THE ONTOGENY OF RELATIVE CLAUSES: HOW CHILDREN LEARN TO NEGOTIATE COMPLEX REFERENCE

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1. Introduction *

1.1. The adaptive ecology of REL-clauses

In an earlier companion paper (Givón 2008a) I traced the acquisition of complex verb phrases (verb complements) in native English-speaking children at the age range of 1;8–2;8. The findings suggested that complex VPs are acquired relatively early, in the distinct adaptive ecology that characterizes early child communication:

(1) Communicative ecology of early childhood: (Givón 2008a, 2008b)

- a. **Speech act**: The child's, and indeed adult's, speech-acts are primarily manipulative (Carter 1974; Bates et. al. 1975).
- b. **Domain of reference**: The child's, and indeed the adult's referents are mostly non-displaced, both spatially and temporally.
- c. **Discourse coherence span**: The child's conversational turns, most characteristically one- or two-word long, are most commonly also one-clause long, so that the child and the adult typically alternate single clauses, building up multi-propositional coherence primarily *across turns* rather than within turns (Ervin-Tripp 1970; Keenan 1975, 1975; Scollon 1976).

Within bounds, the same features also characterize the adaptive ecology of pre-human communication (Givón 1979, 2008b).

The acquisition of complex VPs proceeds during this early period of child grammaticalization in a distinct fashion, whose first three features as summarized below recapitulate Diessel (2005):

(2) Manner of acquisition of complex VPs: ((Diessel 2005; Givón 2008a)

- a. Deontic modality markers are acquired before epistemic ones.
- b. Direct-manipulative deontic function (SAPs are centrally involved) are acquired before non-direct deontic description of 3rd person event participants.
- c. The main verbs are grammaticalized to from the very start.
- d. The complex two-clause construction is distributed across adjacent adult-child or child-adult turn (Ervin-Tripp 1970; Ochs *et al.* 1979) before they get syntax. That is, from parataxis to syntaxis.
- e. The child and adult usage through the acquisition period is surprisingly synchronized, both in terms of type of constructions and their text frequency.

Complex verb phrases are thus *functionally simplex* from the very start (Thomasello and Diessel 2001; Diessel 2005). Their adaptive goal is not to focused on the 'main' proposition\, but rather to use deontic main verbs such as 'want', 'can' or 'let', and epistemic main verbs such as 'know', 'think', 'guess' or 'say', as markers of the intentional or epistemic modal values of the complement proposition.

The communicative ecology of child communication has shifted radically by the time RELclauses are acquired. To begin with, REL-clauses are acquired much later. By stage III of verbal modality acquisition (ca. 2;6-2;8), when children use V-complement structures at a surprising frequency (as do the adults), REL-clauses are virtually unused by the children, and are also relatively infrequent in the adult interlocutors's speech. To drive this across, consider the summary tabulation of the comparative frequency of complex VP-clauses and restrictive REL-clauses (including closely related *restrictive post-nominal modifiers*) in three contiguous acquisition stages in this and the previous study.[FN 1]

					STA	GE						
		III				IV			V			
	CHI	===== [LD	ADU	==== J LT	CHII	==== L D	ADUL	 T	CHIL	 D	ADUL'	 Т
subject	CVP	==== REL		REL	CVP	REL	CVP	REL	CVP	REL	CVP	REL
EVE	10	/	32									·
NAOMI	39	1	35	1	43	2	43	1	47	5	46	6
NINA	18	2	43	1	92	3	45	2				
ADAM	9	/	24	1	39	4	19	3	48	4	30	2
======================================	===== 76	3	===== 134	3	====== 174	9	 107	===== 6	 95	==== 9	76	8
mean;	19	0.75	33.5	0.75	58	3	35.6	2	47.5	4.5	38	4
cvp/rel ratio:	25:1		44:1		19:1		17:1		10:1		9:1	

TABLE 1. Text frequencies of Complex VPs (CVP) vs. complex NPs (REL)(pp. 1-10 of CHILDES transcript)

These results are instructive. First, the text frequency of complex VPs fluctuates, but doesn't seem to grow any more during that transition period, neither for the child nor for the adult, reaching an apparent plateau. In contrast, the text frequency of REL-clauses doubles or tripples for both. Consequently, the text-frequency ratio of the two constructions, expressed as complex VPs over complex NPs, is growing in a remarkably similar fashion for the child and adult. It is highest-**25:1** for the children **44:1** for the adults--at stage III, the last stage of our study of complex VPs and first in the study of complex NPs. It then goes down in both the child and adult to ca. **20:1** at stage IV and ca. **10:1** at stage V, a ratio that converges with the adult oral norm. To illustrate this converges, consider the distribution of the two types of complex clauses in a sample of adult oral autobiographical narrative.[**FN 2**]

TABLE 2: Text frequencies of complex VPs (CVP) and complex Nps (REL)--adult (find the second seco

(first 10 pp. of transcript)

CVP	474
REL	41
CVP/REL ratio:	11.5

Second, as we shall see further below, at the time when REL-clause arise in child's discourse, ca. age span 2;6--4;6, the three main features of the communicative ecology (1a,b,c) have already shifted considerably towards the more mature adult norm: (a) More declarative and interrogative speech-acts; (b) more displaced referents; and ©) longer multi-propositional turns of coherent discourse.

Third, the purposive context of communication has also shifts markedly between the acquisition of complex VPs and the acquisition of REL-clauses. Deontic and epistemic complex VP structures are acquired in the interactive context of intense, rapid-exchange (short turns) **modal negotiations** between child and adult, where the complex structures emerge first as collaborations, shared across adjacent child-adult or adult-child turns (Ervin-Tripp 1970; Ochs *et al.* 1979). The proximate goals of these modal negotiations, shared by both child and adult, seems to be:

(3) Proximate goals of modal negotiations: (Givón 2008a)

a. **Deontic**:

"This is what I want you to do for me" (manipulation/request).

"What would you like me to do for you?" (solicitation/offer)

b. Epistemic:

"This is my certainty /verity level regarding this proposition." (assertion)

or

"What is your certainty/verity level regarding this proposition?" (inquiry)

Child-adult discourse at the developmental stage(s) when REL-clauses are acquired is still profoundly interactive, but the child's conversational turns have become increasingly multipropositional (1c). The interactive context within which adult and child REL-clauses are produced may be characterized as **referential negotiations**, with the aim of establishing **common reference**. The proximate goals of such negotiations are strictly epistemic, and are reminiscent of the muchearlier developmental stage of establishing *joint attention*:

(4) **Proximate goals of referential negotiations**:

a. Joint attention:

"How can I make sure that you and I are *attending to* the same referent?"

b. Common referent:

"How can I make sure that you and I are *talking about* the same referent?"

In other words, the mutual proximate goals now have to do with the genesis of the grammar of **referent tracking** or **referential coherence**.

The two types of complex/embedded clauses thus seem to differ in age of acquisition, in the communicative ecology during acquisition, in the manner of acquisition, and in the proximate communicative goals that drive the acquisition process. They also differ in the ultimate syntactic product they engender: Complex VPs, due to grammaticalization of main verbs into modal operators, often display full clause -union. And when co-lexicalized, they yield complex **lexical verbs.** Complex NPs most typically do not reach full clause -union. And when co-lexicalized, they yield complex lexical nouns.

The syntactic difference between the two complex constructions may be illustrated by their differential sensitivity to zero co-reference and 'extraction' tests. Thus compare the behavior of V-complements (5b-f) with the REL-clauses (5g) below:

(5) a. Simple :	the letter that [she sent [0]]
b. Modality COMP:	the letter that [she wanted [to send [0]]]
c. Manipulation COM:	the letter that [I told her [to send [0]]]
d. Cognition COMP:	the letter that [I thought [he sent [0]]]
e. Utterance COMP:	the letter that [they told me [she sent [0]]]
f. Perception COMP:	the letter that [heard she sent [0]]].
g. REL-clause:	*the letter that [I saw the woman [who sent [0]]]

Complex VPs thus behave syntactically as simple single clauses, while complex NPs behave like two clauses (Ross 1967).

These profound differences, taken together, raise a fundamental question--is **recursivity** as defined formally by either Simon (1962) or Hauser *et al.* (2002) a meaningful concept, or is it an *epiphenomenon* that--it just so happens--falls out of two separate and distinct processes of *grammar genesis*? We will return to this question at the very end.

