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## Typological Perspectives on Connectivity<sup>1</sup>

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### 1. Domain of Inquiry

The topic of "connectivity" forms part of what is characterized as "cohesion" or "cohesiveness" in general and narrative discourse analysis (e.g., Halliday / Hasan, 1976; Grimes, 1978; Hickmann, 1995). In the present context, connectivity corresponds to what is termed "clause combining", "clause-linkage", or "clause-chaining" in typological linguistics (Haiman / Thompson, 1988; Slobin, 1988), or what we called "syntactic packaging" in the context of narrative-text production (Berman / Slobin, 1994). Under all these labels, connectivity concerns the way in which speakers (or writers) mark interclausal connections in describing situations, and how they link together the parts of a text in the course of its construction. In developmental studies, the topic has been analyzed mainly as expressed by overt lexical markers of such connections, as well reviewed by Peterson / McCabe (1991) for narrative development in English, and as I have discussed elsewhere for Hebrew (Berman, 1988; 1996).

In the discourse-embedded terms under consideration in this chapter, connectivity – in the more general sense of clause-linkage adopted here – lies in the domain of what can be defined as *rhetorical options*: the linguistic devices which speakers select to express a particular conceptual content or textual function out of the entire repertoire of forms (morphological, syntactic, and lexical) occurring in the target language (Berman, 1995a, 1996). In developmental terms, this means that children

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learning how to construct texts, whether narrative or other, need to acquire knowledge not only of *what* forms are available, but also which are preferred, and how they are deployed for particular textual purposes and in different discourse contexts.

In our crosslinguistic study of narrative texts based on the picture booklet *Frog, where are you?* (henceforth, "the frog story"), produced by children aged 3 to 9 years compared with adults, we identified five types of devices for what we termed "syntactic packaging" (Berman / Slobin, pp. 538-55).

(1) "Syntactic Packaging" (Berman / Slobin, 1994, pp. 538-555):<sup>2</sup>

Devices	English Examples
Coordination with null subject:	The owl came out <i>and scared the boy</i> .
Verb gapping:	The boy started looking, <i>and so did the dog</i> .
Relative clauses:	He's showing it to the dog, <i>who seems fairly interested</i> .
Finite linking:	The dog's running away <i>because the bees are chasing him</i> .
Nonfinite linking:	He lifted his head up <i>carrying the boy with him</i> .

In all five languages in the crosslinguistic frogstory sample, the amount of "syntactic packaging" per text increased quantitatively as a function of age – both as mean percentage of "packaged" clauses and by mean number of clauses per package (Berman / Slobin, 1994, pp. 538-543). And qualitatively, the range and type of packaging devices expanded and changed with age. This is consistent with findings from a range of Hebrew-language studies, which reveal that use of embedded clauses increases significantly with age (Berman, 1997). The findings laid out in Table 1 refer to subordination by any of the following three types of finite constructions: complement clauses, adverbials, and relatives combined.

2 To these devices should be added simple juxtapositioning, where clauses are connected by shared semantic content and by pragmatic knowledge rather than by any overt lexical or syntactic means, e.g., "I'm famished. There's a MacDonald's down the road". (See Berman, February-1996; Mann / Thompson, 1986).

Table 1: Percentage of subordinate clauses [SCs] out of total clauses/utterances used by Hebrew-speaking children in three studies, by elicitation setting and age-group

Study	Setting	# Ss	Mean Length	Age	Percentage of SCs per Text Length
Dromi-Berman 1986	Con- versa- tion	116	170 clauses	1 - 2	--
				2 - 3	4.6
				3 - 4	9.5
				4 - 5	5.4
Rabinowitch 1985	Con- versa- tion	53	100 utterances	3 - 3	8.5
				4 - 5	16.6
				5 - 5	17.3
Berman 1988	Narra- tive	72	54 clauses	3 - 4	4
				4 - 5	7
				5 - 6	11
				7 - 8	14
				9 - 10	18
				Ads	23

These figures reveal a consistent age-related rise in overall amount of subordinate clauses used by children in different discourse contexts. Use starts as early as age two, it levels off in conversational interaction with adults at late preschool age (age 4 to 5 years), and increases in narratives produced by schoolage children. This suggests that, in general, amount of subordination constitutes a good indicator of grammatical development at a stage in language acquisition when MLU or other similar measures are no longer distinctive. These findings further indicate that the same type of construction may show up earlier, or with higher frequency, in conversational interaction than in the context of extended discourse – an idea which is supported by other evidence considered later in this chapter.

The present analysis focuses on the effect of target language typology on these general trends, by reconsidering four topics which emerged from our analysis of connectivity in the frogstory study: (a) Use of *also* as an immature marker of connectivity (Section 2); (b) null subjects (3.1); (c) function and distribution of relative clauses (3.2); and (d) finite versus nonfinite subordination (3.3) in different language types. This analysis is confined largely to the frogstory sample, but similar trends are evident in other types of narrative texts produced by children in describing personal

experiences, the contents of a short picture-series, or of a film without words (Berman, 1995b).

