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WHY QUESTIONS?

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1.1 Introduction

In the following paper I will argue that experimental evidence from children aged 4 and older demonstrates mastery of the principles governing empty categories left by Wh-movement. However, the evidence from younger children suggests that there might be a stage at which their grammar for wh-questions is quite different from that of adult English, in particular with respect to adjunct questions. In brief, several lines of evidence point to the possibility that the child's first adjunct questions might be generated *in situ* in a topic position adjoined to the IP. Only at a later point, after some crucial data from embedded clauses trigger the change, is the analysis of adjuncts as moving to the spec of CP adopted. To propose such a radical departure from adult grammar requires some defence, and this paper makes a preliminary attempt to provide that defence.

1.2 The Argument-Adjunct Distinction and the ECP

To begin, let me review the data on the adjunct/argument distinction in long distance movement. The possibility of long distance extraction of wh-questions from embedded clauses provides us with a test of the child's knowledge of the Empty Category principle. In the absence of a principle governing the licensing of traces left by wh-movement, the array of rules to be mastered by the child would be bewildering. For instance, the set of questions shown in Table 1 reveal a complex pattern of possibilities of interpretation, depending upon whether the moved

question is an adjunct or argument, and whether the medial COMP is filled with no medial, an argument or an adjunct wh-question.

Table 1

Extraction from wh-islands.:

- a. **Who** did Fred ask t to paint t?
- b. **How** did Fred ask t to paint t?
- c. **Who** did Fred ask t **how** to paint t?
- d. **How** did Fred ask t **who** to paint *t?
- e. **Who** did Fred ask t **what** to bring *t?
- f. **How** did Fred ask t **when** to paint *t?

In a) through c), the interpretation of the trace in the lower clause is unproblematic, whereas for d) through f), the trace in the lower clause is not a possibility. There are several competing formulations of the ECP that will account for these distinctions, but perhaps the most successful currently is that by Rizzi, in his book on relativized minimality and the conjunctive formulation of the ECP (1990). He defines the conditions as follows:

- A non pronominal empty category must be
- 1. properly head governed (formal licensing)
- AND
- 2. theta governed or antecedent governed (identification)

The crucial point is that for Rizzi, head government and antecedent government are on parallel tracks and hence the two different kinds of governor do not provide barriers for each other. But head government is blocked just in case another potential head governor intervenes, and likewise with antecedent government. In the sentence in 1f), an operator in the intermediate spec of COMP is a potential antecedent governor for the adjunct trace in the lower clause, hence blocking the government from the wh in the main spec of CP. Since the trace is not theta governed either, ECP is violated. The argument case, 1e), is less clearly blocked under any formulation of the ECP but remains strikingly bad in our judgement. The contrasting cases in c) and d) arise because the object case can be both head governed and theta governed by the verb, while the adjunct case can only be head governed.

1.3 Children's Knowledge of the ECP

Our first study (de Villiers, Roeper & Vainikka, 1990; see also de Villiers & Roeper, this volume) explored children's knowledge of these violations and of the adjunct/argument distinction by using a comprehension task in which ambiguous questions followed stories providing several alternative answers. The child's access to primary data of this type is rather slight, as searches through the CHILDES corpora reveal. Yet our studies with 4 to 6 year old children reveal a mastery of the constraints on interpretation of just this complexity. It is argued that the children's grammars contain the basic distinction between adjuncts and arguments, and that they already have formulated a version of the ECP that makes these interpretive differences fall out.

Does this necessarily mean that the ECP is immediately in effect in children's grammars? Such a principle may be present, but it is necessary for the child to develop the appropriate syntactic structures, and the appropriate assignment of empty categories, before the ECP can apply. As discussed in de Villiers & Roeper (this volume), there are other parametric choices in UG that do not involve syntactic wh-movement, and it is possible that the child makes such a choice at the start. At the very earliest stages, some data suggest the child begins with questions that are generated *in situ* at the front of the sentence, and linked instead of to a trace, to something like a small pro. Roeper has argued on a number of occasions that there may be an initial generic empty category that has properties like a small pro, and later differentiates into the various types known in adult syntax. In particular, children's violations of the Strong Crossover condition would be compatible with such an analysis (Roeper et al, 1985; Lebeaux, 1988)

I want to focus here on a second possibility, that adjunct questions initially begin as unmoved elements, generated in place at the front of the sentence, and with neither trace nor pro in the verb phrase.