1.2. The grammar referent tracking

About half of the grammatical machinery of any language is dedicated to referent tracking: Determiners, syntactic case markers, pronouns and anaphora, REL-clauses, pragmatic voice, topic and focus constructions, presentative devices, WH-questions and switch-reference devices (Givón 2001). The **adaptive-communicative niche** of REL-clauses must be thus viewed within the wider context of the grammar of referential coherence (Givón ed. 1983; Givón 1992; 1995, ch. 8; 2005, ch. 5). The following example is but a brief illustration of the more general dimensions of this complex grammar-coded domain and the special niche REL-clauses occupy within it. Consider the mid-discourse narrative in (6) below:

- (6) a. There was this man [standing near the bar],
 - b. but we ignored him and went on across the room,
 - c. where **another man** was playing the pinball machine.
 - d. I sat down and ordered a beer.
 - e. The bar tender took his time,
 - f. Guess he was busy.
 - g. So I just sat there waiting,
 - h. when all of a sudden **the man [standing next to the bar]** got up and started screaming.

In coding 'man', introduced for the first time in (6a), with the referring-topical indefinite marker 'this', the speaker cues the hearer first that s/he doesn't expect him/her to have an **episodic-memory** trace of the referent. Since the marker is 'this' rather than 'a', the speaker is also alerting the hearer that the newly-introduced referent is topical, likely to recur in the subsequent discourse, and thus must be marked as such in the **new episodic memory** structure that the hearer is in the midst of constructing. In coding the same referent with the anaphoric pronoun 'him' in (6b), the speaker assumes that the referent is not only accessible, but is still **currently activated**, i.e. still under **focal attention**.

Another referent is introduced for the first time in (6c), this time with the indefinite marker 'another'. In using of the first-person pronoun 'we' in (6d), next, the speaker assumes that his/her own referential identity is accessible to the hearer from the immediate **speech situation**, i.e. available in **working memory**. 'The bar tender' is introduced for the first time in (6e)--but marked as definite. This is possible because the prior discourse had activated 'bar', which then remains activated by the persistence of the narrated situation. And 'bar tender' is an automatically-activated connected node of the **lexical-cultural frame** 'bar', already encoded in **semantic memory**. In continuing with the anaphoric pronoun 'he' in (6f), the speaker again assumes that the referent is both accessible to the hearer and currently activated, i.e. still under **focal attention**. And in using the first-person pronoun 'I ' in (6g), the speaker assumes that his own identity is still accessible to the hearer from the **speech situation**, held in **working memory**.

Finally, the man introduced earlier in (6a,b) and then absent for five intervening clauses, is re-introduced in (6h). The use of a definite article suggests that the speaker assumes that this referent is still accessible in the hearer's **episodic memory.** However, the hearer's memory search is not going to be simple. Another man had been mentioned in the interim in (6c), described as 'was playing the pinball machine'. Both referents are assumed to still be accessible in the hearer's **episodic memory**, and would thus compete for the simple definite description 'the man'. To differentiate between the two, a *restrictive relative clause* is used, matching 'standing next to the bar' in (6h) with the restrictive REL-clause 'standing near the bar' in (6a). In using this grammatical cue, the speaker reveals his/her assumption that the hearer still has an episodic trace of both the referent and the proposition in (6a).

The two restrictive REL-clauses used in (6) above, reveals three important communicative uses of this construction:

•**Presentative**: To give salient information about topical referents upon their first introduction into the discourse (6a).

•Long-range retrieval: To help the hearer search in their episodic memory and retrieve a previously-introduce important referent when it is re-introduced into the discourse after a considerable gap of absence (6h).

•**Referential competition**: When the preceding discourse, and thus presumably its episodic trace, contains other lexically-similar referents that my compete with the intended referent (6h).

As we shall see below, the range of communicative functions coded by REL-clauses in both child and adult discourse is considerably broader.

2. Texts and subjects

The previous study of the acquisition of complex VPs (Givón 2008a) used three English speaking children--Eve, Naomi and Nina--from the CHILDES data-base. The age range there was ca. 1;8--2;8. For each child, the period was divided into three stages (I, II, III), by intuitively survey of the type and frequency of complex VPs produced.

In the present study, we began the analysis with stage III (ca. 2;6-2;8) of the previous study, and then added two more stages, one ca. 3;6 (IV) and one ca. 4;6 (V). In stage IV, we lost Eve, so we added Adam in stages III, IV, V to maintain continuity. In stage V we lost Nina. We thus had 4 children for stage III, 3 for stage IV and 2 for stage V.**[FN 3]** For each child at stage III we studied ca. 60 pp. of the printed CHILDES transcript. For each child at stages IV and V we studied ca. 90 pp. of the printed CHILDES transcripts. Whenever the absolute text-density was important, we express the results in terms of a uniform baseline, e.g. per number of pages.

3. REL-clause types in the CHILDES texts

3.1. What counts as a REL-clause?

It is relatively easy to define in structural terms what counts as a restrictive RELclause in adult English (e.g. Givón 1993,vo. II, ch. 9), and such criteria were applied in Diessel's (2005) study. But do children acquire adult-type REL-clauses right away, or are there precursors that don't look like full-fledged relative clauses but perhaps function the same way? For the purpose of this study, it was decided to be more inclusive and consider all **large restrictive post-nominal modifiers** (RPN modifiers) that can be paraphrased, without stretching the meaning to much, by a REL-clause. This pulls in an array of structures that either have no verb or have no REL-pronoun. Within certain bounds, however, they are functional equivalent of restrictive REL clauses in both children and adults. If one is interested in possible developmental precursors of adult structures, there are good reasons for not excluding these non-standard types.

The following are the categories of restrictive post-nominal modifiers that were considered. Adult-produced examples were used only when no child-produced examples were found in the transcripts.

(7) Structural classification of non-restrictive REL-clauses

a. **HEADED REL-clauses:**

- (i) Subject: 'The pretty thing that's on the floor'. (Naomi-V, p. 22)
- (ii) Dir. Object: 'That's all I wanna say'. (Naomi-V, p. 22)
- (iii) Ind. object: 'And everything they go on tick-tock[s]'. (Adam-IV, p. 16)
- (iv) **PART** (subj.): 'Once there was a [???] sitting on the back of...' (Naomi-V, p. 20)
- (v) PASS (subj.): 'Something made out of clay'. (Nina-IV, adult, p. 13)

b. HEADLESS REL-clauses:

- (i) Subject (of passive): 'So you can tape what 's left'. (Naomi-V, adult, p. 22)
- (ii) **Dir. object**: 'I hope I'll get what I said'. (Nina-V, p. 19)
- (iii) Indir./Locative: 'Here's where the cat goes'. (Nina-V, p. 23)
- (iv) **Predicate**: 'Gas is what makes my car run'. (Nina-III, adult, p. 5)
- (v) Reason: 'That's why they had to squeeze out'. (Nina-V, p. 19)
- (vi) Extent: 'Hey, is that how far it goes?' (Nina-V, p. 21)
- (vii) Manner: 'That's how you unbutton them'. (Nina-IV, adult, p. 13-14).

c. INFINITIVE REL-clauses:

(i) **Subject**: 'Where's the bottom to **go in these panties**?' (Naomi-IV, adult, p. 10)

- (ii) **Dir. object**: 'Oh, so many things **to remember** ...' (Naomi-V, adult, p. 29)
- (ii) Indir. object: 'I want something to play with'. (Adam-IV, p. 15)

d. VERBLESS restrictive modifiers:

- (i) Possessive: 'I scratched it on the metal of your bedroom study'. (Nina-V, p. 20)
- (ii) **Prepositional**: A bear **just like mine**'. (Adam-IV, p. 17)

'I got all the books **from my the other school**...' (Naomi-IV, p. 8)

e. CLEFT: 'It's Rusty who has fingers'. (Adam-III, adult, p. 31)

The numerical distribution of the five main types of REL clauses in the child and adult language, in the three developmental stages studied here are summarized in tables 3, 4 and 5 below.