## 2. A Developmental Precursor

Another device for connectivity needs to be added to those in (1). Use of an "additive" expression meaning *also* was common in the frogstory texts of the youngest children in our sample, aged 3 to 4 years, in German (*auch*), Spanish (*también*), Hebrew (*gam*), and Turkish (*de*) – as well as French *aussi* (Kern, 1997). In all these languages, this floating operator served to indicate "activities carried out jointly by two protagonists as well as the same activity carried out across more than one picture by a single protagonist" (Sebastián / Slobin, 1994, p. 273), functioning as "an additive tag for successive utterances" (Aksu-Koç, 1994, p. 369). Examples translated from Hebrew texts are given in (2), with subjects' ages indicated in square brackets.

(2) Examples of *also* as a precursor of connectivity:

- a. And the deer went up the mountain. And here the deer *also* went up the mountain. [3;8]
- b. And the boy goes up on the deer, and *also* the boy sits on the deer. [3;7]
- c. And the dog wanted to jump from the window, and and ... he jumped, and the boy watched, and after that the boy *also* jumped [5;3]

These uses of terms meaning 'also' – particularly of the 3-year-olds in examples (2a) and (2b) – illustrate a more general developmental phenomenon: a particular linguistic form serves among young children as a "precursor" to more structurally complex, and more discursively appropriate, means for expressing a particular content or function. Interestingly enough, this characterization of *also*, although proposed within a different conceptual framework, is closely analogous to the analysis presented by Penner, Tracy, and Weissenborn (1996) for the German focus particle *auch* as well as other special lexical elements like the negation particle *nicht* at an even earlier period of acquisition, in two-word utterances. They describe these as fulfilling "a pioneering function for syntactic structure building". From their perspective, these "precursors" represent a state of underspecification which leads to

"stage-specific interim solutions" in the acquisition of syntax. A not dissimilar situation exists with respect to the deployment of the equivalents of *auch* in the frogstory narratives of 3- and 4-year-old children speaking different languages.

The counterparts of *also* are used similarly across four of the five languages in the Berman / Slobin sample, as well as in Kern's (1997) French narratives. (The absence of the English equivalents *also* or *too* in the North-American children's sample is a puzzle to which I return later). They are commonest among the younger children, typically together with a deictic marker like *here*, *now*, indicative of a picture-by-picture description of events. And they occur in a very similar way in texts produced by Hebrew-speaking 4-year-olds on the basis of short picture-series (Katzenberger, 1994), so that their occurrence is not restricted to the "frogstory" context. With development, these expressions change in both form and function: they are used far more sparingly by older children, in more complex syntactic contexts and with a more conventional semantic content, as in the excerpt from the Hebrew-speaking 5-year-old in (1c). For example, in English *also* serves in a correlative context such as *not only ... but also*; and in Turkish, *de* is used by older narrators with an anaphoric function in a range of temporal contexts, rather than with deictic markers. Aksu-Koç (1994, p. 371) sums up "developmental progress in the positioning of *de*" as shown in (3).

- (3) *burda da* 'and here' > *sonra da* 'and then' > *o strada da* 'and in the meantime' > *kavanoz kurildi(iinda da* 'and at the breaking of the jar'.

This initial use of expressions meaning *also* in linking clauses appears to be "typologically neutral": the relevant term is used similarly by children speaking languages in whose endstate grammars they demonstrate a range of different syntactic constructions and semantic content. However, indepth analysis across a longer period of development in different languages is needed to confirm this claim. For example, *auch* occurs as early as in two-word utterances in German (Penner, Tracy, / Weissenborn) as does *ook* in Dutch (Schaerlakens, 1973). In contrast, its English and Hebrew equivalents, *also*, *too* and *gam* respectively, while quite common in the speech of 2-year-olds at the stage of early clause-structure, seem not to appear at all in these children's two-word utterances (Berman, 1985; Borochofsky, 1984; Bowerman, 1973; Braine, 1976; Tomasello, 1992). And we are left with the puzzle of why *also*, *too*

fail to occur in the English-language frogstory texts, in contrast to the quite common, and similar, usage of its equivalents in five other languages in this same sample (French and Spanish, German, Hebrew, and Turkish). One suggestive fact is that in English and in Hebrew two-word utterances, the “additive” function is performed by other lexical elements, specifically English *more* (and occasionally *again*), Hebrew *od* (and occasionally *od paam* ‘again’), in ways not dissimilar to German *noch(mal)*. To describe and hence to explain the full developmental route of such elements, as compared both across stages and across languages, requires tracing the path of these “precursors” from their earliest appearance in two-word utterances and isolated clauses through to their functioning in the context of discourse-embedded clause-linkage.

