar data on early acquisition of passives. Chichewa presents a valuable contrast case, in that it is also Bantu, but is not topic-oriented (i.e., it allows for questioning of subjects **in situ**). This case makes it possible to hold morphosyntactic factors constant, while determining the role of topic/subject-orientation. Demuth reports preliminary findings in research by Chimombo (personal communication to Demuth [1990, p. 80]) that passives are acquired later in Chichewa than in Sesotho and Zulu. This case, comparing topic- and subject-oriented languages, moves us from the intra- to the cross-typological approach.

3. The Cross-Typological Approach

3.1. Implicational Universals

Cross-typological research begins with the study of one or more individual languages and then works outward, making comparisons along typological dimensions, as in the Bantu example. As a starting point, therefore, one needs to
determine dimensions along which languages can vary.\(^1\) Every kind of typological analysis seeks to classify languages according to particular distinctive features, but a classification is of little interest if each distinctive feature is independent of all others. Following Greenberg’s (1963, 1966) pioneering work on language universals, typologically oriented research is aimed at the discovery of IMPLICATIONAL UNIVERSALS—that is, regular and constrained cooccurrences of particular linguistic features. This sort of research is psycholinguistically interesting if it has the following two characteristics:

- The features constitute an EXHAUSTIVE set along some universal dimension. (In parameter-setting theory, the features are typically binary, but they can also include more choices than two, and they can be scalar as well as absolute.)
- The features CO-DETERMINE each other. There should be psycholinguistic reasons for such co-determination—i.e., an explanatory model is called for.

Consider a very simplified example: Languages can be classified as INFLECTIONAL versus NONINFLECTIONAL, in terms of whether or not grammatical relations and categories are directly marked on nouns or verbs. For example, Latin is inflectional, with casemarked nouns, and English is noninflectional. Languages can also be classified in terms of the functions of word order as PRAGMATIC WORD-ORDER LANGUAGES, in which word order is varied for discourse purposes, versus GRAMMATICAL WORD-ORDER LANGUAGES, in which word-order patterns express grammatical relations. In this regard, English is a grammatical word-order language and Latin is a pragmatic word-order language. These two typologies are each exhaustive, in that each defines a dimension on which languages vary, and most languages tend toward one or another end of each dimension. Thus the first psycholinguistic criterion is met. But, as the example shows, the second criterion is also met: Latin is classified as both an inflectional and a pragmatic word-order language; English is classified as both noninflectional and grammatical word-order. If we were to examine a large number of languages in terms of these two dimensions, we would find a crosslinguistic tendency towards filling only two of the four cells of this two-by-two matrix, following the example of Latin and English. And we would seek a psycholinguistic explanation—in this instance, perhaps, the availability of word-order variation to express pragmatic distinctions when grammatical relations are encoded directly on content words. As Hawkins has suggested (1983, p. 125):

\[\text{Those languages which encode more pragmatic distinctions explicitly will exhibit correspondingly less pragmatic ambiguity... I would expect the more extensive...}\]

\(^1\)Another term for “dimension” is “parameter.” I will avoid this term, since it has become a technical term in GB syntax, and my goal is to make a general presentation, independent of any particular syntactic model. As in phonology, I will use the term DISTINCTIVE FEATURE to refer to ways in which languages differ systematically from one another along a typological dimension.

pragmatic use of word order to correlate quite generally across languages with a richer morphology, with greater surface structure disambiguation, less semantically diverse grammatical relations, less raising, fewer extractions, and fewer deletions, while the more grammatical use of word order will correlate with just the reverse... There are various sorts of possible explanations for implicational universals. Following Chomsky (e.g., 1981), some implicational universals may be an automatic consequence of the innate structure of language, resulting from particular parameter settings as triggered by the input language. In this model, if the subtheories of universal grammar interact in specifiable ways, sets of grammatical properties will emerge with the setting of parameters in each subtheory. In one formulation (Chomsky, 1988, pp. 62–63):

\[\text{The principles of universal grammar have certain parameters, which can be fixed by experience in one or another way. We may think of the language faculty as a complex and intricate network of some sort associated with a switch box consisting of an array of switches that can be in one of two positions... Each permissible array of switch settings determines a particular language. Acquisition of a language is in part a process of setting the switches one way or another on the basis of the presented data, a process of fixing the values of the parameters.}\]

However, this approach, if valid, would only tell part of the story.\(^2\) Most of the issues dealt with in this chapter, and these volumes, lie beyond the purview of this school of formal grammar. Parameter setting pertains to only a segment of the acquisition and use of language, as underlined by Edwin Williams in his introduction to an edited book with Tom Roeper, Parameter Setting. After discussing the possibility that parameters may not be independent of one another, Williams comments (Roeper & Williams, 1987, pp. xi–xii):

\[\text{The second point I would like to raise in connection with the parameter setting model in acquisition studies has to do with a neglect of those aspects of language that do not lend themselves to parameterization... The extent of linguistic structure for which the parameter setting model is inappropriate may be wider than is recognized... For example, nearly every language has some kind of nominal or verbal paradigm, which is essentially an n-dimensional matrix of forms, mapped in a systematic (but not necessarily bi-unique) way onto a set of morphological distinctions. The number of dimensions of this matrix, the size of each dimension, and the mapping of the matrix onto the set of distinctions are all subject to great variation from language to language, and the idea of 'setting parameters' seems to be of no help here. Another domain apparently beyond parameter setting would be the identification of affixes... There is probably room for low level 'concept...}\]

\(^2\)The approach itself may be on the wane. In a recent two-volume work on the acquisition of syntax in a crosslinguistic and Chomskian framework (Lust, Sufter, & Whitman, 1994), the editors conclude: "One striking result across both volumes is an apparent diminished role for parameters both in the explanation for cross-linguistic variation and for language acquisition" (Vol. 1, p. xxvi).
formation as well—languages seem to have language particular categories. It would be quite surprising if parameter setting exhausted the possibilities—knowledge of language involves a number of different types of knowledge, and acquisition will proceed most efficiently if the means of learning each type is tailored to that type.

Hyams (1989) agrees with Williams that there is more to language acquisition than parameter setting, but considers language beyond core grammar to be "idiostycratic or peripheral" (p. 215):

Of course, in addition to fixing the parameters of UG, the child must also acquire the idiostyctastic or peripheral aspects of his language, which may be unrelated or only loosely connected to the parameters. However, it is assumed that once the child has set all the parameters, he will have acquired the 'core' component of the adult grammatical system.