	EV	======================================		NAOMI NINA		AD	AM			
TYPE:	CHI	ADU	CHI	ADU	CHI	ADU	CHI	ADU	TOT/C	TOT/A
====== REL		1		= ===== 8		= ===== 3	=====	= ===== 2	= =====================================	= ====== 14
INF	/	/	/	/	2	1	/	/	2	1
H-LESS	/	/	/	4	/	2	/	3	/	9
V-LESS	1	/	/	/	5	4	2	/	9	4
CLEFT	/	/	/	/	/	/	/	1	/	1
TOTAL:	1	1		12	 7	10	3	6	== ===== 12	28

TABLE 3:Distribution of modifier types:Stage III (ca. 2;6)SUBJECT

One may express the text frequency of the various REL-clause, including the various RPN modifiers, in the child and adult at this early stage on a *per-page* basis, yielding:

•Child: 12/4 subj = 3 per subject per 60pp. = 0.05 page of transcript

•Adult: 28/4 subj = 7.0 per subject per 60pp. = **0.11**/page of transcript

			SOD						
	NA	OMI	NI	NA	AI	DAM			
TYPE:	CHI	ADU	CHI	ADU	CHI	ADU	TOT/C	TOT/A	
REL	4	11	10	10	9	= ====== 7	23	= ====== 28	
INF	1	5	1	2	3	/	5	7	
H-LESS	2	2	1	1	/	4	3	7	
V-LESS	2	3	2	12	4	6	8	21	
TOTAL:	9	21	14	25	16	 17	 39	63	=

TABLE 4:Distribution of modifier types:Stage IV (ca. 3:6)SUBJECT

The text frequencies at this stage, expressed again on a per-page basis, are:

• Child: 39/3 subj = 13 per subj. per 90pp. = 0.144 per page of transcript

•Adult: 63/3 subj. = 21 per subj. per/90 pp. = 0.233 per page of transcript

		SUBJECT					
	NAC	OMI	AD	AM			
TYPE:	CHI	ADU	CHI	ADU	TOT/C	TOT/A	
====== REL	8	13	4	4	12	17	
INF	/	/	2	1	0	3	
H-LESS		8	7	1	18	9	
V-LESS	l 	2	5	2	6	4	
TOTAL:	20	23	18	8	36	33	

TABLE 5: Distribution of modifier types: Stage V (ca. 4;6) SUDIECT

The text frequencies at this stage, again expressed on a per-page basis, is:

- Child: 35/2 subj. = 17.5 per subject per 90pp. = 0.194 per page of transcript
- •Adult: 33/2subj = 16.5 per subject per 90pp. = **0.183** per page of transcript

When these text frequencies are plotted together for the three stages and then expressed as a child-over-adult ratio, as in Table 6, below, they yield a vivid demonstration of how the child catches up with the adult in the use-frequency of REL-clauses.

LL 0.	Text frequ	(per page of transcript) STAGE							
		======= III	IV	V					
CH	HILD:	0.05	0.14	0.194					
AI	DULT:	0.11	0.233	0.183					
CH	 	0.45	0.6	1.06					

Text frequency of all post-nominal restrictive modifiers TABLE 6:

What is also striking about this is that the adult text frequencies are relatively low. That is, however important the adaptive/communicative function(s) of REL-clauses may be in referent tracking, they are either not urgently needed at the type of child-adult communication seen in our transcripts. Alternatively, such function(s) can be performed by alternative, perhaps paratactic, means.

Some assessment of these two possibilities may be furnished by noting that in the adult narrative cited earlier (Table 2), the text frequency of Rel-clauses was 41 per10 pages or **4.1**/page--roughly 20 times the frequency in stage V transcripts. However, ta printed CHILDES transcript page has much fewer words (ca. 52/page) than the typed adult narrative we used for comparison (ca. 640/page), yielding a ratio of 640/52 = 12.3. This figure can now be used to multiply the per-page frequency of ca. 0.2/page for both adults and children in the CHILDES transcripts, yielding a comparable figure of **2.4** REL-clauses per comparable page of text vs. the adult oral narrative **4.1**/page.

This is obviously a very rough approximation, especially that it combines child and adult word-per-page of CHILDES text. Nonetheless, in a rough way it suggests that the text frequency of adults and children at stage V of our transcripts does not deviate markedly from the adult oral norm.

The difference in frequencies may be ascribed to the fact that the CHILDES texts are of rapid-exchange, highly-collaborative **conversations**, while the adult oral text is a single-perspective **narrative**. In the latter, no reference negotiations apply, and perhaps fewer alternative referent-tracking devices--such as paratactic ones--are used.

Given that the three main communicative functions of REL clauses--presentative, long absence, and referential competition--are all cognitively more complex than simple referential continuity, it would make sense that the frequency of REL-clauses in narrative would be higher than in highly collaborative conversation.

4. The communicative use of restrictive post-nominal modifiers

4.1. Early stage (III ca. 2;6)

Diessel (2005) suggested that the existential-presentative use of REL-clauses was the earliest one to appear in English-speaking children in the CHILDES data-base. The data analyzed in this study does not bear this out, even though there is a considerable overlap in the actual children studied (Naomi, Nina, Adam). Part of this is of course due to our structural definition here being more inclusive.

At stage III (ca. 2;6; Table 3 above), where our study started, there was only one postnominal restrictive REL-clause produced by a child (Adam), and it is not an existentialpresentative but rather a pronoun-less, 'be'-less **participial** REL-clause. True, it does introduce a new participant (indefinite). Though not with the verb 'be', but with 'look':

(8) URS: What do you have, Adam? ADA: Looking for bear sleeping. (Adam III, p. 15) The most frequent type of RPN modifier produced by the four children at this stage is the *verbless* one, with 9 out of the total of 13 (2 by Eve, 2 by Adam, 5 by Nina). Eve's use is perhaps marginal:

(9) EVE: My glass. MOT: Your glass? EVE: Yep. MOT: Which glass? Your [???] glass? EVE: Yes. With the ice cubes in it. (Eve III, p. 3-4)

One of Eve's two uses of PP modifiers in (9) is embedded inside the other. The first ('With the ice cubes') is **headless** and qualifies 'glass' in the directly preceding discourse. The other ('in it') modifies 'ice cubes'. The referential negotiation, and the communicative use of restrictive modifiers here, involves the sub-function of **referential competition**.

Consider next Nina's stage-III use of verbless PP restrictive modifiers:

(10) a. MOT: That's a pretty pretty dolly.
 NIN: Yes, she has a blouse like that dolly.
 She has a skirt like that dolly. (Nina III, p. 42)

b. NIN: What are these things? MOT: That's a tree.NIN: What, what are those things on the tree? (Nina III, p. 36)

The two uses of the PP modifier in (10a) may be termed *presentative*. But in (10b) the PP modifies a demonstrative-marked noun accessible in the speech situation, not exactly a classical presentative.

Likewise, Nina's use of a post-nominal restrictive adjective, as in (11) below, again modifies a demonstrative-marked noun visible on the scene:

(11) MOT: I like rabbits, don't you?
NIN: Yup. I like them. Like this one the red.
MOT: You like red rabbits?
NIN: Yup. (Nina III, p. 32)

Nina's last two uses of restrictive post-nominal modifiers in (12) below, both of infinitival REL-clauses, indeed modify indefinite referents--but **non-referring** ones, again hardly a classical presentative:

(12) [context: Pretend phone conversation with uncle Frank.]
NIN: Hi, Frankie is there something for me to play with?
MOT: What did he say?
NIN: He said he had something to play with for me. (Nin III, p.4)

At this early stage, it appears, children use of various RPN modifiers, most of them not classical adult REL-clauses, in communicative functions that fully parallel to the use of REL-clauses. One of those is the presentative, but it is hardly predominant. And neither is the re-introduction of a referent with a previously-established episodic trace following a considerable absence.

If one could single out any communicative function as more prevalent in the child use at this early stage, it is probably the context of **referential competition**, often involving referents in the immediate speech situations. This is of course hardly an accident, since the referential universe of child-adult communication at this early stage is still predominated by referents that are accessible in the immediate speech situation(see Givón 2008a as well section 5.1., Table 9, below).

Probably the most striking fact about the use of restrictive modifiers in our transcripts, at all three stages, is how they appear in the highly interactive context of **referential negotiations**. This is just as striking in the adult usage, which is syntactically more sophisticated but still embedded in the same interactions. Thus consider the two negotiations in (13) below, where the child's incomprehension of the complex clauses forces the adult to simplify:

(13) a. EVE: Hi, Fraser, what's that?

MOT: What? That's Sara's new toy **that she got in the mail this morning**? EVE: Eh? [incomprehension] MOT: Sarah's new toy. [giving up on complexity] (Eve III, p. 28)

- b. EVE: What's that?
 - MOT: That's a card I was going to send to those people who had a baby.

NAO: Had a baby?

MOT: Yeah.

NAO: [???].

MOT: That's okay.

NAO: A little baby. Baby.

MOT: Yeah, I was going to send that to the people who had the baby.

NAO: It's for Nomi?

MOT: No, it's for another baby, honey. (Naomi III, p. 2)

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4.2. Intermediate stage (IV; ca. 3;6)

At our intermediate stage (IV; see Table 4 above), bona-fide REL-clauses begin to predominate the child sample, at 23/40, with verbless RPN modifiers a distant second at 8/40. And headless REL-clauses make their first appearance in the child's usage, at 4/40.

Consider first the use of bona fide REL-clauses. In (14a) below, Naomi is looking for a cover to change diapers on her doll. Her use of the definite 'the cover' is not licensed by previous mention, prompting her mother to ask for clarification, supplied by a REL-clause-that is paratactically detach from its main clause, two turns earlier.