The analysis of *auch* and its equivalents in our frogstory sample at this points suggests that this element is typical of immature precursors of rhetorical functions. They manifest early emergence of the relevant *conceptual* underpinning of a notion (here, the additive aspect of connectivity), one which is shared across children and across languages. But the ability to deploy appropriate, and typologically specific means in the form of normative morpho-syntactic structures for marking such functions develops only later, and quite gradually. A similar development emerges from studies of other linguistic devices, undertaken from quite different perspectives. One such instance is revealed by comparison of young children’s ability express the idea of resultant endstates in English, Hebrew, and Cantonese (Berman, Clark, / Cheung, in progress). And a pattern which corresponds to the one noted here for use of *also* in extended discourse is demonstrated by young children’s immature reliance on the conjunction *and* for marking of temporal sequencing and narrative segmentation in English (Peterson / McCabe, 1991), French (Jisa, 1987), and Hebrew (Berman, 1996).

These different analyses, like the one proposed here for the “additive” lexical item as a precursor to clause-linkage and discourse-connectivity, are consistent with what has been termed a “weak continuity” view of language acquisition in studies based on formal models of linguistic structure (e.g., Weissenborn / Schriefer, 1987) as well as from the perspective of developing form/function relations espoused by the present author (Berman, 1996). Children use only lexical elements which are available in their target language, and they use them in ways which do not violate possible linguistic structure in language in general, and which do not radically depart from what is acceptable in their own mother

tongue.<sup>3</sup> Initially, these “precursor” elements, like various other placeholders noted in the literature (e.g., a neutralized or “underspecified” *que* in French, *\_e-* ‘that’ in Hebrew), represent intermediate strategies adopted by children en route to full command of the morpho-syntax of their target language. With time, use of *auch* and its equivalents as a precursor gives way to clause-chaining by means of a range of syntactic devices, like those listed in (1) above.

### 3. Typological Comparisons

Below are analyzed three devices for marking textual connectivity which differ across languages and which give insight into children’s developing ability to use language-particular means in constructing narrative and other texts: null subjects (Section 3.1), relative clauses (3.2), and finite compared with nonfinite means for combining clauses (3.3).

#### 3.1 Null subjects

Languages differ in how freely they dispense with pronominal subjects in isolated clauses or when the subject is coreferential across conjoined or embedded clauses. The table in (4) shows different levels of subject obligatoriness or optionality in the four languages whose frogstory sample is analyzed here; a plus indicates that a surface grammatical subject is required, a minus indicates that it is prohibited, and parentheses indicate that it is optional or required in some circumstances but not others.

- 3 Compare, for example, the occurrence of a wellformed two-word utterance like English *me too* and its Hebrew equivalents, where one will two different word orders with the nominative first person singular pronoun *ani* to yield either normative *gam ani* and more juvenile *ani gam* ‘also I’ and ‘I also’ respectively. Language-particular differences are revealed by the fact that the following will be produced in Hebrew only by children who are beyond the phase of two-word utterances, and who already have some command of grammatical inflection: the fully normative, although truncated, two-word expressions with the accusative form of the first person pronoun – *gam oti* alternating with *oti gam*, the literal equivalents of English ill-formed ‘also me’ and acceptable though truncated ‘me too’.

(4) Requirement of surface grammatical subject by type of clause and language:

Clause	English	Hebrew	Spanish	Turkish
Lone Clause	+	(+)	(+)	(+)
Coordinated:	(+)	(+)	-	-
Embedded:	+	(+)	-	-

These options are illustrated by the sentences in (5).

- (5) Eng: He fell down and (he) broke the jar when he fell out the window.  
 Heb: *Hu nafal ve (hu) shavar et ha-cincenet kshe (hu) nafal me ha-xalon.*  
 Spa: *(El) se cayo y rompio el jarro cuando se cayo de la ventana.*  
 Tur: *(O) pecereden duserken dusup kavanozu ki rdl*  
 '(he) window-ABL falling-while falling-and jar+ACC broke'

In English, the pronoun is obligatory in the first, main clause, and in the third embedded clause. In Hebrew, a third-person pronoun is obligatory in the first clause, but it can be omitted elsewhere;<sup>4</sup> like in English, it is optional in the coordinated clause but, unlike English, it can also be omitted in the embedded clause, on condition of coreference with the main clause. Turkish is like Spanish in its propensity for null subjects, but even more strongly, since its embedded clauses are typically nonfinite, and hence disallow a surface subject (see Section 3.3). Thus, English, like French, can use subject ellipsis as a device for rhetorical connectivity only in coordinate clauses;<sup>5</sup> Spanish, like Italian, must use subject "pro-drop" as a grammatical requirement in coreferential coordination and subordination; and Turkish, too, disallows pronominalized coreferential subjects in both coordinated and subordinated clauses – irrespective of

4 This is only partially correct, since in 1st and 2nd person, past and future tense, the subject pronoun is marked inflectionally on the verb, so can be omitted in isolated clauses – hence the parentheses in the first line for Hebrew, under "lone clauses" (Berman, 1990).