One goal of these five volumes is to show how much fruit there is beyond the core.

Whereas Chomsky's parameters are limited to "core grammar," and are innately specified, the broader typologically oriented approach to acquisition presented here concerns itself with the full range of linguistic phenomena, without prejudging the architecture and structural constraints of the language faculty. These are issues of empirical and theoretical investigation within broader frameworks of linguistic and cognitive structure, psycholinguistic processing, and discourse analysis. In the principles-and-parameters approach to generative grammar, patterns of cooccurrences of linguistic forms may be attributed to the ineluctable interaction of the subtheories of universal grammar. Typological patterning, on this view, is seen as an automatic consequence of the possible types of parameter setting, and the child's task is reduced to one of deduction. On the other hand, many (or all) of such patterns may be explainable in terms of a number of interacting processes.

Hawkins (1983), for example, attempts to explain implicational word-order universals on the basis of a set of processing principles, such as the need to quickly recognize the head of a construction. Using such processing factors, Hawkins arrives at a principle of "Cross-Category Harmony" which accounts for apparently universal tendencies to harmonize the placement of operators and operands across phrasal categories in a language. This kind of functional model explains, for example, the fact that languages with rigid verb-final order also tend to be noun-final within the NP. In a recent book, A Performance Theory of Order and Constituency, Hawkins (1994) provides detailed evidence for "the grammaticalization of processing principles." With regard to implicational universals, he concludes (p. xii):

Implicational related properties such as "if SOV, then postpositions in PP" co-occur because they are optimal for processing and involve minimal complexity: fewer computations are required over smaller number of entities in order to reach a given parsing decision, involving in this case the recognition of constituent structure.

Similar functional explanations could be offered for the repeated finding that languages only allow subject ellipsis ("null subject") if they provide sufficient structural information to allow for identification of the subject by other means (e.g., Jaeggi & Safir, 1989). Diachronically, languages lose "processing cues" such as rich inflection or recruit lexical items to provide such cues through processes of grammaticalization (e.g., Hopper & Traugott, 1993; Traugott & Heine, 1991). As a result, a language can change in typology—or even present a mixed picture at some stage in its history, as in the case of modern Hebrew. This is a "null-subject language" in the past and future tenses, which have full person/number marking on the verb, but is a "non-null-subject language" (i.e., has obligatory subjects) in the present tense, where only number is marked (Berman, 1990). This is a confusing pattern for parameter setting, but a consistent one for processing.

The picture that emerges from diachronic crosslinguistic research is one of grammars that reconstitute themselves under shifting balances of online processing constraints rather than grammars that are pre-specified as autonomous formal systems (see Slobin, this volume). Indeed, Croft, in his 1990 textbook, Typology and Universals, devotes an entire chapter to "External motivation and the typology of form-function relations," summarizing the contributions of economic motivation, iconicity, and communicative motivation. He surveys a number of preliminary, but provocative analyses arising from "the functional-typological approach to language," which he summarizes in the following terms (p. 155): "Functionalism seeks to explain language structure in terms of language function. It assumes that a large class of fundamental linguistic phenomena are the result of the adaptation of grammatical structure to the function of language."

The child language researcher should be cautious, realizing that both formalist and functionalist explanations have inadequacies at the present time, and recognizing that the current polarization in the field seems to reflect institutional and temperamental determinants as much as reasoned argumentation from data—which, in many cases, are compatible with a range of theories. Thus, even with regard to "core grammar," it is far from obvious what portion, if any, of systematic crosslinguistic variation need be attributed to an innate system of parameters and their consequences for syntactic typology.

In any case, these are arguments about forces that shape the FORM OF THE LANGUAGE TO BE ACQUIRED; they are not explanations of THE PROCEDURES THAT A CHILD MIGHT USE TO ACQUIRE SUCH FORMS. The fact that languages have

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3In fact, as Yonata Levy (personal communication, 1996) has pointed out, the situation in Hebrew is even more complex; in that subject omission is not allowed in third persons in past and future tenses, despite the fact that the verb is fully marked for person and gender. She and Anne Vainikka (in preparation) suggest that this mixed pattern is based on pragmatic distinctions between first/second versus third persons in conversational discourse.
particular “shape” need not be attributed to the acquisition mechanism itself, unless one assumes that the forms that define an individual language are determined by parameters whose setting is merely “triggered” by experience and elaborated by deductive processes. At this point in the science, our understanding of form–function relations is still limited, and it seems premature to opt for such a solution. Rather, the task of child language theory should be to make serious use of the facts of typological variation as a challenge for the development of more adequate theories of the PROCESSES of language acquisition.

In any event, the goal of this chapter—and most of the writing in these five volumes—is not to arrive at The Definitive Acquisition Theory, but rather to illustrate the importance of attending to crosslinguistic and typological factors in preparing the groundwork for such a theory. Therefore, leaving these unresolved theoretical issues aside, I turn to an extended case study of one set of implicational universals that goes well beyond core grammar, and that is realized across a span of later language development. My purpose is to cast light on the interlocking of factors of lexicalization patterns, syntax, and discourse functions in the course of language development. And, from a psychological point of view, the important term is DEVELOPMENT, rather than ACQUISITION. Much attention has been paid to the initial state and the endstate, while the processes of change over time have been too often slighted, ignored, or explained away. The following case study deals with children between the ages of 3 and 9, pointing to continuing change across this age span.

3.2. Motion Descriptions in Satellite-Framed and Verb-Framed Languages

As a case study in cross-typological research, I will focus on verbs of motion in two types of languages, beginning with English and Spanish as examples of the two types, and then making comparisons with other languages of both types. Consider the two equivalent sentences in (1) and (2):

(1) The man ran into the house.

(2) El hombre entró corriendo a la casa.

‘The man entered running to the house.’