(14) NAO: Baby sit there and I'm gonna change you. Up there.

I can't find the cover.

MOT: What cover?

NAO: The cover that I'm looking for. (Naomi IV, p. 8)

In (15) below, Naomi first produces the verb-less restrictive PP to narrow the domain of 'book', discussed earlier, i.e. with an established **episodic trace**. Then she uses two object REL-clauses in succession, both modifying definite objects visible at the scene--indeed identified first by a demonstrative. The second use is paratactic, an NP detached from its main clause ('These are...').

(15) MOT: You have to do the work in the book?

Okay, well I will tell you, let's see...

NAO: I got all the books **from my other school**,

so I have to sit down and...

MOT: Okay.

- NAO: Read these. All these. These are all the books **I have**.
 - And all the puzzles **I have**.
- MOT: All the puzzles you have? (Naomi IV, p. 14)

In (16) below, Naomi uses a 'be-less' participial REL-clause to describe a referent visible on the scene, in a book the two interlocutors are reading together. While the 'girl' is referring-indefinite, Naomi's usage is not a classical presentative, since the indefinite referent is equally accessible to both interlocutors. At best, one may term this use **descriptive**, and the modified NP is again paratactically detached from its main clause:

(16) MOT: Here's a mommy. A big mommy.NAO: Yup. With gir g g girl standing by her.MOT: And the mommy has a bib... What does she have on?NAO: Apron. (Naomi IV, p. 26)

In example (17) below, a 'be-less' passive subject REL-clause is used in a contrastive context, perhaps involving **referential competition**, and again the modified NP is paratactically detached from its main clause:

(17) MOT: You're gonna hold *me*?NIN: No, this lady **named Florence**. (Nina IV, p. 6)

In (18) below, next, the REL-clause again modifies a noun visible to both interlocutors (in a book they are reading), and the usage seems to be again **descriptive**:

(18) MOT: What's that?NIN: That's the kind of food that they eat.MOT: You mean pancakes?NIN: Yeah [???] pancakes. (Nina IV, p. 20)

The two examples in (19) below seem to involve, at least in part, reference to a previous shared experience, thus presumably with an **episodic trace**. In both cases, the modified NP is paratactically detached from its main clause:

- (19) a. MOT: Why don't you find a home for all of them? Put them in their homes and take care of them.
 NIN: All the animals that belong... All the animals that we were playing with, Mommy. (Nina IV, p. 65)
 - b. NIN: Yup, so the people could go in. MOT: Have you seen them around? NIN: Mommy. I want the same people that were at the doll, that were at the doll. MOT: You saw some... Did you play with the doll house yesterday? (Nina IV, p. 70-71)

The last example (20) is a complex referential negotiation, where both child and adult resort to post-nominal modifiers. The first, a subject REL-clauses produced by the child, is paratactically detached:

(20) MOT: What park should we go to? NIN: To the merry... To the park that has the animals. MOT: Which one is that? NIN: [???]. MOT: Which one? NIN: The [???]. MOT: The big one. How about the little park that's near the school? Would you like that? What's there? NIN: Uh, a, a lions. MOT: No. Oh, you mean at the park near here with those animals on the springs? NIN: Yeah. (Nina IV, p. 80-81)

What we see in the stage-IV data so far is an expansion of the functional range of REL-clauses used by the child. But again the presentative use is not particularly prominent. In fact, in the entire 3-children transcripts of stage IV, only one example of the classical presentative form was identified, again in a context where the referents are visible on the scene:

(21) [context: a long stretch of playing with toys]
ADA: A jeep. I goin' put some in the jeep.
There['s] a man driving and need somebody...
And this [is] somebody sitting in the back.
I putting things in the jeep.
MOT: Oh. I see. (Adam IV, p. 79)

The other REL-clause form that makes its appearance for the first time in stage IV is the **headless REL-clause**, with a WH word. There are 3 child uses and 7 adult uses of this construction in out stage-IV transcripts. Let us consider first the adult uses:

- (22) a. MOT: Which one's the hokey-pokey book? NAO: I'll show you. This one. MOT: Oh, I didn't know that was what that was called. Oh, The Pokey Little Puppy. (Naomi IV, p. 19)
 b. NAO: More snacks please.
 - FAT: Are you all finished with all those?
 MOT: She's had her next to the last one.
 FAT: Nomi, what you need is a napkin, don't you?
 NAO: Where are the rest of them? (Naomi IV, p. 56)

- c. NIN: How do you take these buttons off? MOT: You unbutton them. NIN: I can't. MOT: There we go. That's how you unbutton them.
- d. MOT: What did he find on his head? ADA: Is that bead? MOT: No, that's where the acorn hit him, and he went to tell the king. ADA: Tell you falling from a tree. (Adam IV, p. 12)

(Naomi IV, p. 13-14)

- e. ADA: What are these? MOT: That's what you call chalk. ADA: Chalk for putting in the mouth? MOT: No, not for putting in the mouth. (Adam IV, p. 20)
- f. ADA: I bringing it.
 MOT: No, you don't have what I ordered.
 ADA: What I 'pposed to have?
 MOT: I said four quarts of milk. Where's the milk? (Adam IV, p. 34)
- g. ADA: What's that?MOT: That's where you keep your milk.I'd like two quarts of milk, please. (Adam IV, p. 43)

All 7 examples are **contrastive**, involving **referential conflict**, arguments or misunderstandings about the referent. Of those, 6 are predicate constructions--one a pseudocleft, the remaining five with a contrastive-stressed 'that' as the subject. The sole nonpredicate form, (22f), is still contrastive.

The 3 child-produced examples are given in (23) below.

(23) a. NAO: Just whisper.

MOT: Whisper. Because he's crabby? NAO: Yep. That's **why he should take a long long... long nap**. MOT: Okay. (Naomi IV, p. 18)

b. MOT: So he didn't understand you.

NAO: Go insi[de]. He wanted to walk around the hose..

And. Go right there and. Stand up there and go to sleep. MOT: Oh.

NAO: That's why he didn't want [to] talk. (Naomi IV, p. 62)

c. NIN: Go to sleep.
MOT: Where am I going to sleep?
NIN: Right here next to the dolly.
That [is] where you gonna go to sleep. (Nina IV, p. 6)

These child-produced forms are all contrastive, all with a stressed 'that' as subject.

In sum, the children at this stage show can expansion of the syntactic form of their RPN modifiers, with two more-standard REL-clause forms taking over, one with multiple functions, the other restricted to **contrast** or **referential conflict**. The children of course continue to use infinitival and verbless forms, but their functional load diminishes as it transfers to the more standard RE-clause form(s).

4.3. Late stage (ca. 3;6)

Out of the 35 RPN modifiers produced by the two children studied for stage V (Table 5, above), 12 are standard REL-clause forms and 17 are headless REL-clauses. Only 6 are verbless forms; and not one infinitival REL-clause was found in the sample. The adult distribution is broadly similar: 17 standard forms, 9 headless, 3 infinitival and 4 verbless, for a total of 33.

Of the 18 child-produced headless REL-clauses, fully 15 have the stressed 'that' as their subject, in what appears to have become the standard contrastive form. The other 3 are used in analogous context of **conflict** or **uncertainty**. Thus:

(24) a. FAT: An opossum. He's got holes in his ears, doesn't he? NAO: [???] squeak anymore. FAT: [???]. NAO: I hope I'll get what I said. FAT: Oh yeah, what you said will be on there. NAO: It really is. (Naomi V, p. 2)
b. NAO: I don't want to go to summer camp. FAT: Why now? NAO: Because I have to do what the teacher says I have to do and I don't like to do that. FAT: What sort of things don't you like to do? (Naomi V, p. 6) c. MOT: It looks like you're there? ADA: Yeah. MOT: What does that mean? ADA: That mean what I see on television. MOT: Oh, what you see on television. (Adam V, p. 11-12)

5. The communicative ecology: Quantitative assessment

In this section I will attempt to characterize the changes in communicative ecology that form, leastwise in my judgement, the adaptive foundation for the use of restrictive postnominal modifiers. This assessment is not always easy, given the nature of the transcripts and the extreme context-dependency required in making some of the determinations. The marking frequency of many grammatical sub-systems at this stage is still rather low, and the conversational style of both the child and adult is highly elliptic.