5 Interestingly, English also allows – in fact, often requires – subjectless clauses in the case of nonfinite embeddings, as shown in the examples in (7b) below.

whether these are finite or nonfinite. Hebrew lies between these extremes, with null subjects optional in all three syntactic contexts.

The developmental consequences of these typological contrasts reveal a U-shaped pattern in languages where null subjects are either ungrammatical or optional. In English and Hebrew, young children may omit grammatical subjects where they are required (as in lone clauses), but they fail to use null subjects for purposes of syntactic packaging. Older children overuse pronoun subjects in English and Hebrew coordinate clauses and in Hebrew subordinate clauses, but they do *not* show such overmarking in Spanish or Turkish embedded clauses. That is, where the grammar *requires* children to rely on a device such as subject elision, they do so as soon as they start to use the relevant constructions, around age 4 or 5 in our sample. But where the form represents an *optional* rhetorical device, it is later to emerge, as we found for a range of forms we examined in the frogstory texts (e.g., optional alternation of SV with VS order in Hebrew and Spanish, and optional tense-shifting in Hebrew versus obligatory alternation of grammatical aspect in English, Spanish, Turkish). Thus, at the stage where English and Hebrew speakers start to mark interclause connectivity by null subjects in coreferential coordination, Spanish-speaking children will use this device in subordinate clauses, and Turkish children in nonfinite embeddings – perhaps even sooner.

Moreover, the age-ranges noted here for use of linguistic forms are based on the extended-text productions of the frogstory sample. In isolated sentences, in contrast, and in conversational interaction compared with monologic discourse, these devices occur considerably earlier and with higher frequency, as was noted for German *auch* and Hebrew *gam* in the preceding section (and see, too, Berman [1990] for null subjects in Hebrew and Slobin [1988, 1993] for a range of clause-linking devices in Turkish). In other words, not only do the same surface forms serve rather different textual functions across languages, depending on whether they are optional or obligatory, they also emerge at different developmental stages across discourse contexts, languages, among children acquiring typologically distinct languages.

### 3.2 Relative clauses

Although entered separately among the devices for "syntactic packaging" listed in (1) above, relative clauses obviously constitute a subclass of

“finite means” for clause linking, while reduced relative clauses could be subsumed under “nonfinite” means. Nevertheless, for purposes of this analysis, (finite) relative clauses are treated separately from (finite as well as nonfinite) adverbial clauses, as discussed in the next section. In principle, both relative and adverbial clauses serve an attributive function, and so differ from the obligatory, argumentlike nature of complement clauses. But they differ syntactically in ways which warrant separate discussion. Besides, whereas the analysis in the next section (of finite versus nonfinite embedding by adverbial clauses) was developed specifically for the present study, there is already available a detailed analysis of both the function and distribution of relative clauses in the crosslinguistic frogstory sample (Dasinger / Toupin, 1994).

Early child language (in conversational contexts) reveals different periods at which relative clauses emerge in productive usage. Zvi Penner (personal communication) notes that they emerge as early as 2 years of age in Swiss German, but only around 5 years in Standard German. For English, Hamburger and Crain (1982) report them as used by 2-year-olds, though structurally deficient in form, while De Villiers and De Villiers survey other results “which are in keeping with other data demonstrating the paucity of relative clauses in children’s free speech before the age of 6 years” (1985, p. 112). In contrast, a large number of Hebrew-speaking 2-year-olds for whom longitudinal or cross-sectional samples are available, use relative clauses at least occasionally in the course of conversational interchanges, some of which are illformed, typically omitting the *\_e-* ‘that’ relative marker, others of which are perfectly adultlike (e.g., *ti\_a'er ba-ohel \_e asiti* ‘stay in-the-tent that I made’ [Uri, 2;6]; *ye\_kapit axat \_e ani lo motset* ‘there’s one teaspoon that I can’t find’ [Naama, 2;5]).

The Dasinger and Toupin (1994, pp. 475-481) analysis of the crosslinguistic frogstory sample revealed the following distributional findings: (a) at least one relative clause construction was produced by at least one 3-year-old – the youngest children in the sample – in each of the five language groups; (b) the amount of relative clauses increased, as expected, across the age-groups from 3 to 5 years from 5 to 9 years, with the biggest jump between 9-year-old schoolchildren and adults; and (c) relative clauses were used with significantly different frequencies across the languages, where frequency was defined by two measures – the percentage of subjects who use a relative clause at least once, and the mean number of relatives used within an age-group. Spanish had the highest rate, followed by Hebrew, while in the German sample, there are

fewer relative clauses at age 5 years than in either the English or Turkish texts, and the German 9-year-olds also use them less than their counterparts in the other four languages. A comparable study of French frogstory texts reveals a distribution somewhere between that of Spanish and Hebrew (Jisa / Kern, 1994).

The reasons for these differences represent a complex interaction between relative structural complexity in crosslinguistic terms, on the one hand, and the functions of relative clause as a device for clause-linkage at different among the different age-groups and across the different languages, on the other. In the present context, I will do no more than briefly sketch some of the factors which have been proposed to account for these differences, supplemented by a few observations of my own. As pointed out by Dasinger and Toupin (1994), Spanish and Hebrew present children with a structurally simple option in the form of a single invariant relative marker *que* compared with the different agreement requirements of relative markers in English (choice between *zero*, *that*, *who(m)*, *which*, *where*) or German, and a set of syntactically determined alternants in Turkish. Moreover, Spanish and Hebrew relative clauses mirror the word order of simple clause constructions, again unlike German. Besides, the possibility of alternating SV with VS order in Spanish, and to a lesser degree in Hebrew, makes these two languages particularly open to “continuative” type relative clauses, e.g., a bilingual Spanish-Hebrew speaking 5-year-old uses both the following (Kupersmitt, 1996):

- (6) a. *Y despues, las abejas que salieron de ahi lo picaron.*  
 ‘And then, the bees that came out from there stung him (the little boy)’
- b. *axarkax hem saxu ve higu le makom \_e aleyhem lehagia [sic]*  
 ‘Afterwards they swam and came to (a) place that they-had to arrive (at)’

These type of plot-advancing relative clauses, where two events are linked by relativization rather than by markers of sequential temporality or by adverbial subordinate clauses, are found mainly among the older narrators in English and German, and in French as well. Among young children, across the languages, the relative clauses serve a primarily presentative function, to introduce or reintroduce characters, e.g., English *there’s a boy that has a frog*. Similar findings are reported for French by

Jisa / Kern (1994), who note that children first use relatives to nominate referents, and only later to predicate something about the protagonists. They also found that children do not use relative clauses to predicate transitive events for which the antecedent is the agent. Thus, not only amount but also the discourse or specifically narrative function of relative clauses changes across time.

In more structural and typological terms, two further points should be noted. First, the Hebrew example in (6b) is illformed, because it lacks the case-marked resumptive pronoun (in this case *elav* 'to it') required in relative clauses formed with an oblique object (Hebrew *le-hagia el makom* 'to arrive to=at (a) place'). This complex facet of Hebrew relative-clause formation explains the large number of illformed relative clauses in the Hebrew frogstory texts produced by the 9-year-olds. They use relative clauses for more complex narrative functions, and in more complex syntactic contexts than the younger children, but in doing so, they sometimes fail to observe structural wellformedness. In this, they demonstrate the difficulty which children encounter in "juggling together" the concurrent requirements in online text production of global discourse-organization, interclause rhetorical appropriateness, and local syntactic structure.

Relatively wide use relative clause for the function of clause linkage in the Spanish frog stories demonstrates yet another more general facet of the complex interaction between language knowledge and language use. The particular devices favored by speakers may depend critically on the range of other options available to them in their language for achieving a given discourse function or expressing a particular semantic content. I have argued this in relation to the late emergence of passive constructions in Hebrew (Berman, in press). Taking into account the discussion of null subjects in the preceding section, the same can be said for the favoring of relative clauses in Spanish. Since null subjects are an obligatory grammatical requirement and not merely an optional rhetorical means for achieving greater connectivity (as in English coordinates and in Hebrew coordinate and subordinate clauses) in sentences with two or more same-subject clauses, Spanish speakers achieve this level of connectivity by means of the optional device of relative clauses. This same factor could in part at least explain findings for preferential use of presentational relative clauses in Italian compared with English in a quite different elicitation context (Bates / Devescovi, 1989). Thus, as was early on argued by Karmiloff-Smith (1979), in order to take seriously the development in relating linguistic forms and discourse functions, it is

necessary to consider a range of formal devices that on the surface might appear unrelated (in this case, null subjects and relative clause formation), but which in fact constitute alternative, interrelated rhetorical options for achieving specific discourse functions (in this case, textual cohesiveness and connectivity).

### 3.3 Finite versus nonfinite embedding

Similar trends emerge for the last two syntactic packaging devices listed in (1). Adverbial clauses (of time, cause, purpose, etc.) fall into two main categories: finite clauses with tense-marked predicates and nonfinite clauses with nominalized, infinitival, gerundive, or participial verbs. These are illustrated in (6) from the adult English frog stories.

#### (7) Examples of Different Embedded Constructions in Adult English Frog Stories:

##### a. Finite Tensed Clauses:

The boy is so preoccupied with his frog that he doesn't notice the dog is shaking the tree [where the beehive is connected to] while the boy climbs on top of the tree and starts yelling in a hole for the frog.

##### b. Nonfinite Participles:

After saying goodnight to the frog, the boy and the dog climb into bed and fall asleep.  
The dog sticks his head into the glass jar, trying to get the scent of the frog.

Children telling the frog story in English, French, Hebrew, and Spanish (and, no doubt, in other discourse contexts, too) reveal closely similar patterns of development. With age, simple juxtapositioning and linear chaining of clauses gives way to tighter syntactic packaging through subordination as shown in (7a). In these languages, age 9 manifests a clear decline in coordination in favor of subordination. Moreover, irrespective of target language, older speakers give more specific and more varied expression to the semantic relations between main and subordinate adverbial clauses. For example, starting from schoolage, and increasingly among adults, English speakers use *while* or *as*, Spanish

mientras, Hebrew *tox-kdey* to mark simultaneity, over and above a more general, less specific temporal marker when, *cuando*, or *k\_e* respectively.

In contrast to these shared developmental trends, target-language typology affects both the type and extent to which nonfinite constructions are used for sentential modification, to present one situation as background or subordinate to the foreground event presented in the main clause. Progression in this domain is schematically depicted in (8) for the four languages analyzed here, where ">" stands for 'precedes', and parenthesized constructions were not found even in the adult frogstory corpus.

(8) Developmental Progression of Types of Adverbial Embedding:

*Eng*: Finite subordinates > Nonfinite participials (-ing > -ed)  
> (Latinized nominalization)

*Heb*: Finite subordinates > Nonfinite nominalization > (Nonfinite gerundives)

*Spa*: Finite subordinates > Nonfinite gerunds > Nonfinite infinitives

*Tur*: Nonfinite converbs > Nonfinite nominalized verb+postposition  
> Infinitive -me+ Poss

In English, adults – and they alone – rely widely on nonfinite participial modification of the kind illustrated in (7b). These typically require null subjects, and so differ markedly from finite subordination in English, where subjects must be overtly expressed by pronouns or other mean. Use of participial *-ing* forms as a rhetorical option for achieving textual connectivity is typical of some but not all of the mature English texts. And it demonstrates the development in form/function relations which forms a leitmotif of our analysis: the same surface form (in this case participial *-ing*) acquires more elaborated, and different, discourse-motivated functions in the immature texts produced by preschoolers (where it marks the default present progressive of picture-based storytelling mode), in the wellformed narrative texts constructed by schoolage children (where it serves in a variety of complement clauses as syntactically required by the matrix clause) and in the rhetorically proficient narratives of mature speakers, where it performs the narrative function of marking foreground/background distinctions.

In Spanish, two types of nonfinite packaging occur in the sample, illustrated in (9).

(9) Nonfinite constructions in Spanish frogstory texts:

a. *entonces luego van por el bosque llamando a la rana*  
'then afterwards (they) go through the wood calling to the frog'  
[9;11]

*y se llevó a Pepito encima de sa cabeza corriendo corriendo hacia un precipio*

'and picked-up to Pepito onto his head running running towards an abyss' [Adult]

b. *y el perro al buscarlo - se metió en la botella*

'and the dog on to-**seek-it**, put himself inside the bottle' [9;2]

*y al salir a la ventana siguiendo a Juan, pues se cae y al caerse rompe el recipiente*

'and on to-**exit** from the window following Juan, so he falls and on to-**fall** breaks the vase' [Ad]

Some 5-year-olds, many 9-year-olds, and most adults use gerundive constructions like those translated by *-ing* participles in (9a). This contrasts with the lack of comparable constructions in the English 9-year-old texts and reflects the Romance favoring of nonfinite adverbials as rhetorical options to replace tensed, finite subordinate clauses. On the other hand, several 9-year-old nonfinite clauses yield syntactically illformed constructions, e.g. *mientras el perro mirando por - mirando en el ventana tambien - con el bote de cristal ... el perro se cae* 'while the dog looking through - looking in the window also - with the jar of crystal ... the - the dog falls' [S9e; 9;6]. This is remindful of the considerable amount of structural errors noted in the preceding section for 9-year-old relative-clause formation in Hebrew. Again, when children start to use a given structural option extensively, they may not be able to cope concurrently with both the online processing constraints of using such a construction appropriately in extended discourse and the grammatical constraints of producing syntactically wellformed structures.

The second nonfinite construction noted for Spanish takes the form of a preposition, generally *ai* 'on, when, while', followed by an verb in the infinitive, analogously to English *on exiting (from the window)*, *on falling* in (9b). It is rare in the children's texts (used once each by two 9-year-olds) but common in those of Spanish adults, reflecting the generally higher register style which they employ.

The Hebrew frog texts of 9-year-olds and adults, in contrast, reveal very general reliance on tensed, finite subordination for syntactic



packaging, combined with increasing use of null subjects for topic elision. Nominalizations corresponding to English expressions like *during the search for* or *in their pursuit of the frog* are very rare, and they occur only in the adult frogstory sample. These are late acquisitions in Hebrew (Berman, in press; Ravid / Avidor, 1996), and represent a mature, highly literate type of embedded construction, due to factors of both structural complexity and register. In Hebrew, embedding by nominalizations is typical of academic discourse, rare in everyday spoken usage such as is suited to a children's adventure story. Analogously – as shown by the parentheses in the first line of (7) – the English sample contained not a single Latinate type of nominalization; compare *in search of* vs. *looking for*, *in pursuit of* vs. *running after*. And the Hebrew frog texts contained not a single instance of gerundive prepositional constructions, corresponding to English *in climbing*, *on reaching*, and especially to the Spanish preposition plus infinitival constructions in (9b). In structure, these Hebrew gerunds have the same surface form as (obligatorily subjectless) infinitives, but they must take a (following) surface subject, further evidence for how a process like subject ellipsis applies differentially across lone clauses versus subordinates, across finite versus nonfinite clauses, in different languages; and compare, too, the way that languages differ in how much inflectional agreement may or must be carried by nonfinite participles – in English, none; in Hebrew, number and gender, but not person. From the point of view of usage, Hebrew gerundive constructions are largely restricted to expository or highly literary prose style, unsuited to the relatively colloquial register of an oral narrative based on a children's picturebook. That is, the total absence of such forms in our narrative texts is due more to register constraints for what is appropriate to oral production of a children's picturebook story than to factors of structural complexity. As in the other domains considered here, choice of devices for marking connectivity depends on a complicated interaction between typological availability, rhetorical preferences, structural complexity, and level of usage.

This is clearly demonstrated by the contrast between finite versus nonfinite subordination in Turkish, compared with English, Spanish, and Hebrew. As Slobin notes at the start of his 1988 paper, "Turkish, as a typical OV language, makes use of clause-chaining constructions in which one or more nonfinite clauses are followed by a finite clause". These nonfinite clauses take the form of nominalized constructions marked by so-called "converbs" or gerunds, four of which were analyzed for the frogstory sample, as shown in (10).

- (10) Turkish gerunds ("converbs") in the frogstory sample (from Slobin, 1988, 1993):  
*X-ip* Y 'X and (then) Y', 'having X-ed, Y',  
 e.g. *leaving the jar, he ran away*  
*X-ince* Y 'when X, Y', 'as soon as X, Y',  
 e.g., *when they woke up, ...*  
*X-erken* Y 'while X-ing, Y',  
 e.g., *while the dog was ..., the boy ...*  
*(X-erek* Y '(in, by) X-ing, Y')

In English translation, these appear highly complex and sophisticated constructions. Yet except for *-erek*, the last of these four converbs, they appear in the Turkish frogstory sample from as early as age 3 years. The relatively later emergence of the converb *-erek*, which shows up in the frogstory sample only from age 9, is evidently due to the conceptual complexity involved in the kind of packaging which it entails.<sup>6</sup> In addition, Turkish narrators from as young as age 5, but increasingly from age 9 and among adults, use nominalized, stem-form verbs with postpositioned markers of adverbial relations, as illustrated in (11).

- (11) Turkish nominalized verbs plus postpositional adverbials [Aksu-Koc, 1994, p.377]  
 a. *Ertesi sabah çocuk kurbagasın kavanozun içinde bul-ama-dığ-ı için çok üzüldü.*  
 next morning boy frog-his-ACC jar-GEN inside find-not able  
 that because boy upset-PST  
 'The next morning the boy got very sad because of not finding his frog in the jar' [9;1]  
 b. *Geceleri yat-madan önce kurbagasına iyi geceler diliyormu Ali.*  
 evenings go-sleep-before frog-his-DAT good night wish-PRG-NONWIT Ali  
 'In the evenings, Ali would say goodnight to his frog before going to bed' [Ad]

<sup>6</sup> Slobin, 1993, describes this as an instance where two situations – activities, states, or events – are treated as constituent parts of a single superordinate event, which itself is not explicitly named or categorized as such, rather like serial verb constructions of languages like Mandarin.

For speakers of Turkish, nonfinite constructions like those in (10) and (11) provide highly favored means of syntactic text packaging from an early age (supplemented by later use of the more sophisticated “inflected infinitive” *me-* construction). In this, nonfinite embedding reflects the impact of target-language typology on both structure – the accessibility of these nominalized syntactic options in a verb-final language – and usage – the fact that speakers rely on them more than on coordination or subordination with finite verbs in child language input and output. For Turkish children, these constructions are morphologically and syntactically as transparent as their finite counterparts in the other languages in our sample. The major development here, too, is lexico-semantic rather than syntactic, in marking a wider and more precise range of relations between the situation depicted in the main clause and its associated adverbial circumstances, similarly to what was noted for the increased, and more precise, range of expressions used in finite subordinate clauses to mark a relation of simultaneity in English, Hebrew, and Spanish, too.

#### 4. Interacting Factors in Developing Linguistic Forms for Connectivity

In sum, across languages, textual connectivity first appears as straightforward juxtapositioning with immature reliance on lexical elements with an additive function, like *also, again*. Next comes linear chaining by coordination, combined immediately with subject ellipsis in languages where this is grammatically obligatory (Spanish, Turkish) and only later with subject ellipsis where optional (English, Hebrew). Once complex syntax can be recruited for the discourse function of textual cohesiveness and connectivity, the most favored, typologically least marked constructions take over increasingly with age, as outlined in (8).

These typologically motivated crosslinguistic differences interact with developments that are shared by speakers of different languages. With age, a more varied and semantically more complex range of relations is expressed between clauses by reliance on two types of “later acquisitions”: (a) use of more explicit, more specific lexical expressions – e.g., English *as, while* and Turkish *-erek*; and (b) syntactic constructions which are structurally marked or restricted to certain registers provide mature narrators with rhetorical options for textual connectivity not available to younger, less proficient speakers of a given target language –

e.g., English nonfinite abverbials, Hebrew nominalizations. Finally, as shown by the parenthesized elements in (8), certain more literary, higher-register embedding constructions are not evidenced at all in the discourse genre of oral storytelling represented by our frogstory sample. They not only emerge much later in general, they may be dependent on factors such as the development of literacy and familiarity with certain registers and discourse genres which lie outside the normal, “natural” path of native language acquisition and development.

#### A Personal Note:

I was delighted to learn that Zvi Penner and Norbert Dittmar were planning a Festschrift in honor of Jürgen Weissenborn, and it gives me great pleasure to be included among the contributors to this volume. Jürgen and I first met at the 1980 Linguistic Institute in Albuquerque, New Mexico, at a time which marked a turning-point in the course of both of our academic histories. What we have shared since then is a strong commitment to and interest in crosslinguistic perspectives on the study of language acquisition. On the other hand, our intellectual paths have diverged increasingly. Jürgen has become a foremost scholar among those researchers for whom the insights provided by formal models of linguistic structure provide the inspiration and the underpinning for the study of children’s acquisition of their native language, with the logical issue of learnability playing a critical role in his research in this domain. I have become increasingly preoccupied with issues of language use, of how children deploy the linguistic structures which they acquire in the context of extended discourse.

Despite these differences in our research perspectives, we have remained not only close personal friends, but also colleagues and collaborators in a range of German-Israel research enterprises, many of them funded through Jürgen’s unstinting efforts and generosity with the resources which we shared. Over the years, we have retained constant contact via meetings and discussions, until recently at the Max-Planck Institut für Psycholinguistik in Nijmegen, as well as in Cambridge/Mass., and at my home-base in Israel. That such cooperation has been not only possible but non-acrimonious is a tribute to Jürgen’s openness of mind and his generosity of spirit, and to the fact that for him the problem under study is always at the crux of the issue, rather than his own ego or

proving who has the upper hand. It is in friendship, affection, and respect that I offer my contribution to the Festschrift in his honor.

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WOLFGANG KLEIN

## Assertion and Finiteness

The distinction between finite and non-finite verb forms is well-established since the days of the Greek grammarians; but it is not particularly well-defined. Why is it, for example, that *has* is finite, whereas *given* is non-finite, although both of them carry tense and aspect information? Which general property makes *had* sometimes finite and sometimes non-finite, although in neither case it is inflectionally marked for agreement? In this paper, five arguments will be given to demonstrate the following two points:

1. On some level, the structural representation of a finite declarative clause contains an element AST (for "assertion").
2. This element is structurally linked to the finite component of the verb; in fact, being the carrier of AST is the main function of finiteness.

Thus, the distinction between finite and non-finite forms is not a mere surface phenomenon. It reflects the presence or non-presence of an abstract operator in the representation of an utterance.<sup>1</sup>

Both theses will become clearer as we go through the five arguments. Taken together, they have numerous and important consequences for the syntax and semantics of finite clauses, but also of non-finite constructions. In section 1, I will present the five arguments, and in section 2, some of the structural consequences will be sketched. In both parts, the presentation will be entirely non-technical, although for clarity of exposition's sake, some simple notational conventions are used. Since the problem is relatively neutral with respect to the particular assumptions of some specific syntactical or semantical theory, I also tried to keep the presentation as neutral as possible. The only assumption made is that there is a surface level and a more abstract level of representation, called here LEVEL\*, which are related to each other by a number of partly general, partly specific rules. It is not excluded that

<sup>1</sup> Both theses easily extend to non-declarative sentences and to subordinate clauses; but in the present context, this will not be systematically discussed; see, however, sections 1.2 and 1.3, for some remarks.