In English, the verb, ran, only indicates that motion has occurred, in a particular manner, with no information about the direction of the motion. That information is provided by the verb particle, in. By contrast, the verb in Spanish, entró ‘entered’, indicates that motion has occurred in a particular direction, with no indication of manner. That information is optionally provided by a separate verbal element, the gerund, corriendo ‘running’. And in both languages, additional information about the path of movement can be provided by a prepositional phrase, to the house, a la casa. As described in detail by Talmey (1985, 1991), these two patterns are characteristic of English and Spanish overall. In fact, they constitute a basic typological distinction that may be applicable to all languages. Talmey defines the distinction on the basis of the part of a clause that frames the “core meaning” of MOVEMENT ALONG A PATH. In English this information is conveyed by a SATELLITE to the verb, the particle in, and so Talmey calls this type of language SATELLITE-FRAMED. In Spanish, it is a verb that frames the core meaning—that is this is a VERB-FRAMED language. In English there is a large collection of verbs of manner of movement, such as run, walk, fly, swim, crawl, creep, and they can all be combined with a collection of path satellites, in, over, up to, across, down from, and so forth. In Spanish, there is a small collection of verbs of inherent direction, such as entrar ‘enter’, salir ‘exit’, subir ‘ascend’, bajar ‘descend’, and the like. These verbs can be combined with manner expressions when manner is relevant to the discourse, as in (2). According to Talmey (1991), within Indo-European, all languages are satellite-framed except for the Romance languages, which are verb-framed. Finno-Ugric languages and Chinese are also satellite-framed; Semitic and Turkic languages, as well as Japanese and Korean, are verb-framed.

4 Talmey’s (1991) typological analysis goes far beyond lexicalization patterns for the expression of motion events; the bipartite classification embraces aspect, change of state, realization, and action correlation. Consider, for example, the satellite-framed typology of English constructions such as eat up, burn out, slam shut, walk along with someone. A verb-framed language uses separate verbs in corresponding constructions; compare, for example, The leaves withered away, with Spanish, Las hojas se desintegraron al secarse ‘The leaves disintegrated by withering’. Revisions of Talmey’s typology have been suggested by Aske (1989) and Stolin and Holting (1994), and I am preparing a more detailed typological approach to linguistic descriptions of motion events.

5English stories were gathered in Berkeley, California by Virginia Marchman and Tanya Renner. Spanish stories were gathered in Spain by Eugenia Sebastián, and in Chile and Argentina by Aura Bocaz. Narrators were preschoolers (3–5 years), school-age children (7–11 years), and adults. Research reported here was designed in collaboration with Ruth A. Berman, Tel Aviv University, Israel, with support from the U.S.-Israel Binational Science Foundation (Grant 2732/82, to R. A. Berman and D. I. Slobin), the Linguistics Program of the National Science Foundation (Grant BNS-8520008, to D. I. Slobin), the Sloan Foundation Program in Cognitive Science (Institute of Cognitive Studies, University of California, Berkeley), the Max-Planck-Institut für Psycholinguistik (Nijmegen, The Netherlands), and the Institute of Human Development (University of California, Berkeley).
stories reveals major differences at the levels of lexicon, syntax, and narrative organization. In other words, the analysis provides a preliminary approach to what could be called a TYPOLOGY OF RHETORIC. I will summarize some of the differences briefly, attending only to descriptions of change of location.

In order to compare two equal-sized groups of narrators, a comparison can be made between data gathered in California and Spain. There were 12 subjects in each of five age groups: 3, 4, 5, 9, and adult; that is, a total of 60 stories in each language. A major typological difference can be found in comparing the verb lexicons of the two languages. Consider the entire collection of motion verbs used in all 60 stories combined. These include verbs of self-movement and caused movement. The verbs are listed in (3):

(3a) **English verbs**: back+, bump+, buzz+, carry, chase+, climb+, come+, crawl+, creep+, depart, drop+, dump+, escape, fall+, float+, fly+, follow, get+, go+, head+, hide, hop+, jump+, knock+, land, leave, limp+, make-fall, move, plummet, pop+, push+, race+, rush+, run+, slip+, splash+, splash+, splosh+, sneak+, swim+, swoop+, take+, throw+, tip+, tumble+, walk+, wander+

(3b) **Spanish verbs**: acercarse 'approach', alcanzar 'reach', arrojar 'throw', bajar(se) 'descend', caer(se) 'fall', correr 'run', dar-un-empujón 'push', dar-un-salto 'jump', entrar 'enter', escapar(se) 'escape', hacer-caer 'make-fall', huir 'flee', ir(se) 'go', llegar 'arrive', llevar(se) 'carry', marchar(se) 'go', meterse 'insert oneself', nadar 'swim', perseguir 'chase', ponerse 'put oneself', regresar 'return', sacarse 'remove oneself', salir 'exit', salir 'jumper', subir(se) 'ascend', tirar 'throw', trasponer 'go over', venir 'come', volar(se) 'fly', volver(se) 'return'

The first striking difference is simply in terms of variety: 47 verb types were used in English, in comparison with 27 in Spanish. This is due to the collection of English verbs that conflate the expression of motion with manner of motion—verbs like crawl, creep, plummet, splat, swoop, and the like. But the imbalance between the two languages is even greater when one considers the resources of a satellite-framed language like English. Recall that satellites, in English, are verb particles such as in and out. In (3a), the verbs marked with a plus-sign occurred with satellites. If one lists the English verbs together with all of the satellites that accompanied them in the stories, there is a total of 123 verb types, shown in (4):

(4) **English verbs + satellites**: 
   buck + off
   bump + down
   buzz + out
   chase + after, in
   climb + down, on, out, over, up, up in, up on
   come + after, down, off, on, out, over, up
   crawl + out, over, up
   creep + out, up
   dump + in, off
   fall + down, in, off, on, out, over
   float + off
   fly + after, away, off, over, up
   get + away, down, in, off, on, out, over, past, up, up on
   go + down, down out, home, in, off, out, outside, over, through, up
   head + for, to
   hop + in, on, out, over
   jump + down, off, out, over, up
   knock + down, down out, in, off, out
   limp + in
   pop + out, up
   push + down, off, off in, out
   race + after, away
   run + after, along, away, by, from, in, off, out, over, through
   rush + out
   slip + on, over
   sneak + out, over, up
   splash + in
   splat + in
   swim + out, over
   swoop + down
   take + away, off with
   throw + down, down in, in, off, over, over in
   tip + off over
   tumble + down, out
   walk + along, down, over to
   wander + out

English differs from Spanish then, not only in its satellite-framing typology, but also in terms of its lexicalization resources: There are more types of motion verbs; many of these verbs conflate motion and manner; and they can be flexibly combined with a range of satellites to produce a large, open set of VERB + SATellite constructions. In terms of a typology of rhetoric, we can ask whether these differences have any implications for the narration of motion events in the stories. To simplify the presentation, consider only descriptions of paths of movement, ignoring manner.