5.1. Displaced referents

In the preceding companion study (Givón 2008a) I assessed the distribution of 1^{st} and 2^{nd} person (SAP) vs. 3^{rd} person subjects of modal expressions during the acquisition of modal expressions (stages I, II, III; ca. 1;8–2;8). The data illustrated vividly the extreme **egocentricity** of communication during these early stages, albeit only with respect to the selection of subjects of complex VPs (i.e. controllers of modal attitudes). A compressed summary of those results, for both child and adult interlocutors, is given in Table 7, below.

or comp		DE	ONTIC	III (su	EPISTEMIC			
	CHI	 LD	ADU	 LT	CHI	LD	ADUI	
STAGE	1-2	3	1-2	3	1-2	3	1-2	3
I II III	97% 92% 83%	3% 8% 17%	92% 92% 85%	6% 8% 15%	63% 67% 63%	37% 33% 37%	40% 69% 71%	60% 31% 29%

Table 7: Percent of 1st/2nd vs. 3rd person subjects of complex VPs in stages I. II. III (summary)

With one exceptional adult (the mother in Nina-I, epistemic), both the adults and children showed a predominant use of 1st/2nd subjects (83–97%) in deontic-modal constructions, and

a much higher percentage of 3^{rd} person subjects in epistemic-modal constructions (29–37%). A slight shift toward 3^{rd} person subjects of deontic-modal expressions in stage III is perhaps visible (83–85%).

What may be more relevant for the acquisition of REL-clauses is that RPN other modifiers are not commonly used with three types of referents:

- speaker-hearer pronouns (or proper names), accessible in the speech situation.
- • 3^{rd} person referents, of whatever marking, visible in the **speech situation**.
- •anaphoric-pronouns or zero-marked 3rd person referents still under the scope of **focal attention** or **working memory** (immediate repetition).

What I tried to measure next, therefore, is the frequency distribution of 3rd person referents that are not accessible in either the speech situation or current attention/working-memory. For this purpose, we divided accessible vs. inaccessible referents, and counter the first 10pp of the CHILDES transcripts of stages I (ca. 2;0), III (ca. 2;7) and V (ca. 4;6). The rough numerical results are given first in Table 7. below.[**FN 3**]

	SU	BJ.	Ol	===== BJ	SU	BJ	OBJ		OB	J-ref	T	OTAL
SUBJECT	N	%	N	%	= ==== N	%	N	%	===== N	%	N	%
EVE-I	109		55				6		/		170	100.0
NAOMI-I	106		14		/		2		/		122	100.0
NINA-I	132		29		/		3		/		164	100.0
TOTAL-I:	347		98		/		11		/		456	100.0
EVE-III	64		17		10		18		10		119	100.0
NAOMI-III	129		42		7		26		18		222	100.0
NINA-III	121		72		15		14		8		230	100.0
ADAM-III	135		54		19		7		6	ō	221	100.0
TOTAL-III:	449		185		51		65		42	2	792	100.0
NAOMI-V	87		24		65		13		40)	207	100.0
NINA-IV	177		80		11		20		44	Ļ	332	100.0
ADAM-V	139		65		/		13		19)	236	100.0
TOTAL-V:	403		169		76		46		103	3	797	100.0

TABLE 7:	Accessible vs. inaccessible referen	nts (raw figures in pp. 1-10 of transcript)
	ACCESSIBLE	INACCESSIBLE

From Table 7. I then computed the percent of inaccessible referents for each child at each developmental stage, collapsing together the grammatical sub-categories (subject/object, referring /non-referring). The results are given in Table 8. below

Table 8: Percent	of inaco	cessible referent STAGE	ts		
I		III		V	
EVE-I	3.5	EVE-III	31.9		
NAOMI-I	1.6	NAOMI-III	18.4	NAOMI-V	57.0
NINA-I	1.8	NINA-III	16.0	NINA-IV	21.3
	 =======	ADAM-III	14.4	ADAM-V	13.1

The results reveal considerable variation, due first to the small text sample (10 pp.), given the considerable within-text variation of topic. Considerable cross-subject variation also arose from the imprecise assessment of developmental stage.[FN 4] While these results cannot be subjected to inferential statistics, a clear jump in the percentage of inaccessible referents seem to occur in all children between stage I and III, where RPN modifiers make their first appearance. For two of the three children there is also a similar jump from stage III to stage V. When the results for the children are collapsed together, the following overall pattern obtains:

ie 9:	STAGE	distribution	percent		
	 I:	11/456	2.4 %		
	III:	158/792	19.9 %		
	V:	225/797	28.2 %		

anall noncont of inaccossible rafe Table 9: Or

5.2. **Displaced temporality**

One major use of REL-clauses in adults is to brink back into the discourse referents that have been mentioned earlier in the ongoing discourse, or ones that may have been discussed or known sometime in the past, and that the speaker assumes the hearer still hold a mental trace of in their episodic memory. In early childhood development, when communication is centered on the here-and-now, there is scant need for such grammatical devices. It is thus of interest to see how temporal reference used by the children shifts

from the almost absolute anchoring in the **speech situation** characteristic of early childhood, to the more **displaced temporality** of past, future or habitual.

Tables 10, 11 and 12 summarize the frequency distribution of temporal reference in the children's discourse at stages I, III and V, respectively. The 'here-and-now' category collapses the *progressive*, *present* and *immediate future*, with the latter taking in all direct manipulative speech-acts. For the methodology of making such determinations at a stage where the grammar of tense-aspect-modality is often unmarked, as well as the notion of 'clause' in children's discourse, see Givón (2008a). **[FN 4]**

	HERE	(pp. 1-30 of transcript) E&NOW DISPLACED									
	==== PR/P	R/IMM	==== H.	AB	PAS	===== 5T	===== F	UT	TOT		TOT
	===== N	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	====== N	%	====== N	%	N	%	= ===== N	%	====== N
EVE NAOMI NINA	228 257 340	= ==== 97.0 98.8 100.0	===== / / /	= ====== / / /	7 2 /		= ==== / 1 /	= ====== / /	= ===== 7 3 /	3.0 1.2 /	===== 235 260 340
TOTAL:	825	 98.8	 /		 9		 1		 10	1.2	835

TABLE 10: Temporal displacement--stage I

TABLE 11: Temporal displacement--stage III

	NOW&	(pp. 1-30 of transcript) NOW&IMM DISPLACED											
	======================================		HAB		PAST		===== Fl		ТОТ		ТОТ		
	 N	%	N	%	N	%	N	%	== ==== N	%	 N		
EVE	163	===== 83.5	===== 4	====	= ===== 20		= ==== 8	= ====	32	= ==== 16.5	===== 195		
NAOMI	211	67.8	8		73		19		100	32.2	311		
NINA	281	76.5	26		41		19		86	23.5	367		
ADAM	372	87.3	11		43		/		54	12.7	426		
TOTAL:	1,027	79.0	49		177		46		272	21.0	1,299		

]	(pp. 1-30 of transcript) NOW&IMM DISPLACED											
	======= PR/PR/IMM ========		HAB PAST		======================================		 TOT		TOT			
	N	%	N	%	N	%	N	%	== ==== N	%	 N	
NAOMI	213	55.0	18		148		8		174	45.0	387	
NINA(IV)) 308	64.0	13		60		100		173	36.0	481	
ADAM	248	74.4	50		22		13		85	25.6	333	
TOTAL:	769	64.0	81		230		121		432	36.0	1,201	

TABLE 12: Temporal displacement--stage IV

The results, while not amenable to inferential statistics, are striking. At stage I of our study (ca. 2;0), the children anchored virtually all are their clauses in the current speech situation--on the average only an average of **1.2%** displaced temporality. At stage III (ca. 2;6), where the children are just beginning to produce restrictive RPN modifiers, the average has risen to **21.0%**. And at stage V, the final one in our study, the average was **36.0%**. While one cannot claim a direct causal link, it is fairly clear that REL-clause are acquired by children during the time when they begin to communicate about events and states that are not any more anchored in the here-and-now of the current speech situation.

5.3. Length of coherence clausal chains inside single turns

Another characteristic of early child communication is the rather **local coherence** of the discourse, where often the topic shifts every turn. What is striking in early childhood discourse--ca. 2;0 and below--is that the child's turns are often just the **one-clause** long. This gives rise to an extremely collaborative discourse style, where both topics and constructions are shared and elaborated across adjacent turns (Ervin Tripp 1070; Scollon 1976; Ochs *et al.* 1979). At this early stage of communication, topic negotiations are often protracted and repetitious (Keenan 1964a, 1964b) and the discourse style highly **paratactic**, shunning complex NPs, in particular large RPN modifiers. Multi-propositional discourse in single turns, the hallmark of more sophisticated adult discourse with single-person control of perspective, emerges only gradually.**[FN 5]**

Table 13, 14, 15 below summarize the distribution of turn-length in stages III, IV and V, respectively, of our study. The counts were performed on the first 15 pp. of each child/stage text.