2.1 Comprehension and Production of Adjunct Questions

Why, one might ask, would such a claim be necessary given the adult-like performance of the 4 to 6 year olds? Several lines of research have led me to this point of view and suggested that it may be a unifying account. In recent studies we have pursued research

with children below age 4, and we have also undertaken systematic searches of naturalistic data in the CHILDES corpora and others.

In the first line of research, we have discovered that young children give a large percentage of answers to "how" questions that did not sound appropriate to the adult construal of how. In particular, the default assumption in answer to an adjunct question appears to be to assume it meant "why". Some examples of these answers are provided in Table 2. These questions

How did the dog run?	Because black dogs are fast enough.
"	Because he had so much might.
"	Because he was using his paws.
How did the clown catch the ball?	Because he used a net.
How did the woman talk to her friend?	Because she didn't like that car.
How did the boy say what he caught?	Because he caught a boot.
How did the dog climb who barked?	Because he had a ladder
	Because he wanted to save the cat.
How did the mouse fix the bike?	Because it was broken.

followed stories in which there was provided a very easy, if not emphasized, answer to the how question, usually as an instrument or a marked manner. Furthermore, the answers represented the diversity of reasons that are typical of why questions: they were not semantically limited to close relatives of "how". Nevertheless, the children invented different answers, very frequently answering adjunct questions as if they meant "how come -S".

The distinctive feature of these answers in the long distance environments was that they neatly sidestepped the problem of wh-assignment to a clause: it was frequently difficult to justify that the question was being interpreted with respect to just the upper or just the lower clause: the question seemed to take its scope over the whole sentence, without having a particular clause of origin.

The second source of evidence derives from reports on the nature of the actual why questions that children produce. Blank (1976) reported that young children ask "why" questions in sometimes unanswerable ways, as if they "stuck" the why on the front of any sentence, or sentence fragment e.g

Why the garage door?

Blank interpreted this as due to a kind of pragmatic strategy for generating more discourse, so that a child could eventually learn the complex meanings that why answers encode. Such an explanation may still be right in terms of function, but syntactically the characteristic of such questions is that they appear attached in an *ad hoc* fashion to the whole sentence or sentence fragment, as seen in the examples in Table 3. Of course part of that impression comes from the lack of subject-auxiliary inversion in such sentences, which turns out to be a crucial clue to the structure.

Table 3

Asking why questions

Blank 1976: Dusty at 26 months asked why questions that were "meaningless" e.g.

Adult: "That's the garage door".

Dusty: "Why the garage door?"

From CHILDES: (ages in parentheses)

Abe 036 (2;9):	Why that's a little piece of foil?
Abe 044 (2;10):	Why we are daddies and hers girl?
Abe 068 (3;1):	Why tonight we're not gonna babysit anyone?
Adam 015 (2;10):	Why not my coffee fall?
Adam 017 (2;11):	Why not you looking right place?
Adam 037 (3;9):	Why is a turkey?
Nath 027 (3;4):	Why is night?
Nath 028 (3;8):	Why next Saturday is gonna be April?

comes from the lack of subject-auxiliary inversion in such sentences, which turns out to be a crucial clue to the structure.

It is interesting to note that in adult English "why" questions do have a rather unique property of

attachment to fragments, unlike most other wh-questions:¹

- (2) Why questions, in particular?
 Why Rizzi's book?
 Why BLACK tape?
 Why Saturday?
 Why hack at it like that?
 *How questions?
 *When the talk?
 *Where blue string?

2.2 Some Adjunct questions are IP-adjoined.

Where is this argument taking us? I am leading to the claim that why questions can in fact be generated in a topic position in front of the sentence rather than in the SPEC of CP, and that that position may remain a possibility in adult grammar. Furthermore, there is evidence from other languages that the proposal is not outlandish for UG. Consider some evidence from Rizzi about the difference between various French question words, specifically *pourquoi* (why) and *comment* (how). They are distinguished in the fact that no stylistic inversion or *in situ* use of *pourquoi* is possible:

- (3) * *Pourquoi a parlé Jean?*
 * *Il va pourquoi?*

though both are fine with *comment*:

- (4) *Comment a parlé Jean?*
Il va comment?

Hence Rizzi argues that *pourquoi* may best be analyzed as an IP adjunct rather than a VP adjunct, generated directly in place with no empty category, and no trace. That would explain why there is no *in situ* position for *pourquoi* to occupy.