A satellite-framed language invites the speaker to elaborate path descriptions by appending several satellites to a single verb of motion. For example, in describing a scene in which an owl leaves its hole in a tree, an English-speaker might say:

(5a) *The owl flew down from out of the hole.*
The satellites trace out a complex trajectory, along with a single verb: the path is *down from out*, and a prepositional phrase specifies the source, *of the hole*. There is no compact way to express this information in a single clause in a verb-framed language. A Spanish-speaking narrator, for example, is more likely to either use a single clause, omitting the fact of downward movement:

(5b) *El buho salió volando del agujero.*
     ‘The owl exited flying of the hole.’

or the narrator may break up the complex path into two clauses:

(5c) *El buho salió del agujero y bajó volando.*
     ‘The owl exited of the hole and descended flying.’

That is, there is a tendency to append path segments to a single verb in a language like English, versus a tendency to either simplify path descriptions with one verb or to analyze the path in several verbs in a language like Spanish. This sort of IMPLICATIONAL RELATION between lexicalization patterns and rhetorical style is reflected in the narrative data in several ways.

One might expect English speakers, following this typological tendency, to provide more information about the GROUND of movement—that is, to make more mention of source and goal and landmarks passed along a path, with regard to a verb of motion, because several bits of path and ground information can easily be appended to a single verb, which is, itself, not a path verb. One way to check for this tendency is to count the number of verbs that occur with some specification of ground. These are found in clauses like those in (6b), as opposed to the use of simple directional expressions, such as those in (6a):

(6a) *The owl flew out.*
     El buho *(se) salió.*
     ‘The owl exited.’

(6b) *The owl flew out of the hole.*
     El buho *(se) salió del agujero.*
     ‘The owl exited from the hole.’

Table 1.4 presents figures based on all verbs of motion in the frog stories, along with comparable figures from a study of novels written in English and Spanish, discussed below. The figures are the percentages of such verbs which are accompanied by one or more prepositional phrases that encode source, goal, or landmarks along a path. The overall tendency is for English narratives to use more ground adjuncts with regard to verbs of motion than Spanish narratives. Interestingly, the differences between the languages are most marked for mature speakers/writers: for adult frog-story narrators the comparison between English and Spanish shows 82% versus 63% of motion verbs with mention of ground, and for novel writers the contrast is 96% versus 81%. These figures suggest that the endstate model is rather different for the two types of language—even in the case of literary fiction, where novelists are not constrained by the pre-established pictures of an elicited narrative task (for details, see Slobin, 1996b). The developmental patterns reinforce this impression. The American preschoolers provide more ground information than the Spanish preschoolers. There is also a hint of some development during the preschool period in English, but not in Spanish.

At school-age the two groups are comparable, though the Spaniards have advanced from the preschool to the 9-year-old level, whereas the Americans were already at that level at age 5. And there is essentially no further development in Spanish, whereas there is continuing development in English until adulthood. Overall, then, it appears that English-speaking narrators may pay more attention to path details than do Spanish-speakers.

Another way of comparing the two types of languages is to look at an extended motion event in detail. As an example, consider the series of changes of location that occur in one particular scene—the dramatic highpoint of the frog story. The scene is shown in a series of six pictures, in the course of which the main protagonist, the boy, endures the following change of location:

**Picture 13:** The boy, fleeing from an owl, starts to climb a large rock.

**Picture 14:** The boy is standing on top of the rock, holding on to what appear to be branches.

**Picture 15:** The boy is lying between the antlers of a deer that is standing just behind the rock. Apparently he unwittingly held onto the antlers, the deer stood up, and the boy became ensnared in the antlers.

**Picture 16:** The boy is still on the deer’s head, as the deer runs toward the edge of a cliff. The boy’s pet dog runs along ahead of the deer, turning back to bark.

**Picture 17:** The deer stands at the edge of the cliff. The boy and the dog are in mid-fall from the cliff to a pond below.

**Picture 18:** The boy and dog have apparently just fallen into the pond, with their feet sticking up out of the water.
Let us focus just on the boy’s journey from the deer’s head to the water. One technique, typical of a satellite-framed language, is to compact the journey into a single clause. As shown in (7), this is available to both preschool and school-age English-speaking children:

(7a) He threw him over a cliff into a pond. [age 5]
(7b) He [=deer] starts running and he tips him off over a cliff into the water. [age 9]

Another technique is clause chaining, as in (8). This technique is available in both types of languages. As shown in (8), it is available to Spanish preschoolers.

(8) Un ciervo le cogió al niño, y le llevó al agua, y le tiró. Se cayó al agua.
‘A deer picked up the boy, and carried him to the water, and threw him. (He) fell to the water.’ [age 5]

Note that in (8) there are two instances of a verb with a prepositional phrase indicating the ground: le llevó al agua ‘he carried him to the water’ and se cayó al agua ‘(he) fell to the water’. There seems to be nothing about verb-framed typology that should prevent Spanish speakers from using compact expressions, like those in (7), in situations where more than one ground element can be associated with a verb. Such expressions are highly frequent in English at all ages. But they are vanishingly rare in Spanish. This can be clearly seen in a combination of Eugenia Sebastián’s Madrid data (Sebastián & Slobin, 1994) with stories gathered in Chile and Argentina by Aura Bocaz, covering the ages of 3, 4, 5, 7, 9, 11, and adult (Slobin & Bocaz, 1988). In this entire corpus of 216 Spanish frog stories, there are only three instances of a clause in which both source and goal are mentioned in relation to a single verb: two from Spain and one from Chile. They come from a 5-year-old, a 9-year-old, and an adult, suggesting that this is not a developmental issue, but rather a consequence of verb-framing typology:

(9a) Se cayó de la ventana a la calle.
‘(He) fell from the window to the street.’ [age 5: Spain]
(9b) Lo lleva campo a través hasta un barranco.
‘(The deer) carries him across (the) field to a cliff.’ [age 9: Spain]
(9c) El perro... hace un movimiento tal que se precipita al suelo, desde la ventana...
‘The dog... makes a movement such that he plummets to the ground, from the window...’ [adult: Chile]

It appears, then, that Spanish speakers tend to limit themselves, when using a prepositional phrase with a verb of motion, to one piece of information about the ground (source, goal, or medium).

The same is true of novels. I have examined five novels in each of the two languages (Slobin, 1996b). (See listing of novels in the references following this chapter.) From each novel I selected, at random, 20 descriptions of a protagonist moving from one place to another—that is, 100 motion events for each language. As shown in Table 1.4, above, a ground element is mentioned in 96% of such events in the English novels and 81% in the Spanish novels. Furthermore, as in the frog stories, English writers mention more ground elements per motion event than do Spanish writers—even though novelists are free to be as expressive and creative as they please. On average, English writers mention 2.24 ground elements in each description of a motion event, whereas Spanish writers mention 1.52.