		====== 1	2	====== 2	3		4		5-	 +	тот	===== AL
SUBJECT	===== N	==== %	===== N	==== %	===== N	%	N	 %	===== N	===== %	N	===== %
EVE	===== 81	===== 86.1	12	12.7	1	1.2	===== /	: ===== /		= ===== /	94 =====	100.0
NAOMI	74	69.2	22	20.6	6	5.6	2	1.8	3	2.8	107	100.0
NINA	86	66.6	28	21.7	6	4.6	5	3.8	4	3.3	129	100.0
ADAM	84	64.7	22	16.9	10	7.6	7	5.4	7	5.4	130	100.0
TOTAL:	325	70.7	===== 84	18.3	23	5.0	14	3.0	===== 14	 3.0	460	100.0

Table 13. Number of clauses per turn (child)--Stage IIILength of chain

Table 14.Number of clauses per turn (child)–Stage IVLength of chain

		1		 2	3	 3		 I	5	+	TO	 ΓAL
SUBJECT	==== N	%	==== N	~ %	===== N	===== %	==== N	===== %	==== N	===== %	= ==== N	%
NAOMI	=======================================	48.5	11	==== 15.7	==== 7	10.0	==== 5	= ==== 7.1	13	18.7	70	100.0
NINA	77	62.2	22	17.7	10	8.0	8	6.4	7	5.7	124	100.0
ADAM	50	57.4	15	17.2	12	13.9	6	6.9	4	4.8	87	100.0
TOTAL:	 161	57.2	48	17.0	===== 29	10.3	===== 19	6.7	24	====== 8.8	281	100.0

Table 15.Number of clauses per turn (child)–Stage VLength of chain

		====== 1	2	====== ;	3	=====	4		 5-	====== +	тот	 AL
SUBJECT	===== N	 %	N	===== %	N	 %	===== N	%	===== N	 %	===== N	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
======= NAOMI ADAM	==== 30 26	==== 44.2 46.5	===== 15 11	==== 22.1 19.6	===== 8 5	===== 11.7 8.9	==== 1 4	1.4 7.1	14 10	20.1 17.9	==== 68 56	100.0 100.0
TOTAL:	 56	45.2	26	20.9	13	====== 10.5	5	4.0	24	19.4	 124	====== 100.0

With considerable cross-subject variation, the general trend is nonetheless fairly obvious. One-clause turns drop gradually, from ca. 70% of all children turns at stage III to ca. 57% at stage IV to ca. 45% at stage V. Correspondingly, turns of 5 or more clauses stand at ca. 3% at stage III, 8% at stage IV and 19% at stage V, the stage where some of the children have long bursts of multi-clause narrative chains.

I will illustrate the two extremes of this developmental scale with one example from stage I (ca. 2;0) and one from stage V (ca. 4;5). In the first (25), the collaborative nature of early-stage topic negotiations is striking, as is the rapid **topic shifts** initiated by the child. This contrasts sharply with the adult's turns in (25), which pull repeatedly toward **topic continuity** in the first portion of the interaction, until in frustration the adult takes charge.

(25) **One-clause child turns, stage I** (Naomi-I, p. 45):

[Context: discussing objects in the immediate environment] NAO: Baby ball. MOT: Baby has a ball. NAO: Got [???].Got [???]. MOT: What? NAO: Got **shoe**. MOT: Got show, yeah. Yes. The baby has a dress on. NAO: Jacket on. MOT: And a jacket on, right. CHI: Shoes on. MOT: Yes, Daddy has shoes on. NAO: Knee. MOT: Yeah. Daddy has knees. Where is the baby's elbow? NAO: Elbow. MOT: Do you know where the elbow is? NAO: Elbow [pointing to Daddy's head]. MOT: No, that's Daddy's head.

Contrast this short-burst child discourse style with (26) below, where same child at stage V produces a 13-clause turn, taking charge of topic continuity to the point of discouraging the adult's 'clarifying' intervention:

(26) Multi-clause child turns, stage V (Naomi-V, p. 2-3)

[Context: playing in the bathtub]

FAT: That's so you can slide down and get your hair rinsed.

NAO: Oh. Whoopsie. I slided down for real fun. And isn't that nice?

All the fiends except **Froggy** and Pogo. **Froggy** and Pogo live next doors.

They live next door and little. Froggy says "here I go [???]".

'at['s] all. So he just swam under everything. Until one day. [???].

All the people ran in his house. And he most of all [???].

FAT: Most of all what, Nomi?

NAO: I wasn't talking to you.

At our stage V, children are of course still capable of engaging in short-turn backand-forth discourse, superficially similar to that in (25). But such rapid-switch interactions tend to exhibit much higher **cross-turn collaborative coherence**, characteristic of adult conversation (Chafe 1997; Ervin-Tripp 1997). Thus consider another interaction with the same child at stage V:

(27) **One-clause child turns** (Naomi V, p. 94-95)

[Context: Imaginary play with a doll]

NAO: Um also, she um also she had chicken pox.

MOT: Chicken pox!

NAO: [???].

MOT: She **itching**?

NAO: Uh-huh.

MOT: Oh, you still have the **chicken pox**.

NAO: Oh yeah.

MOT: And such a **young baby** too.

NAO: She's only **two**.

MOT: Yeah. She must feel a lot better now.

NAO: She still has chicken pox.

MOT: Uh-huh.

NAO: Are you cold?

5.4. Speech-act distribution

The last feature of the communicative ecology that changes rapidly during early language acquisition is the frequency of speech-act types. In our earlier companion study of the acquisition of verbal modality (complex VPs) between the ages of ca. 2;0 and 2; (Givón 2008a), it was shown that the frequency of **manipulative speech-acts**, which predominate the early stages of child communication (Carter 1974; Bates *et al.* 1975), had already stabilized at ca. **30%** by age 2;0. Thus, by the time children in our CHILDES transcripts begin to acquire post-nominal restrictive modifiers, the major shift in speech-act distribution has already taken place.

The counts of speech-act distribution in the transcripts of stages III, IV and V show wide swings across subjects and across different portion of the transcript for the same child/stage. Long stretches of child narrative, as in (26) above, tend to tilt towards a high frequency of declaratives; while more rapid-shift short-turn exchanges show a higher frequency of manipulatives. The frequency distribution Tables 16, 17, 18 below testify to such variation, rather than to any continuing developmental trend from stage III to IV to V.

	===== Ma	 nip.	Dee		Ques	tion	TOTAL	
SUBJECT:	===== N	 %	===== N	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	===== N	 %	===== N	%
======= EVE	30	36.1	===== 39	46.9	=====	17.0	83	100.0
ADU	37	23.8	73	47.0	45	29.2	155	100.0
NAO	66	45.5	63	43.4	16	11.1	145	100.0
ADU	38	28.1	47	34.8	50	37.1	135	100.0
NIN	32	21.3	86	57.3	32	21.4	150	100.0
ADU	34	19.1	42	23.5	102	57.4	178	100.0
ADA	61	32.6	 74	39.5	52	17.9	187	100.0
ADU	23	18.6	64	52.0	36	29.4	123	100.0
======= ADU:	189 = 4	====== 44.4%					425	
CHI:	132 =	22.3%					591	

Table 16: Speech-act distribution-stage III (pp. 1-15 of transcript)Speech act

	Ma	Manip.		Declar.		Question		TAL
SUBJECT:	===== N	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 N	 %	===== N	 %	===== N	%
NAO ADU	51 36	40.4 40.9	61 36	==== 48.4 40.9	==== 14 16	11.2 18.2	==== 126 88	100.0 100.0
NIN ADU	63 26	31.9 17.7	121 39	61.4 25.6	13 87	6.7 56.7	197 152	100.0 100.0
ADA ADU	17 16	12.5 17.5	90 37	66.6 40.6	28 38	20.9 41.9	135 91	100.0 100.0
======= ADU: CHI:	131 = 78 =	28.6% 23.5%					458 331	

Table 17: Speech-act distribution-stage IV (pp. 1-15 of transcript)Speech act

Table 18: Speech-act distribution-stage V (pp. 1-15 of transcript)Speech act

	Ma	Manip.		Declar.		Question		TAL
SUBJECT:	===== N	 %	N	 %	 N	 %	==== N	%
NAO ADU	15 33	9.5 32.3	===== 128 40	81.5 39.2	14 29	9.0 18.6	157 102	100.0 100.0
ADA ADU	37 28	27.4 42.4	80 21	59.2 31.8	18 17	13.4 25.8	135 66	100.0 100.0
======= ADU: CHI:	====== 52 = 61 =						==== 292 168	=

6. Paratactic precursors of children's REL clauses

In his seminal study, Diessel (2005) suggests that the acquisition of both complex VPs and complex NPs proceeds through **expansion**, starting from an earlier **holistic** single-clause constructions and eventually expanding, at least semantically, to two clauses packed together as a complex construction. In my earlier study of the acquisition of complex VPs (Givón 2008a),

I suggested that the expansion model did not accurately characterize the acquisition of complex VPs. Rather, the process of **condensation** was involved there, whereby the precursors of complex VPs were **paratactic** two-clause combinations spread across **adjacent conversational turns**.