Consider also the question "how come" in English, which is exceptional in allowing no aux inversion:

- (5) * *How come is he going?*

and also has no echo version:

1. There are in fact some other candidates: "what about", "how come", "what if", "how about" - but they do not seem as flexible in their combinations as "why"

(6) * He is going how come?

In addition, it seems that long distance movement of "how come" is blocked:

(7) How come she said t she was going *t?

Since Rizzi argues that *pourquoi* may best be analyzed as an adjunct to the IP rather than the VP, a candidate for a similar analysis in English would be the form "how come", which does not permit inversion nor appear in echo form, nor does it seem to link to a lower clause trace. Hence there is available an alternative analysis in UG of adjunct questions. The case is then strengthened that young children may adopt this analysis of adjuncts at the earliest stages, as an alternative to movement and trace.

The place in which these adjuncts are generated is in some contention, however. Are they generated directly in SPEC of CP, in which case are they structurally distinct from VP adjuncts only by the lack of a trace? Or are they perhaps generated in topic position adjoined to IP? In the latter case, is the CP node either empty, absent, or optional at the start?

Several recent lines of work (e.g. Radford 1988; Lebeaux 1988; Roeper 1988; Meisel & Müller 1990) have suggested that young children must learn the possibilities for the functional categories in their grammars, given that there is cross-linguistic variation in whether the category exists, and if so, whether or not it has internal structure, e.g. specifiers (Fukui & Speas, 1985). Hence the proposal that the wh-word is not in SPEC of CP at the start is not out of line with these other theoretical arguments, nor in fact with other data on child language (see Meisel & Müller, 1990; Radford, 1988; Platzack, 1990; Penner, 1990). But the case is strengthened by consideration of the course of acquisition of aux inversion in wh-adjunct questions.

3.1 Aux-inversion and the Development of CP

I tested the following hypothesis against the CHILDES data base: that inversion would be particularly delayed in the case of why questions. I reasoned that if the "why" question did not occupy the CP node, but was instead adjoined to IP, it would not be possible to have I to C movement in those sentences. It has been known for some time that inversion in wh-questions lags behind inversion in yes/no questions, and comes in at different

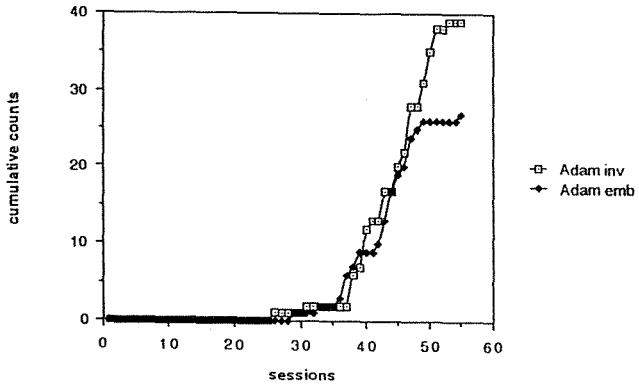
times for different wh-words (e.g. Kuczaj & Brannick, 1979).

In searching through the printouts of why questions, I was immediately struck by what appeared to be a coincidence: the point at which inversion with why questions entered the child's production was the same or only slightly later than the point at which embedded why questions first made their appearance. The data from Adam's transcript are shown in Figure 1, along with similar data for several more children (Figures 2,3).

In fact, a wider search revealed that in every case, the embedding of a wh-word precedes the establishment of inversion with that wh-word¹ (see Figures 4,5,6,7, which show data from the four children with rich enough data). In each case, there is a connection between the appearance in medial position in the children's speech and the onset of inversion in those question types. That coincidence of timing is always most precise in the case of "why" questions, which are usually the last both to embed and to invert.