As shown in Table 1.5, when an author does make reference to ground—source, goal, medium, landmarks—English-language authors are far more likely than Spanish-language authors to refer to two or more ground locations, and Spanish-language authors never refer to more than two. Thus the novels, like the frog stories, show English narrations to be richer in encoding path details. I suggest that satellite-framing typology orient speakers to path descriptions outside of the verb. Learning a verb-framed language, by contrast, locates path information in verbs, and each verb can convey only a particular type of path.4

Returning to the frog stories, one might ask, then, if Spanish provides other means for providing details of paths, rather than associating ground elements with a single verb of motion. Up to this point, the data presented here have taken the CLAUSE as the unit of analysis for motion description. Most work in linguistic typology focuses on lexicon and grammar, and does not concern itself with larger units. However, in narrative discourse, the movements of a protagonist from place to place are situated in a physical setting and temporal flow of events. Narrators need not limit a path description to a single verb and its adjuncts. In describing realworld or fictional events, a narrator may present a series of linked paths or a path with way-stations. Perhaps Spanish speakers prefer to analyze a motion event into separate clauses, as in (8). The frog story is useful here because we can compare narrations of the same event. Consider the scene of the fall from the cliff again. It consists of six narrative segments, each of which are mentioned in one narration or another:

NARRATIVE SEGMENTS OF THE FALL FROM THE CLIFF: deer starts to run; deer runs, carrying boy; deer stops at cliff; deer throws boy (off of antlers/down); boy and dog fall; boy and dog land in water

Perhaps Spanish narrators mention MORE SEGMENTS of the event, rather than expressing it compactly in English fashion. But this is not the case. The relevant

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4Continuing crosslinguistic study of novels also demonstrates the predicted patterns: German, Dutch, and Russian (satellite-framed) resemble English, while French, Turkish, and Japanese (verb-framed) resemble Spanish with regard to descriptions of motion events (Slobin, in preparation). Note that genetic relationship and common culture have nothing to do with these patterns; the typology of lexicalization patterns divides languages on a different basis than common ancestry, culture, or literary tradition.
TABLE 1.5
Percentages of Motion Events with Ground References in Novels

<table>
<thead>
<tr>
<th>Language</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3+</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
<td>61</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>Spanish</td>
<td>19</td>
<td>73</td>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

data come from 9-year-olds and adults, since preschoolers do not tend to provide many details in their stories. The data are shown in Table 1.6, using only the Madrid stories. Only 40% of the Spanish 9-year-olds provided three segments, and none of them provided more than three. In contrast, 92% of the American 9-year-olds provided three or more segments, and, of these, almost half provided more than three segments. Of the adult narrators, 100% of the Americans and only 75% of the Spaniards provided three or more segments of the motion event. In sum, Spanish speakers do not seem to "compensate" for minimal use of source-goal clauses by means of a series of separate action clauses that analyze an event into a number of its components. There may be a narrative pressure against elaboration of a path in a series of clauses, with each clause presenting a bit of foregrounded information. A series of path verbs is "heavier" than a single verb with a series of path satellites and prepositional phrases, and narrators probably avoid this "heaviness" in verb-framed languages.

To sum up thus far: In comparison with English-speakers, Spanish narrators use a smaller set of motion verbs; they mention fewer ground elements in individual clauses; and they describe fewer segments of a motion event. Yet their frog-story narratives, overall, seem to "tell the same story" as English accounts. Although the analysis has been extended from verbs of motion to include associated locative phrases, and has gone from individual motion verbs to series of clauses, the focus has remained on descriptions of MOVEMENT. However, movement always takes place within a physical SETTING. The two languages seem to differ, further, in relative allocation of attention to movement and setting. English, with its rich means for path description, can often leave setting to be inferred; Spanish, with its sparser path possibilities, often elaborates descriptions of settings, leaving paths to be inferred. For example, the trajectories in (7a) and (7b), above, allow one to infer that there is a cliff located above some water: over a cliff into a pond, over a cliff into the water. Compare this to the following Spanish narrative segments:

(10a) Los tiró a un precipicio donde había harta agua. Entonces se cayeron. 'The deer threw them at a cliff where there was lots of water. Then they fell.' [age 7: Chile]

(10b) El ciervo le llevó hasta un sitio, donde debajo había un río. Entonces el ciervo tiró al perro y al niño al río. Y después, cayeron. 'The deer took him until a place, where below there was a river. Then the deer threw the dog and the boy to the river. And then they fell.' [age 9: Spain]

(10c) Lo tiró. Por suerte, abajo, estaba el río. El niño cayó en el agua. 'The deer threw him. Luckily, below, was the river. The boy fell in the water.' [age 11: Argentina]

In these accounts, we are told that the deer 'threw' them and that they 'fell', ending up in the water. We can infer that the trajectory went from some elevated place to the river because of the STATIC descriptions: 'a cliff where there was lots of water', 'a place where below there was a river', 'below was the river'. In comparison with English, Spanish frog stories have an abundance of such static descriptions of settings, suggesting a different allocation of attention between description of movement and description of states. In a sense, the Spanish narrators ARE providing ground information—but it is in separate clauses rather than adjoined to verbs of motion. However, it should be noted that even by this criterion, Spanish frog stories devote less explicit attention to movement and ground, broadly conceived, than do English versions. Table 1.7 summarizes the percentages of the 12 narrators in each age group in Spain and the United States who provided static scene setting descriptions in the scene of the fall from the cliff. There is essentially no development in English, and this option is not taken by any adult narrators at all. In Spanish there seems to be a major development from ages 5 to 9, although only three of the adult narrators take this option.

In sum, analysis of the frog stories reveals a distinct contrast in RHETORICAL STYLE between English and Spanish. English-speakers may devote more narrative attention to the dynamics of movement along a path because of the availability

TABLE 1.7
Percentage of Narrators Providing Extended Locative Elaboration in Describing the Fall from the Cliff

<table>
<thead>
<tr>
<th>Language</th>
<th>5 yrs</th>
<th>9 yrs</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>8</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Spanish</td>
<td>8</td>
<td>42</td>
<td>25</td>
</tr>
</tbody>
</table>
of verbs of motion (often conflated with manner) that can readily be associated with satellites and locative prepositional phrases to trace out detailed paths in relation to ground elements. Spanish speakers, by contrast, seem to be led (or constrained) by their language to devote less narrative attention to the path dynamics and perhaps somewhat more attention to static scene-setting.