Earlier above, I have shown that before children acquire adult-type REL-clauses, they already produce several types of RPN modifiers that are functionally equivalent to REL-clauses. Those constructions may be considered early precursors of standard REL-clause forms. I have also showed that the presentative clause, the presumed early holistic one-clause stage identified by Diessel (2005), is not found in any particular frequency in the early stages of REL-clause acquisition, leastwise not in the transcripts studied here. What I would like to suggest now is that a **condensation**--rather than an e**xpansion**--model also characterizes the early stages of acquisition of restrictive REL-clauses.

It is not easy to prove that some paratactic construction is 'the precursor' of syntactic RELclauses. To begin with, the notion of 'semantic equivalence' is rife with difficulties, and the difference between run-of-the-mill conjoined clauses and paratactic clausal modifiers may hinge of subtle pragmatic difference between **asserted** and **presupposed** information. Demonstrating the semantic equivalence of paratactic and syntactic configurations is thus, at best, suggestive.

What follows below is the entire inventory of paratactic constructions used by the children at stages II, IV and IV of our study. The plausibility of these constructions being the developmental precursors of the RPN modifiers discussed earlier above is thus not proven, but only suggested. In each of the examples, either the RPN modifier itself or the entire modified noun phrase is packed under **a separate intonation contour** from its proper main clause.

Consider first the paratactic RPN modifiers found in the transcripts of stage-III:

(28) **EVE-III** (ca. 60 pp. of transcript)

(a) EVE: My glass. MOT: Your glass? EVE: Yep. MOT: Which glass? Your [???] one? EVE: Yes. With ice-cubes in it? MOT: With an ice-cube in it? EVE: Yeah. [p. 3-4]

(b) RIC: Let's put it...

EVE: There. You make it right there. You make it there, **by your other flower**. [p. 43]

©) FAT: A bill from Dr. Finn for Eve's chin.
 EVE: A bill, from Dr. Finn, to fix Eve chin. [p. 60]

(29) NAOMI-III (ca. 60 pp. of transcript)

MOT: That's a card I was going to send to these people who had a baby.
NAO: Had a baby?
MOT: Yeah.
NAO: [???].
MOT: That's okay.
NAO: A little baby. Baby.
MOT: Yeah, I was going to send that to the people who had the baby. [p. 2]

- (30) NINA-III (ca. 60 pp. of transcript)
- a. MOT: What's this? NIN: A little ducky. **Swimming in the water**. [p. 13]
- b. NIN: Oh there's a new picture of one. MOT: Of what?NIN: Of building houses. [p. 13]
- c. NIN: Oh, this is a picture... of hippopotamus and seals and a man. MOT: Oh, that the little box that the rhinoceroses came in. [p. 33]
- d. MOT: And what else is this dolly wearing?
 NIN: A blouse like that one. Louise gave me that one.
 MOT: That a pretty, pretty dolly.
 NIN: Yes, she has a blouse like that dolly.
 She has a skirt like that dolly. [p. 42]
- (31) ADAM-III (ca. 60 pp. of transcript)
- a. ADA: [???] paper. Have some. Have some table. Ursula brought this Adam.
 NOT: What? Have something on the table that Ursula brought Adam? ADA: Sit a right there. [p. 5]
- b. ADA: Like a house. Cowboy like a house. MOT: Cowboy likes a house? It's a restaurant, where you go to eat. [p. 23]

For the four children at stage III combined, out of a total of **14** RPN modifiers, **10** appeared in paratactic constructions.

The comparable list for the three children at **stage IV** is as follows:

- (32) NAOMI-IV (ca. 90 pp. of transcript)
- a. NAO: Because I want the black dolly. The black dolly. The dolly with the brown sleeper.
 MOT: You want this one?
 NAO: Yes.
 MOT: This is the one with the brown [sleeper?]. [p. 8-9]
- b. NAO: Up there. I can't find the cover. MOT: What cover? NAO: The cover that I'm looking for. [p. 8]
- c. MOT: You have to do the work in the book? Okay, well I will tell you, let's see. NAO: I got all the books from my the other school, so I have to sit down and... MOT: Okay.
 NAO: Read these. All these. These are all the books I have and all the puzzles I have.
 - MOT: All the puzzles *you have*? [p. 16-17]
- d. MOT: Here's a mommy. A big mommy.
 NAO: Yup. W[ith] ger gir g g girl standing by her.
 MOT: And the mommy has a bid... What does she have on?
 NAO: Apron. [p. 26]
- e. MOT: I don't know what we can get to fasten this and we'll have to think about it. So we can get...
 NAO: [???] something to play with. [p. 80-81]
- (33) **NINA-IV** (ca. 90 pp. of transcript; total RPN modifiers =14; ; paratactic = 9)
- a. MOT: Okay, tell me the story about Pinocchio.
 NIN: Okay... Once upon a time here was a three many Pinocchios
 and they had a great time. And we had two stories. [p. 6]
- b. MOT: You're gonna hold me?NIN: No, this lady named Florence. [p. 6]
- c. NIN: Now slap her legs down.
 And go to sleep in your sleeping bag. like your friend Elizabeth is.
 This is Elizabeth and this is Nina. [p. 7]

- d. MOT: Why don't you find a home for all of them? Put them in their homes and take care of them.
 NIN: All the animals that belong... All the animals that we were playing with, Mommy. [p. 65]
- e. NIN: Yup, so the people could go in. MOT: Have you seen them around? NIN: Mommy. I want the same people that were at the doll. that were at the doll. [p. 70-71]
- f. MOT: Is it going to be in the city or in the country? NIN: In the country. MOT: And what are we going to see in the country? NIN: People that are not gonna be burned up. [p. 76]
- g. MOT: You went to see a movie with daddy? NIN: Yup.MOT: And what was the story of the movie?NIN: Uh, the people that are in love. [p. 76]
- h. NIN: In the morning Yup. They are going to a movie that, that's Hikey and Fixey and the Fox. [p. 77]
- i. MOT: What park should we go to?
 NIN: To the merry... To the park that has the animals.
 MOT: Which one is that? [p. 80-81]
- (34) ADAM-IV (ca. 90 pp. of transcript)
- a. ADA: See the engine? URS: Yes ADA: A box, that is a boxcar and that a log car. Carrying logs. [p. 3]
- b. MOT: What kind of whale is that?ADA: Have big sharp mouth. Have big sharp teeth. It's a baby whale. [p. 10]
- c. ADA: What are these? MOT: That's what you call chalk. ADA: Chalk for putting in the mouth? MOT: No, not for putting in the mouth. [p. 20]

MOT: This isn't a doggie. ADA: What is it? A bear **just like mine**. MOT: Mmhm. [p. 28]

Out of the combined sample for the three children of **39** RPN modifiers, **18** are paratactic. Finally, consider the following examples from the two children at **stage V**:

- (35) NAOMI-V: (ca. 90 pp. of transcript)
- a. FAT: Okay, one more story and then you come out of the tub.
 NAO: There was two frogs and one Pokey. And they all lived together.
 Frogs, two frogs and one Pokey and they always pooped in their face. [p. 14]
- b. NAO: Know what? MOT: What? NAO: I have... I picked up that thing. That pretty thing that's on the floor. MOT: The wall paper, piece of wallpaper? NAO: Yeah. [p. 34]
- c. NAO: Okay. Once there was...Once there was. Humpty Dumpty sitting on a wall.He fell down and hurt hisself. Tumbling from it, [???] cried. [p. 37-38]

(36) **ADAM-V:** (ca. 90 pp. of transcript)

- a. MOT: Alvin.
 ADA: Rocky.
 MOT: Oh, Rocky, I'm sorry.
 ADA: Rocky with nothing on his... with his friends. [p. 13]
- b. ADA: What's in here?
 URS: Oh, that's something for your mother.
 ADA: That's a book, right? A book about knights? A book about knights. [p. 46-47]

Out of the combined **37** RPN modifiers produced by two children at stage V, **9** appeared in paratactic constructions.

The frequency distribution of paratactic RPN modifiers in our transcripts at stages III, IV and V, combined for all children, is summarized in table 19 below.