Figure 1

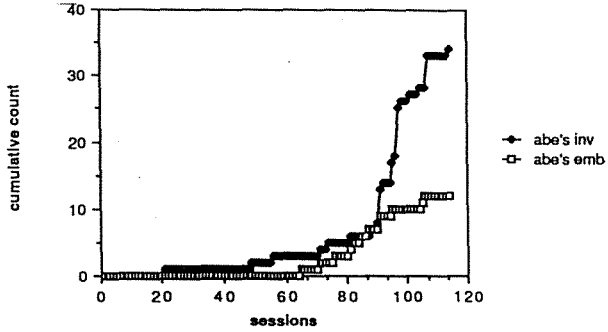
Adam's why questions



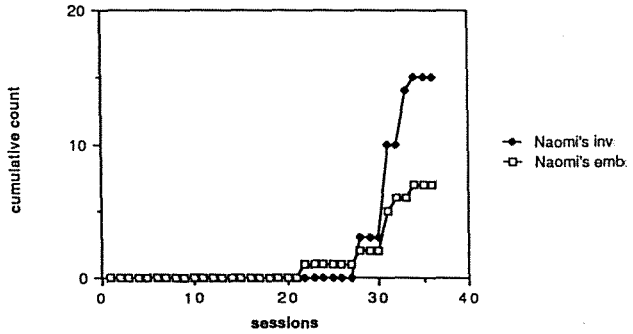
1. In the case of Adam's how questions, the case is distorted by the presence of a very early, apparently routinized form "How d'you know?".

Figure 2

Abe's "why" questions



Naomi's why questions



Ross's why questions

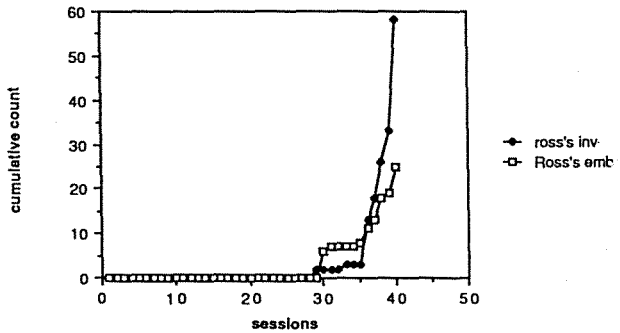


Figure 3

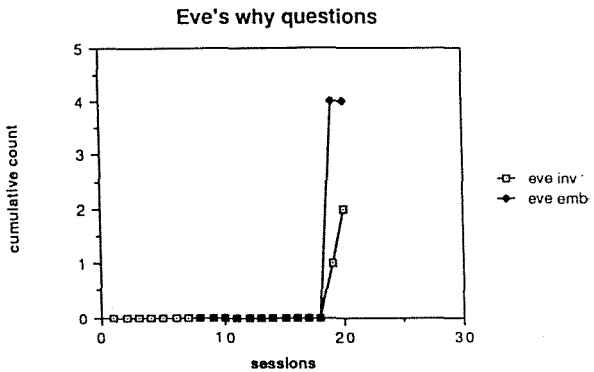
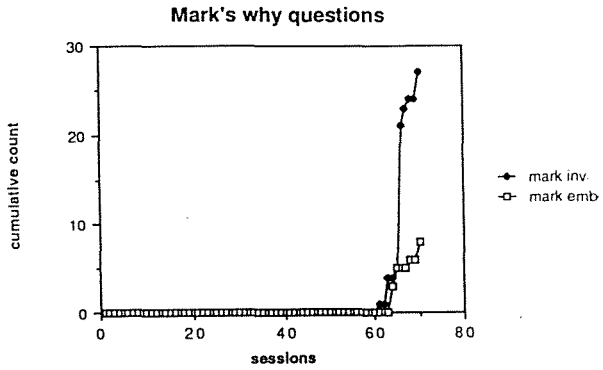
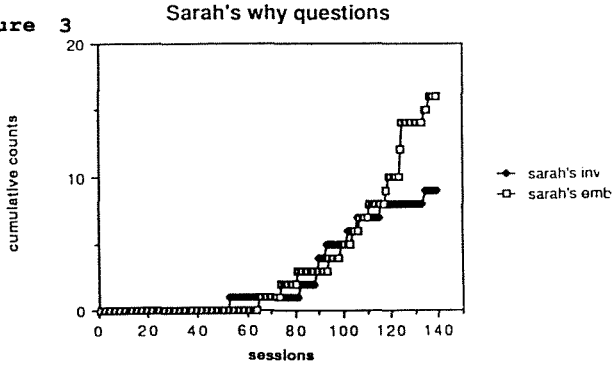
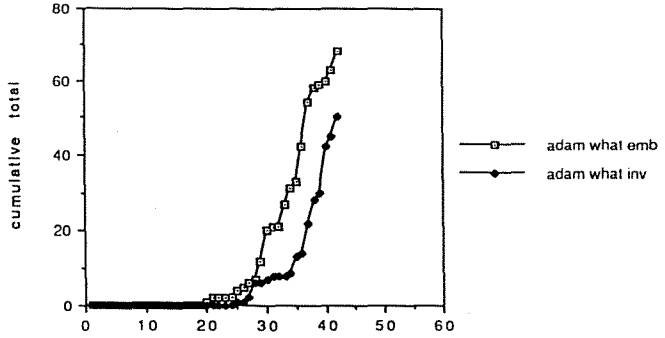
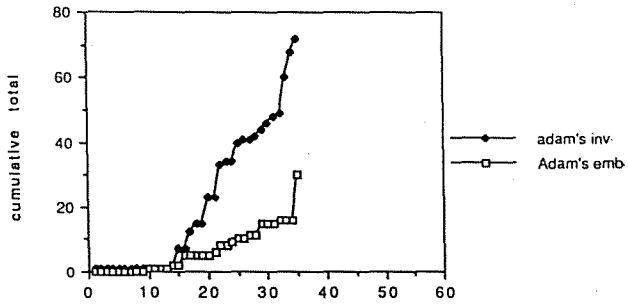


Figure 4

ADAM'S WHAT QUESTIONS



Adam's How Questions



Adam's why questions

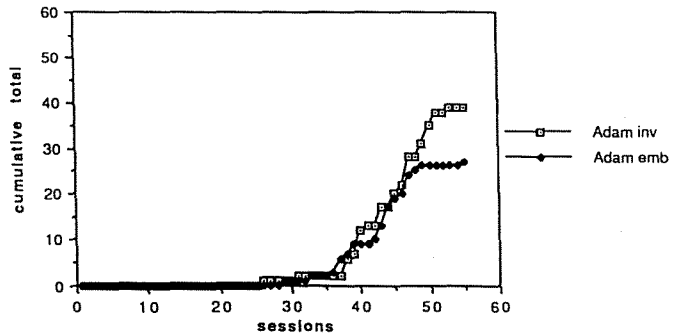
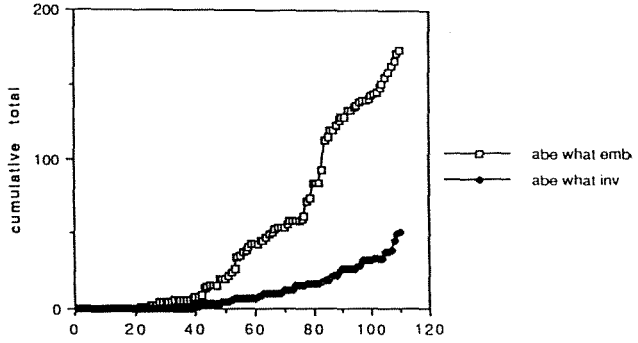
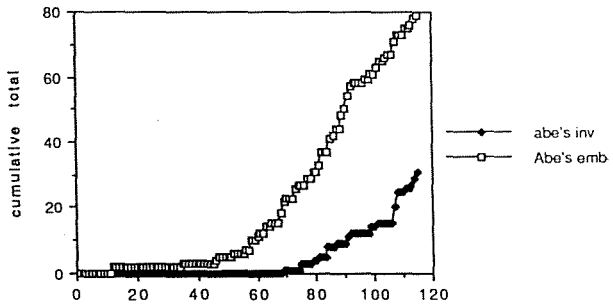


Figure 5 Abe's What Questions



Abe's How Questions



Abe's why questions

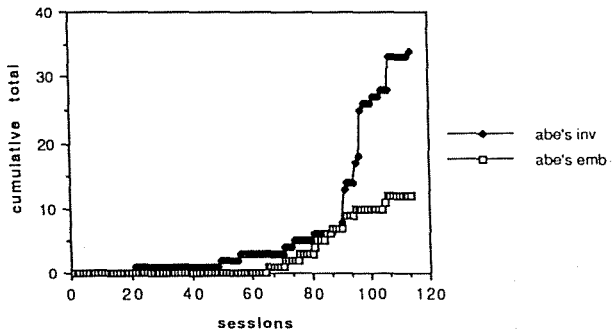
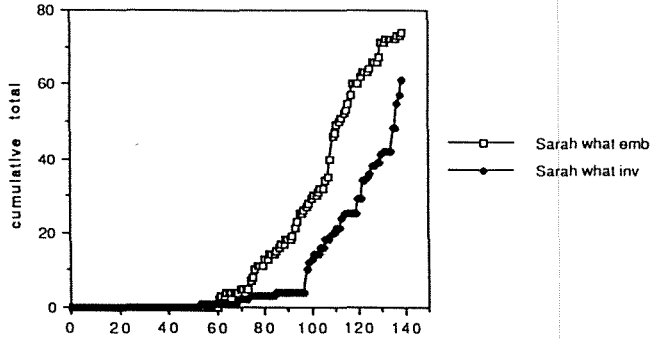
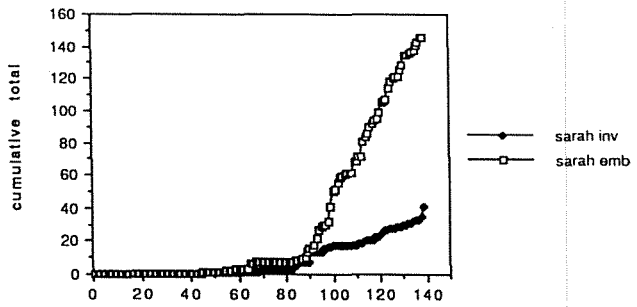


Figure 6

Sarah's What Questions



Sarah's How Questions



Sarah's why questions

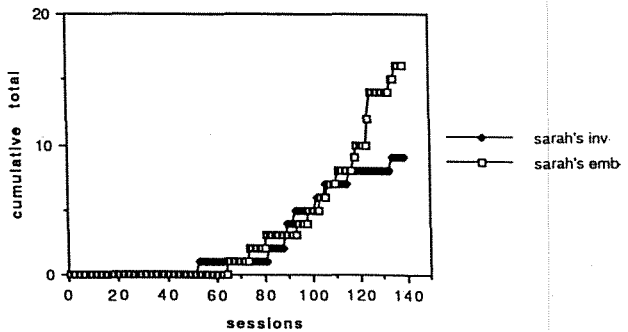
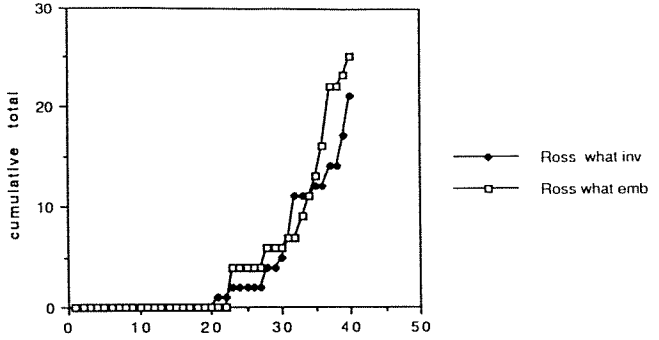
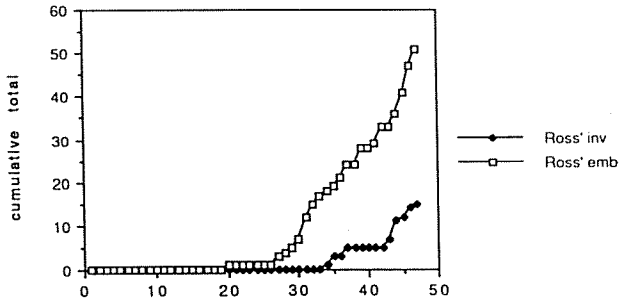


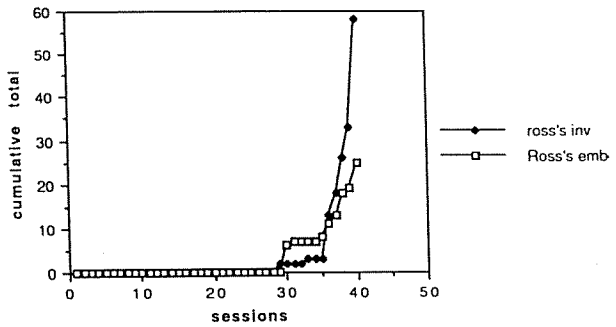
Figure 7 Ross's What Questions



Ross's how questions



Ross's why questions



Why should this be? I argue that the appearance of the wh-word in medial position coincides with its analysis as part of CP, subcategorized and lexically governed by a particular verb in the matrix sentence. The subcategorization provides the trigger that the appropriate analysis of the question is in SPEC of CP, rather than in a topic position. One consequence of this re-analysis is that it makes available the C-position into which I can move, hence the appearance of inversion in the matrix clause thereafter.

The graphs suggest that the individual wh-words are justified as belonging in CP on an individual basis, in keeping with the observation that inversion also comes in at different times with different wh-words. Certainly data in the input are available in differential richness in this regard, with evidence of embeddings with "why" being provided on a rather infrequent basis by parental talk. The major fact is lexical variation in the emergence of embedded wh-words and inversion. The primary explanation for this must be in the C of CP since that is the position which, by SPEC-Head agreement, is then subcategorized by particular verbs. Hence we have rather striking evidence of a grammatical process that is lexically sensitive, with each wh-word apparently being justified in turn as being subcategorized by a matrix verb, and thus as belonging in CP.

3.2 CP or no-CP?

A point still to be established, however, is the precise nature of the categories available to the child prior to this reanalysis. Is it that C is missing at the start? Radford has made the claim for the earliest stages of English, and Platzack for the earliest stages of Swedish, that functional categories are entirely absent, with children's grammar taking on a small clause structure: S-> NP XP. Others, e.g. Weissenborn (1990) argue that CP must be present in early German as a landing site for V2, which most people agree is established in the earliest stages of German acquisition. However, Meisel & Müller (1990) argue to the contrary, that the position for V2 is reanalyzed as CP, with the landing site first being in the TP node.

In English, the fact of early aux inversion in yes/no questions might seem to dictate the presence of a C position, but Pierce (1989) argues that the subject is generated within the VP in English and raises in declaratives to the SPEC of IP. In that case, the early

forms of aux "inversion" may in fact represent the canonical position of phrases in early English. Obviously considerable dispute rages around this particular decision, and it is premature to attempt a resolution (see also Plunkett, this volume). Instead, four major alternatives will be sketched:

a) the CP node is always present, but lacks a specifier node. It is available for I to C movement in yes/no questions, but an adjoined wh-question at IP rules out this movement in wh-questions, until the wh-question moves to SPEC of CP (see e.g. Roeper, 1988).

b) the CP node is optional, available for yes/no questions. Each wh-word has to be separately justified as belonging in CP rather than topic. For instance, argument questions may occupy CP at an earlier stage.

c) the CP node is absent, and I to C movement is an illusion. Subcategorization of complements is one of the triggers of a CP node for the matrix clause (see also Penner, 1990, Meisel & Muller, 1990, Platzack, 1990).

d) the CP node exists only embryonically as a verbal node at the start, available for V2 and aux inversion but not for wh-questions (i.e. IP). It is relabeled as CP at a later point in development, when it is enriched by finiteness (+F) (see e.g. Clahsen, 1990).

Each of these proposals has something to recommend it, and each has its disadvantages. Future work must determine:

a) the reliability of productive aux inversion in yes/no questions prior to its appearance with wh-questions

b) the evidence for non-wh complementation in English before wh-complementizers appear.

c) the exact relation between subcategorization of wh-complements and the availability of copying in the medial position (see de Villiers & Roeper, this volume and Roeper, this volume).

d) a precise account of the relation between barrier effects and subcategorization in young children's comprehension. This is crucial also for understanding some of the effects we have found, e.g. the extraction of adjuncts from quotations found in three languages (Weverink, this volume, Weissenborn *et al*, this volume).

4.1 Conclusions:

a) Children have an initial analysis of (at least adjunct) wh-questions as being in topic position, attached to IP, and with no trace. Hence early wh-questions may not involve movement.

b) A reanalysis takes place as children receive evidence from subcategorization of wh-complements that each wh-question is in fact in SPEC of CP. The analysis of adjuncts "how" and "why" as IP-adjuncts persists for some time.

c) Once the wh-word is analyzed as in SPEC of CP, inversion of I into the head of C becomes possible. Hence inversion of aux is delayed, and when it comes in, it comes in piecemeal with each wh-word.

d) Once that structural change is accomplished, long distance movement (cycling through SPEC of CP) becomes possible and the ECP conditions are respected.

Several puzzles remain. No satisfactory account is provided here of why children should not invert in embedded clauses, and in fact, they do, at first. What triggers them to stop? A second question revolves around the question of stages: is the adjunct-IP analysis available as a default assumption even once the child has passed this final stage?

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