As a result of this broad cross-typological analysis, comparing a satellite-framed and a verb-framed language, it is possible to propose an implicational universal on the level of the typology of rhetoric:

**IMPLICATIONAL UNIVERSAL**: Narratives in verb-framed languages will tend to devote relatively more attention to scene-setting and relatively less attention to details of paths of motion, in comparison with satellite-framed languages.

This claim can be tested by gathering data from other languages of the two types. That is, having established a pattern in languages belonging to different typological classifications, it is time for replication INTRA-typologically, seeking evidence from additional languages of each type. Additional data from the frog-story project support the implicational universal. There is another satellite-framed language in the sample—German, and two more verb-framed languages—Hebrew and Turkish. Example (11), from German, shows the pattern of event compacting familiar in the English data:

(11) **German**: Der Hirsch nahm den Jungen auf sein Geweih und schmiß ihn den Abhang hinunter genau ins Wasser.

'And the deer took the boy on his antlers and hurled him down from the cliff right into the water.' [age 9]

Hebrew and Turkish, like Spanish, show the rhetorical style of stage setting: ‘a cliff that had a swamp underneath’; ‘Just in front of them there was a cliff. Below there was a lake’:

(12a) **Hebrew**: Ve ha’ayil nivhal, ve hu hitxil laruis. Ve hakelev rats azarav, ve hu higta lemacok she miyaxat haya bitsa, ve hu atsar, ve hayeled ve hakelev naftu labtisa beyxad.

'And the deer was startled, and he began to run. And the dog ran after him, and he reached a cliff that had a swamp underneath, and he stopped, and the boy and the dog fell to the wamp together.' [age 9]

(12b) **Turkish**: Ancak önlere bir çurum vardi. Altıda göldü. Çocuk hız yapığı için, geyiğin başlarından köpeğiyle birlikte düştü.

'Just in front of them there was a cliff. Below there was a lake. Because the boy was making speed, he fell from the deer’s head together with his dog.' [age 9]

The satellite-framed languages allow for compact presentation of a path of motion, clustering around a single verb, as in the case of schmeißen 'hurl' in (13), or throw and tip in (7). This means of expression is already available to some preschool-age children, as shown in the 5-year-old English example in (7a). By contrast, in verb-framed languages, where the verb indicates only directionality, the narrator is faced with the task of providing enough stage-setting information for the details of the trajectory to be inferred, as in the Spanish examples in (10) and the Hebrew and Turkish examples in (12). Hardly any preschool-age narrators show this level of proficiency in verb-framed languages.

Table 1.8 expands the data presented in Table 1.7 to include all five languages of the Berman/Slobin study. The table shows the percentages of 5- and 9-year-olds who provide the kind of extended locative elaboration shown in (10) and (12)—that is, descriptions of the static locations of landmarks, such as cliff and water, enabling the listener to infer the source and goal of movement. It is evident that this sort of locative elaboration is rare in the preschool texts in Spanish, Hebrew, and Turkish, but that it develops in school age. By contrast, it is not an option that is exploited in English and German, where satellite-framed devices are available from early on.

More recently it has been possible to ascertain the presence of these patterns in a much larger collection of languages. In a 1995 frog-story workshop we were able to compare nine satellite-framed and seven verb-framed languages. The languages are listed below, with the names of the investigators who gathered the data:

**SATELLITE-FRAMED LANGUAGES**

- **Dutch** (Jeroen Aarsen, Petra Bos, Ludo Verhoeven, Carla Zijlenmaker)
- **English** (Virginia Marchman, Tanya Renner)

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1 The workshop was supported by the National Science Foundation and was held at the University of New Mexico in conjunction with the Linguistic Institute of the Linguistic Society of America. Participants in the workshop were Jeroen Aarsen, Ayhan Aksoy, Michael Bamberg, Edith Bavin, Ruth A. Berman, Petra Bos, Nancy Budwig, Harriet Jisa, Catalina Johnson Herrera, Sophie Kern, Åsa Nordqvist, Barbara Pearson, Hrafnhildur Ragnarsson, Judy Reilly, Svenka Savič, Dan I. Slobin, Magdalena Smoczyńska, Anat Stavans, Sabine Stoll, Sven Strömqvist, and Ludo Verhoeven.
German (Michael Bamberg, Mary Carroll, Christiane von Stutterheim)
Icelandic (Hrafhníslad Ragnarsdóttir)
Swedish (Åsa Nordqvist, Sven Strömqvist)
Polish (Magdalena Smoczyńska)
Russian (Yana Anilovich, N. V. Durova, N. M. Yurieva)
Serbo-Croatian (Svenka Savić)
Warlpiri (Edith Bavin)

VERB-FRAMED LANGUAGES
French (Harriet Jisa, Sophie Kern)
Italian (Margherita Orsolini, Franca Rossi)
Portuguese (Isabel Hub Faria)
Spanish (Aura Bocaz, Eugenia Sebastián)
Moroccan Arabic (Petra Bos, Ludo Verhoeven)
Hebrew (Ruth A. Berman, Yoni Neeman)
Turkish (Ayhan Aksu-Koç, Aylin Küntay)

So far we have examined ten adult frog stories in each of these languages. In describing the fall from the cliff, 21% of narrators in the verb-framed languages provide static scene-setting, in comparison with 8% in the satellite-framed languages. In fact, there are no instances at all of such elaboration in Dutch, German, English, Polish, or Russian. By contrast, there are instances in each of the verb-framed languages. The patterns represented in Table 1.6 for English and Spanish are also replicated in the larger sample. Adult narrators in the satellite-framed languages mentioned, on average, more segments of the fall from the cliff, and were far more likely to mention three or more segments, in comparison with narrators in the verb-framed languages. The expected typological differences also held up on the level of the individual clause. On average, comparing the nine satellite-framed with the seven verb-framed languages, adult narrators mentioned more ground elements per verb of motion in the satellite-framed languages. Thus the predicted patterns of rhetorical style seem to be replicable across languages, based on their typology alone.

The child, of course, must learn such patterns—though we have no adequate model of this sort of complex, interactive learning. The patterns are not prescribed by the grammar, but they are consequences of the set of options made available by the grammar. The form of the discourse that children are exposed to is, of course, also determined by the same forces. But children do not simply copy those discourse forms, as evidenced by age differences in the frog stories, across the five languages of the original sample. As noted above, children learning satellite-framed languages provide elaborate path descriptions in the preschool years, using combinations of satellites and prepositional phrases. But children learning verb-framed languages do not manage scene-setting until school age. This is part of a general development of intralinguistic skills, as reflected also in the development of definiteness discussed earlier. The emergence of such skills then has consequences for the mastery of a range of syntactic forms, such as relative clauses, definite referring expressions, anaphora, and temporal subordination (Berman & Slobin, 1994). Explanation of learning processes of this sort requires attention to a number of interlocking factors, going beyond current "domain-specific" approaches to development.