STAGE	# of subjects	total F	RPN modifiers	total paratactic	%	paratactic
					==	
III	4	14	(3.5/child)	10		71.4%
IV	3	39	(13/child)	18		46.1%
V	2	37	(18.5/child)	9		24.3%

Table 19: Percent of paratactic RPN modifiers

While these distributions are in no way definitive, they nonetheless suggest a developmental trend, whereby the putative paratactic precursors appears at the highest frequency (71.4%) at the early stage, and then taper off gradually (to 46.1%, then 24.3%) as the children produce more--and more standard forms of--restrictive REL-clauses.

7. Tentative conclusions

7.1. The adaptive ecology of communication

It has become fashionable, ever since Slobin's (2002) course reversal, **[FN 7]** to assert that the three developmental processes that define human language–language ontogeny, language diachrony and language evolution--have little to do with each other. Heine and Kouteva (2007) have already argued, I think convincingly, that parallels between language diachrony and language evolution feed into a fruitful line of inquiry (see also Givón 2008c). My own reading of the acquisition data, including those surveyed here and in the companion study (2008a), is that the course of child development is a powerful, stimulating analogue of language evolution--provided one remembers the difference between analogy/similarity and identity.

In particular, the developmental course of the three grand features of the human **communicative ecology**:

- •the rise of displaced reference;
- •the liberation of declarative/epistemic speech-acts from
- their prior subservience to the deontic/manipulative;
- the rise of multi-propositional discourse

is fundamentally the same process in language ontogeny and language evolution. In language ontogeny as in language evolution, the adaptive ramifications of these three major developmental trends form the context within which the rise of restrictive modifiers begins to make sense. And it is only when the third grand feature has come on line, and the child is capable of producing **multi-propositional paratactic discourse**, that the syntactic pre-conditions for the genesis of complex syntactic construction have been reached.

7.2. Interactive discourse and syntactic development

Relative clauses are acquired in the intensive, interactive conversational context of **referential negotiations**. In the ecology of earlier child communication, such negotiations were handled by rapid-shift, short-burst turns, with much repetition and back-and-forth thrusts and parries (Keenan 1974, 1975). This negotiation style made restrictive modifiers superfluous, but it remains a highly inefficient **pre-grammatical strategy**. The new strategy, adding restrictive REL-clauses to the earlier referent-marking arsenal--full nouns, demonstratives and articles, emphatic stress, pragmatic word-order, pronouns and zero anaphora--is obviously more efficient, in the relatively rare discourse contexts where it is required.

The relatively late acquisition of REL-clauses and their relative rarity in face-to-face informal communication, of both children and adults, go hand in hand. Only within the more complex referential demands of maturing communication does the acquisition of REL-clauses begins to make sense, with an increased recourse to the communicative functions coded by REL-clauses:

- Presentative constructions (making new referents salient)
- •Reference to prior discourse (searches in episodic memory)
- •Navigating referential competition

7.3. 'Expansion' vs. 'condensation' and parataxis to syntaxis

The **expansion-from-holistic** thesis in child language development has its origins in the works of Tomasello (1992; 2000; see also Tomasello and Diessel 2001). In a recent paper, Tallerman (2007) criticized this *analytic* approach as an inadequate model for language evolution, a criticism that may or may not apply quite as forcefully to language ontogeny.**[FN 8]**

Be the general validity of this developmental model as it may, the data of my two companion studies suggest that an alternative model, **condensation from parataxis**, one that is well established in the diachrony of complex clauses, also applies to their ontogenesis. And while the communicative context--negotiations of deontic and epistemic modality of propositions vs. negotiations of reference--may differ between the types of complex constructions, the general **parataxis-to-syntaxis** condensation model seems to apply to both.

7.4. Whither 'recursivity'?

We come back now to a central question broached earlier above. Our cumulative data of both language diachrony and language ontogeny suggest that the two main types of complex clauses, complex VPs vs. complex NPs, differ in multiple major features; respectively:

•time of acquisition: early vs. late

• prevailing communicative ecology:

•domain of reference: here-and-now vs. displaced
•speech acts: deontic (early) vs. epistemic (late)
•coherence span: limited (early) vs. expanded (late)

•proximate goal for acquisition:

- negotiating epistemics and deontics of events vs. negotiating reference
- •terminal usage frequency: high vs. low
- •ultimate syntactic product: clause union vs. no clause union
- •ultimate lexical product: complex verbs vs. complex nouns.

Both developmental trends seem to yield 'recursivity'. But the processes through which such 'recursivity' arises are of very different sorts. In the genesis of complex VPs, a main-clause verb is recruited as a **deontic or epistemic operator** on the embedded' clause, and it is the **embedded clause** that retains communicative center stage. In the genesis of complex NPs, an embedded clause is recruited as a **marker of referential status** of a main-clause referent; and it is that **main-clause referent** that retains communicative center stage. In both cases a clause is recruited to operate on another clause. But it is the **main** clause that becomes the operator in genesis of complex VPs, and the **subordinate** clause in the genesis of complex NPs.

Both Simon (1962) and Hauser *et al.* (2002) define complexity formally, abstractly, and configurationally, with 'recursivity', coming out of to Chomsky's early machine-theory work, being but a sub-case of Simon's more general notion of **hierarchy**. But is 'recursivity' a meaningful concept in language? Or is it but an accidental by-product of development, perhaps an *epiphenomenon* that 'falls out' of two separate and distinct processes of *grammar genesis*?

Perhaps all 'recursivity' means is the following: In the genesis of morphology, **lexical words** are recruited to become grammatical operators on both clauses and other words. In the genesis of complex syntax, **whole clauses** are recruited as operators on other clauses (complex VPs), or on words (complex NPs). But in the case complex VPs, the recruited clause soon shrinks to its lexical core--the verbal word, which then becomes a **morpheme**--bye-bye synchronic 'recursivity'. In the genesis of complex NPs, on the other hand, the recruited clause remains a clause--welcome synchronic 'recursivity'. The common denominator is valid, at best, only during the the **initial recruitment process**, the early stage of the genesis of complex syntax.

Footnotes

*

I am indebted to Holger Diessel for his stimulating study on the acquisition of complex clauses (2005); to Brian MacWhinney for making the CHILDES data-base available electronically; to Cecilia Rojas for helpful discussion of her study of the acquisition of REL-clauses in Spanish; and to Bernd Heine and Tania Kouteva for the stimulating chapters 5 and s 6 of their book (2007).

1

The child-adult communication studied here was based on the CHILDES database, courtesy of Brian MacWhinney. The subjects of the previous study, stages I,II,II (Givón 2008a), were Eve, Naomi and Nina, with ca. 60 pp. of printed transcript each. The transcripts of Adam were added to Stage III. Stage IV involved Naomi, Nina and Adam, with ca. 90pp. of printed transcripts each, and stage V Naomi and Adam with ca. 90pp. of printed transcript each. The age range for stage III was 2;4-2;8, for stage IV ca. 3;6, and for stage V ca. 4;6.

2

The comparison adult text used here was tape-recorded in 1981 when the speaker, a retired rancher, trapper, oil-field roustabout, Ol' Time fiddler and natural *renconteur*, was in his early 60s. The text counted here was taken from the transcribed chapter 3 of his yet-unpublished life-story. 3

Nina's transcripts did not continue beyond our stage IV, so her stage IV was counted as stage V for the purpose of this measure.

4

The methodology depends heavily on the analysis of the immediate context, i.e. preceding and following turns of both child and adult, to indicate the intended temporality of the oft-unmarked and immensely elliptic child utterances.

5

The most extreme type of multi-propositional discourse is, of course, edited written text, whose coherence and grammatical structure(s) are controlled by a single mind (Keenan and Bennett 1977; Givón 1979, ch. 5).

6

Collaborative cross-turn construction of coherent discourse is a well-documented option in adult face-to-face communication discourse (Chafe 1997; Ervin-Tripp 1997).

7

See e.g. his earlier pronouncements on the similarity between ontogeny and diachrony (Slobin 1977).

8

In sum, Tallerman points out that if a multi-word sequence ('you give me apple') is learned first as a holistic unit ('yougivemeapple'), there is no learning procedure that will guarantee the eventual assignment of three specific meanings to any particular three parts of the unsegmented whole. The use of single words to stand for whole propositions ('apple!') in early childhood, (or of lexical-specific predator calls in primate communication), is not a case of holistic meaning, but rather of well-defined lexical meaning, with the rest of the proposition ('you', 'me', 'give', manipulative speech-act) inferred from the context. Syntactic development, leastwise in language evolution, is thus *compositional* rather than *analytic*. But the facts of early language ontogeny, in particular the proverbial one-word stage (Bloom 1973; Scollon 1976) suggest precisely the same context-dependent reading of single-word 'holistic' utterances (see discussion in Givón 2008a).

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