3.3. Intra-Typological Contrasts in Motion Verbs

Returning to verbs of motion, it is profitable to look at patterns of development in similar languages. As in Bowerman's studies, detailed intra-typological comparisons can reveal the roles of additional factors in this domain. Here a comparison of German with English is useful (Bamberg, 1994). As in English, there is a rich collection of verbs of motion and caused motion, most of them simultaneously expressing manner. We have data from four age groups in German—3, 5, 9, and adult—with 12 narrators in each group. Across this age range, in all 48 narrations, there are 37 types of verbs of motion, as shown in (13).


Similar to English, the diversity of verbs of manner is impressive, and we find far more attention to manner of movement in the Germanic languages than in Romance, Semitic, and Turkic. This is also evident in the analysis of the novels, where English writers pay more attention to manner—whether writing originally in English or translating from Spanish (Slobin, 1996b).9

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8The larger sample includes preschool and school-age children, but the child data have not been fully analyzed yet. A volume on the larger project is forthcoming.
9The novels mentioned in footnote 6—written in German, Dutch, Russian versus French, Japanese, Turkish—also show the expected difference with regard to descriptions of manner of movement. In fact, it may be the case that verb-framed languages have smaller lexicons of manner-of-movement verbs, in comparison with satellite-framed languages, where manner verbs fill a core syntactic function while supporting associated satellites which encode path of movement.
In addition, as in English, each of the verbs in (13) can be combined with a large range of path satellites, expressed as verb particles in German. For example, using a simple motion verb with no indication of manner—kommen ‘come’—all of the following occur in the German texts:


On the other hand, we can pick a German path satellite and note its occurrences with a range of verbs of motion. For example, all of the following verbs of motion are combined with the particle raus ‘out’ in the frog stories:


As in the English sample, then, when all of these possibilities are taken into consideration, there are far more than 37 types of verbs of motion in the German texts.

Path satellites in German encode directionality, as in English. But, in addition, they encode deictic viewpoint by means of the particles hin ‘thither’ and her ‘hither’, which can combine with the directional particles. The range of possibilities is thus considerably greater than in English, allowing for expression of VIEWPOINT PERSPECTIVE along with directionality of motion. Compare, for example, the two descriptions of the dog’s fall from the window shown in (16). In (16a) the narrator’s eye is outside of the house, at ground level, as indicated by the satellite her ‘hither’, while in (16b) the satellite hin ‘thither’ traces a path downward from the viewpoint of the windowsill.

(16a) Da fiel der Hund zur Erde her-aus.
‘There the dog fell hither-out to the ground.’ [age 9]

(16b) Als er sich auf die Fensterbank setzte und hin-unter-fiel, zerbrach das Glas in tausend Stücke.
‘When he got onto the windowsill and thither-down-fell, the glass broke into a thousand pieces.’ [age 9]

German thus provides rich possibilities for detailed description of motion in a given direction in a given manner, and from a particular viewpoint. And a child learning this type of language must learn to attend to all of these features of motion. Table 1.9 shows the range of satellites that were combined with verbs of motion by the children in the German sample (from Bamberg, 1994, p. 221). The translations are only an approximation: Here the richness of German exceeds English. Note that even the 3-year-olds command a large number of verb-satellite combinations. The distinction between hin and her is present by age 5 (and probably earlier).

As in English, this range of motion-manner expressions has consequences for the particular rhetorical style that characterizes German frog stories (and German narrative generally). There is an elaboration of spatial movement and location, with attention to the three dimensions of direction, deictic viewpoint, and manner. Prepositional phrases combine freely with verb-satellite constructions to trace out complex trajectories. And there is far more attention to the dynamics of movement than to static descriptions of locations. It seems, then, that learning the available options for describing motion events in a particular language pushes the child to attend to particular features of such events. The lexicalization patterns lead not only to the development of a range of syntactic devices, but also to a
sort of “thinking for speaking” (Slobin, 1991, 1996a) that is characteristic of the input language.

3.4. Cross- and Intra-Typological Consequences of Rhetorical Style

Research of this sort points to the development of an overall rhetorical style that emerges from the interplay of a number of interacting factors in each type of language. Consider again the importance of static locative descriptions in a verb-framed language like Spanish. Increased attention to stage-setting has a number of consequences for syntactic development. For example, stage-setting is background information, and in a competent narrative, such information should be presented in subordinate clauses. Note the use of relative clauses in the 9-year-old Spanish examples in (10): donde había harta agua ‘where there was lots of water’, donde debajo había un río ‘where below there was a river’. The same is true of the 9-year-old Hebrew example in (12a): macok she mitaxat haya bitisa ‘a cliff that had a swamp underneath’. Dasinger and Toupin (1994), analyzing the frog-stories, have found that Spanish and Hebrew speakers use relative clauses earlier, and for a wider range of functions, than speakers of the other languages in our sample. Relative clauses have a heavier functional load in narratives told in verb-framed languages—at least of the Romance and Semitic type. (Turkish is different, for reasons discussed below.) Here, again, we can seek a network of implicational universals.

Spanish has been described as a “topic-dominant” language, in contrast to English, which is “subject dominant.” That is, in English the subject role tends to be assigned to the highest or most agentlike semantic argument of the verb, whether or not it is the discourse topic. Spanish tends to reserve grammatical subjects for established or given discourse topics (Bates & Devescovi, 1989, p. 238).10 As a consequence, another function of relative clauses in Spanish is the introduction of protagonists in nonsubject position, as the following 5-year-old example:

(17a) Salió un buho que le tiró al niño.
‘(There) came out an owl that threw the boy.’ [age 5]

Compare this to an English-speaking 5-year-old, describing the same scene:

(17b) And then he goes up there, and then an owl comes out. And he falls. [age 5]

The new protagonist, an owl, is introduced in subject position, and the following event is presented in an independent clause.

Here we have a complex interweaving of typological factors that work together to influence syntactic acquisition: the discourse functions of relative clauses in a language that is both verb-framed and topic-dominant conspire to accelerate the acquisition of both the construction and its functional range.

The examples in (17) also implicate another typological dimension: the so-called “null subject parameter.” Spanish is a “pro-drop language”—that is, the use of subject pronouns is optional, apparently because verbs are clearly marked for person and number. Sebastián and Slobin (1994) have suggested that relative clauses in Spanish play a discourse role comparable to the use of null pronouns in English in conjoined constructions. Consider various ways of reporting the situation in which the owl emerges and knocks the boy out of the tree. In both Spanish and English, it is possible to conjoint two clauses with ‘and’, as shown in (18). Note that the null subject in the second clause is obligatory in Spanish, whereas an explicit pronoun is used in the English version. (An explicit subject pronoun in the second clause in Spanish would have to be contrastive: an owl came out, and some other known participant threw the boy.)

(18a) Salió un buho y le tiró al niño.
‘(There) came out an owl and it threw the boy.’

(18b) An owl came out and it threw the boy.

Both versions in (18) present the emergence of the owl and his subsequent action as temporally separate events: the owl emerged, and then he did something. By contrast, the Spanish example in (17a), with a relative clause, is more tightly packaged. It presents the two events as phases of a single, larger event. Comparable event packaging is achieved in English by subject ellipsis in the second clause. Compare the two versions in (19), repeating (17a) as (19a), with its functional equivalent in English:

(19a) Salió un buho que le tiró al niño.
‘(There) came out an owl that threw the boy.’

(19b) An owl came out and it threw the boy.

The null pronoun is the default in Spanish, and so another construction, the relative clause, is called upon for tighter event packaging. In English, where an explicit subject is the default, an elliptical construction serves the same purpose.11

10This pragmatic typology is different from Demuth’s syntactic typology discussed above. In the “topic-oriented” languages of her analysis, it is grammatically that is at issue; in situ questions such as the equivalent of “Who wants the food” are not licensed. Such questions are grammatical in a “topic-dominant” language like Spanish. What is at issue is the normal discourse function of grammatical subjects in declarative sentences.

11Sebastián and Slobin (1994) discuss the situations in which an explicit subject pronoun is required in Spanish, noting that the acquisition task in a “pro-drop” language involves attention to such factors as reference maintenance versus shift, contrastive emphasis, and the like. They note: “It strikes us as anglocentric to refer to a language like Spanish as ‘pro-drop’ What the Spanish-speaking child has to learn is not when to drop a subject pronoun, but rather when to add one appropriately” (p. 281). . . . “We would conclude, accordingly, that the Spanish-speaking child has to learn a ‘pro-add’ language, whereas the English-speaking child has to learn when to stress or delete pronouns that are otherwise obligatory and unstressed” (p. 283).
Thus the functions of syntactic constructions—and the course of their acquisition—cannot be understood outside of a typological framework. And such a framework obliges us to examine the set of contrasting grammatical forms and their discourse roles in order to explain the course of acquisition of any particular form. Relative clauses in Spanish and English, though syntactically similar, have distinctly different roles, given a range of typologically defined and interacting discourse functions.

Following the intra-typological approach further, relative clauses should have similar functions and a similar course of acquisition in the other Romance and Semitic languages (with the exception, perhaps, of French, at least for the role that Sebastián and I have proposed for pro-drop, since French is not a pro-drop language). And, in fact, Bates and Devescovi (1989) have found some Italian uses of relative clauses that are like our Spanish data. Both languages avoid beginning a sentence with a new topic in sentence-initial position, which pulls for the use of some kind of introducer followed by a noun and a relative clause that predicates some activity of the new topic. For example, in describing a picture of a monkey eating a banana, Italian speakers prefer (20a), while English speakers most often provide something like (20b):

\[(20a) C'è una scimmia che mangia una banana.\]
\[\text{There's a monkey that's eating a banana.}\]

\[(21b) A\ monkey\ is\ eating\ a\ banana.\]

Bates and Devescovi conclude with an important suggestion about rhetorical style, which they call a “descriptive habit” (p. 252):

If a surface form serves a wider range of functions in one language...then it will be called into service more often. The more often it is used, the lower its threshold of activation...The relative clause difference that we have documented here may reflect the joint effects of function and frequency, operating synergistically to create a “descriptive habit” in native speakers of Italian. The combined availability and reliability of the Italian relative clause also makes it an attractive linguistic object for small children, whether or not they have fully grasped the topic-marking function that justifies frequent use of this object in the adult language.

We can now add another typological factor, based on discourse function. Looking across genetic classifications, a major reason why relative clauses have similar discourse functions in Spanish and Hebrew is due to factors of INFORMATION FLOW, conditioned by word-order typology. Both Spanish and Hebrew are SVO languages. Turkish, however, is SOV, and, as a consequence, the role of relative clauses is rather different. Here, again, cross-typological research is important: although Turkish is verb-framed, like Romance and Semitic, it belongs to a different word-order typology. Relative clauses precede the noun they modify in an SOV language, as part of an overall cross-category harmony of construction types (along with postpositions, postverbal auxiliaries, etc., as discussed by Hawkins [1983]). As Dasinger and Toupin (1994, p. 488) point out, “the sequence MAIN CLAUSE–RELATIVE CLAUSE allows the speaker to FIRST introduce a new referent in nonsubject position and THEN assert a proposition about it.” This natural information flow preserves topic-comment order. However, the Turkish order is RELATIVE CLAUSE–MAIN CLAUSE. Consider how strange it would be to say something like: “A that-threw-him-down owl came out”. In other words, the order of information flow in an SOV language would require the narrator to predicate something of a protagonist that has not yet been introduced into the scene. As a consequence, relative clauses are not a frequent option in Turkish frog-stories. Here another kind of typological constraint—word order—impacts on the availability of a construction type for a particular discourse function.

4. CONCLUSION

These patterns of implicational relations—syntactic and pragmatic—underline the Leitmotif of this chapter: ONE CANNOT MAKE CLAIMS ABOUT THE ACQUISITION OR USE OF A GRAMMATICAL FORM WITHOUT SITUATING IT TYPOLOGICALLY, IN A NETWORK OF INTERACTIVE PSYCHOLINGUISTIC FACTORS. Some of these factors are a consequence of online information processing at the clause level, while others require attention to the organization of information in connected discourse. As a result, the acquisition and development of any linguistic form or construction must be considered in the light of its “functional load” within the language and speech community. A full theory of language acquisition and development will thus have to attend to three levels of analysis: UNIVERSALS and TYPES and FUNCTIONS. A tremendous amount of basic work remains to be done before we can approach such a theory.

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1. Universal, Typological, Particular in Acquisition


Spanish:

NOVELS

English: