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Meike Weverink

University of Massachusetts / University of Utrecht

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INVERSION IN THE EMBEDDED CLAUSE

MEIKE WEVERINK

UNIVERSITY OF MASSACHUSETTS/
UNIVERSITY OF UTRECHT

1. Introduction

Are children sensitive to inversion phenomena? A well-reported fact about the acquisition of English is that children may produce non-inverted WH-questions during a certain stage. That is, we find structures like (1a) next to (1b), while only (1b) is grammatical in adult English.

- (1)a. What Cookie Monster can bake?
- b. What can Cookie Monster bake?

If we assume that the inversion phenomena in English are instances of movement to COMP ('V to C'), we may expect some "confusion" about the application of V to C in embedded clauses as well as in main clauses like (1). In this paper I will deal with one such case: inversion in the embedded clause where there is no medial WH. English children seem to be able to interpret a sentence such as (2a) as a regular embedded clause, even though this structure can only be a quote for adults. (2b) can be either a truly subordinated clause or a quote.

- (2)a. How did he say can she ride a bike?
- b. How did he say she can ride a bike?

What makes the problem even more fascinating is that in languages like German and Black English (BE), a similar verb-movement in embedded clauses is possible:

- (3) How did he ask can he come? (BE)
- (4) Wo hat der Vater gesagt kann er Bratwurst essen?
(Where has-3SG he said-PSTPRT can-3SG he sausage
eat-INF)

The examples in (3) and (4) are in principle ambiguous. First, "can...come" or "kann...essen" can be a regular subordinated clause, and "How" or "Wo" can either refer to the place of coming or of eating sausage. Second, the lower clause could be a quote. In these examples, it is possible to relate the WH-word to the embedded predicate, if the clause is not a quote.

"How" in (2a) however, would never be interpreted as referring to the way of riding a bike, but only to the way of saying "Can she ride a bike?".

Several questions of type (2) were presented to a group of children by Jill de Villiers in the summer of 1989, and interestingly enough, some of the children interpreted the fronted WH-word as referring to the lower clause. Here, I will discuss some ideas that may provide an explanation for this startling difference between (standard) adult English¹ and child English.

In the first part of this paper, I will explain the set-up of the experiment and outline the results. In the second part, I will argue that the phenomenon of children allowing long distance extraction out of an inverted embedded clause needs a syntactic approach. The third part will contain an analysis of the inversion phenomena in non-WH embedded clauses by comparing child English to the relevant Black English, German and Dutch data. The ultimate aim is to give a unified account of the related evidence across the different Germanic languages.

I. Why is it possible for children acquiring Standard English to view an inverted lower clause as a regular embedded clause, without a complementizer, as though there were no inversion involved, if this is not possible for the adult grammar?

1. In this paper, I specifically distinguish between Standard English and Black English. The abbreviations I use will be (SE) and (BE) respectively. When I use the word "English" without specification, Standard English is meant.

II. Why is it possible to extract out of an embedded clause (to have Long Distance interpretation) when there is inversion in the embedded clause?

III. How do children get away from this possibility in the course of development?

I will not be able to get into the third question much, here. I will merely point out what future (experimental) research I believe to be necessary to gain a better understanding of this verb-placement phenomenon in English child language.

2. Experiment and Data

2.1 The Evidence

In the summer of 1989, Jill de Villiers presented 23 children (ages between 3 and 5.7-years) with four stories, that were followed by questions of either type (5) or type (6).

(5) How did the father say can grandma ride a bike?

(6) How did the father say grandma can ride a bike?

For each of the 4 x 2 questions, approximately 10 children were tested. In adult English, (5) can only contain a quote, and only "short distance" (SD) answers would be correct, relating the "how" to "say". For (6), there can be at least two responses: "how" related to "say" (SD), or to "ride a bike" (long distance, henceforth LD). The story preceding questions (5) and (6) is the following:

(7) This grandma was visiting the family but she was bored. She didn't know what to do. The father called the grandpa on the telephone and asked: "Can grandma ride a bike safely?" The grandpa said: "Yes, of course she can". The father and the little boy watched the grandma riding off on the bike and the father whispered to the little boy: "See, she can ride a bike safely."

There are two types of results from this experiment that indicate that the children "ignore" the inversion in the lower clause, i.e., they treat (5) as (6) or the other way around. First, LD-interpretations were given for questions like (5) as well as for (6). Adults can get both SD- and LD-interpretation for "how" in (6). But where the adult can only give SD-answers, as in (5), at least some of the children can interpret "how"

as referring to "ride a bike". Second, notice that there is a difference built into the story in the way the quote is uttered, or the statement of the fact that grandma can ride a bike. To be specific: the question (quote) was uttered on the telephone to the grandpa, whereas the statement that grandma could ride a bike was whispered to the boy. Therefore, an appropriate SD-answer for (6) is (9), and for (5) it must be (8).

(8) called (grandpa) on the phone

(9) whispered (to the little boy)

For adults, it is clear that if an SD answer is given, answer (9) is inappropriate for (5), and (8) is wrong for (6). The children however, frequently gave answers like (9) to (5) and (8) to (6). Again, this may indicate that they do not differentiate between inverted and non-inverted embedded clauses. In the next subsection you can see how the answers were patterned across stories and children. It is clear that the evidence so far is still rather scarce. However, in view of the fact that similar results have been obtained from (pilot) studies on French, German and Dutch (by Juergen Weissenborn and Maaïke Verrips, Max Planck Institute, Nijmegen), we strongly believe that the available data are the result of a basic difference between the child's grammar and the adult's. The challenge is to find out what difference.

2.2. Results

(10) through (13) will give you the stories and the questions asked. Under (14) I listed the results from the answers the children gave.

(10) It was time for the school concert to begin but the little girl had just painted her nails with polish and they were still wet! The little boy whispered to his teacher: "Can the girl play the drums with her feet? Her nails are wet." The teacher said that was fine, so the boy told everyone over the microphone: "Today the girl can play the drums with her feet!".

- a. How did the boy say can the girl play?
- b. How did the boy say the girl can play?

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- (11) The teacher told the class one morning that they were going to have a picnic that evening. The little girl said to the boy: "Can the teacher bake a cake?" The teacher baked a lovely chocolate cake in the school oven. That evening the girl said to the boy: "Mmm, the teacher can bake a cake! This is delicious!"
- When did the girl say can the teacher bake a cake?
 - When did the girl say the teacher can bake a cake?
- (12) The family was playing baseball in the yard, and the mother shouted to the father: "Can the baby play baseball?" The father said: "No, he's too little". The baby played baseball in the kitchen with a spoon and a ball of yarn. The mother whispered to the father: "See, he can play baseball with his spoon".
- How did the mother say can the baby play?
 - How did the mother say the baby can play?
- (13) This grandma was visiting the family but she was bored. She didn't know what to do. The father called the grandpa on the telephone and asked: "Can grandma ride a bike safely?" The grandpa said: "Yes, of course she can". The father and the little boy watched the grandma riding off on the bike and the father whispered to the little boy: "See, she can ride a bike safely."
- How did the father say can grandma ride a bike?
 - How did the father say grandma can ride a bike?
- (14)

Ex	a-questions			b-questions			SD-answers where inversion seems to be ignored	
	# of kids	LD	SD	# of kids	LD	SD		
10	10	4	5	13	4	7	a:3	b:1
11	12	0	9	11	1	7	a:1	b:1
12	12	2	6	11	3	6	a:2	b:-
13	12	1	10	12	1	5	a:1	b:1

N.B: # = number of children that were presented with that question. Ages: 3.1-5.9. The total of LD + SD answers does not match the total of questions; the answers that were irrelevant to this research have been omitted from the table.

Notice that there is a strong correlation between the number of LD-answers in the inverted embedded clause (a) and in the uninverted structure (b). This supports the idea that the children do not discriminate between one or the other. About as many children go LD for the inverted cases as for the uninverted ones.

2.3. Studies of Dutch and German

The WH-project has become fashionably global. Experiments have been translated into German, French (J. Weissenborn) Dutch (M. Verrips), Spanish (A. Perez) and Japanese (M. Takahashi), as literally as the languages allowed. For German, Dutch and French we have some results on the inversion in the embedded clause from pilot studies. Both studies show the same effect so far. That is, for the stories like the ones under (15)-(18) (respectively German and Dutch), and the following questions, some of the children gave LD-answers that you find under (15b)-(18b).

- (15) German story:
Die Kindergärtnerin sagt den Kindern, dass sie für sie Kuchen backen will. Da fragt das Mädchen den Jungen: "Kann man den im Kindergarten Kuchen backen?" "Ja, in der Kindergarten Küche", sagt der Junge. Am Nachmittag backt die Kindergärtnerin einen Kuchen. Zu Hause erzählt das Mädchen dass sie in der Schule Kuchen gebacken haben. (The kindergarten-teacher said to the children that she wanted to bake a cake for them. The girl asked the boy: "Can one bake a cake at school (Kindergarten), then?" "Yes, in the school kitchen", the boy said. In the afternoon, the teacher bakes a cake. At home the girl tells the story that they baked a cake at school.)
- a. Wo sagt das Mädchen hat die Lehrerin Kuchen gebacken?
(Where says the girl has the teacher cake baked?)
- b. LD-answer: In die Küche (Sarah: 5)
(in the kitchen)
- (16) German story:
Der Junge kletterte sehr gerne auf die Bäume im Wald. Eines Nachmittages nun rutschte er aus und fiel auf dem Boden. Er half sich wieder auf die Beine und ging nach Hause. Als er am Abend badete, fand er einen grossen blauen Fleck auf seinem Arm. Da sagte er zu seinem Vater: "Ich hab mir meinen Arm verletzt, als ich heute nachmittag vom Baum gefallen bin." (The boy loved to climb in trees in the forest. One afternoon he fell out onto the ground, though. He got up

again and went home. When he took a bath that night, he found a big bruise on his arm. He told his father: "I hurt my arm when I fell out of the tree this afternoon".

- a. Wann sagte der Jungen war er vom Baum runtergefallen?
(When said the boy had he off the tree down-fallen?)
(when did the boy say he had fallen out of the tree?)
- b. LD-answer: Als er oben drauf war (Kai: xx)
(When he up there-on were)
(When he was up in there)
- (17) Dutch story: not available
- a. Hoe zei het jongetje komt het meisje spelen?
(How said the boy-DIM comes the girl play?)
- b. LD-answer: met de voet (Stefan: 5.8)
(with the foot)
- (18) Dutch story: not available
- a. Hoe zei de vader kan oma fietsen?
(How said the father can grandma bike-INF?)
- b. LD-answer: door sturen en trappen (Eelco: 5.9)
(by steering and pedaling)

For German (see (4)), it may not be so surprising that the children allow LD-interpretation over inversion in the embedded clause, since this is fine in the adult language. However, we should never be less surprised when children's grammars match adult restrictions than when they deviate, or seem to deviate.

In Dutch, just like in standard English it is impossible to have a fronted verb in an embedded clause without it being a quote. Furthermore, it is generally impossible to have a truly, non-quote, subordinated finite clause without the complementizer:

- (19) Hij wist [dat oma de computer had gerepareerd]
(He knew that grandma the computer had repaired)
- (20) *Hij wist [oma had de computer gerepareerd]
(He knew grandma had the computer repaired)
- (21) *Hij wist [oma de computer gerepareerd had]
(He knew grandma de computer repaired had)

In (20) the embedded clause has main clause word order, with the finite verb fronted and the subject topicalized; in (21) the structure is like an embedded clause, but there is no complementizer. I will return

to the Dutch and German data when I discuss some different possibilities in Germanic languages, where finite embedded clauses and WH-extraction are concerned.

3.1 A Syntactic Explanation

One may wonder if it is necessary to look for a syntactic explanation for the phenomenon that children interpret WH-questions differently from adults. Could it not be that they randomly interpret the WH-words, disregarding structural constraints? It is true that children allow both SD and LD interpretation for the inverted cases under discussion, where adults only allow SD. It seems that the children ignore the structural difference between inverted and non-inverted structures. However, there are strong indications from other WH-experimental results that children do not allow for just any cognitively possible interpretation of a WH-word. The strongest of these indications is the following: When there is a medial WH-argument in an adjunct WH-question, the children never allow LD-interpretations. We can conclude this among other things from the results of the same session as the one that contained the experiment on inversion in the embedded clause. The following questions were asked, following the appropriate stories and pictures.

- (22) How did the boy say what he caught?
- (23) When did the mother say what she bought?
- (24) How did the baby say what he ate?
- (25) When did the policeman say who he caught?

None of the 23 children in this particular session (nor for that matter in any of the other WH-experiment sessions that preceded or followed this one) ever answered in a way that would link the fronted WH-word ("how"/"when") to the embedded verb ("caught"/"bought"/"ate").

Thus, I want to argue that if it appears that children ignore inversion in certain structures, there will first of all have to be the syntactic possibility to allow for the different interpretations. To be more specific: something in the child's grammar has to allow the child to have a fronted verb in an embedded clause, and extract from this structure, even if this is this yields ungrammaticality for the target grammar.

This is the starting point of the tentative explanation I will offer in the next section.

4.1 Inversion and the Central Role of the COMP-node

Before we can conclude anything from the children's data concerning WH and embedded clauses, we need to have an idea about what could be the structure of embedded clauses in relation to WH-words in the different grammars. Following Weerman (1989), I will discuss embedded structure. First I will outline Weerman's view on CP-structure, and how syntactic structure can have important implications on possible or inevitable illocutionary force. I will then relate this to the child language phenomenon of "ignoring inversion". Since we only have the data from the one experiment I discussed, many questions remain as to what children know and do. I will explore some evidence from other Germanic languages that is directly related to what we have observed for English child language.

4.2. Lexicality of COMP

I will argue that the fact that some children allow an LD reading in questions like (2), can be explained in part if we adopt Weerman's principle (26).

- (26) Finite COMP has to be lexicalized to assign finiteness, tense and a modal role to the VP. (Weerman 1989)

This principle accounts for the complementary distribution of finite verbs and finite complementizers in a language like Dutch or German. A finite COMP has to be lexicalized, either by a complementizer or by a finite verb. Thus, (27) and (28) are grammatical; (29) and (30) are not.

- (27) Joleen schreef [_Cdat] Lisan een huis heeft gekocht
(Joleen wrote that Lisan a house has bought)
- (28) Lisan [_Cheeft_i] een huis ϕ_i gekocht
(Lisan has a house bought)
- doubly filled COMP:**
- (29) *Joleen schreef [_Cdat heeft] Lisan een huis ϕ gekocht
(Joleen wrote that has Lisan a house bought)
- zero COMP:**
- (30) *Joleen schreef [_C ϕ] Lisan een huis heeft gekocht
(Joleen wrote Lisan a house has bought)

In English, however, COMP can be empty both in main clauses and in embedded clauses:²

(31) [CP[$C\phi$][VPHe said [CP[Cthat][VPshe has bought a house]]]]

(32) [CP[$C\phi$][VPHe said [CP[$C\phi$][VP has bought a house]]]]

(33) [CP[CHas][VPhe said [CP[Cthat/ ϕ][VPshe has bought a house?]]]]

Weerman proposes a verbal branch of the Government & Binding theory: COMP assigns mood to the VP as V assigns a theta role at D-Structure. Therefore, COMP does project. This is how VPs and NPs are licensed at D-Structure, or 'D-identified'. In order to be able to license the structure at S-structure ('S-identification'), COMP has to be lexical. There is 'inherent S-identification' parallel to 'inherent Case assignment'. Languages like English do not require a lexical finite COMP. The crucial difference between a V2 language and English is the fact that finite COMP may remain empty in English, but has to be lexicalized in Dutch or German. (34) and (35) summarize the basics of D- and S-identification for the nominal and the verbal specification of GB theory according to Weerman.

- (34) **D-identification:**
 Y^0 D-identifies X^{max} at D-Structure via its projection:
- | | |
|---|---|
| <p>a. nominal specification</p> <p>D-Identification =</p> <p style="padding-left: 2em;">theta-role</p> <p style="padding-left: 2em;">X = N</p> <p style="padding-left: 2em;">Y = V</p> | <p>b. verbal specification</p> <p>D-Identification =</p> <p style="padding-left: 2em;">Modal role</p> <p style="padding-left: 2em;">X = V</p> <p style="padding-left: 2em;">Y = C</p> <p style="text-align: right;">(Weerman 1989:84-85)</p> |
|---|---|

2. It may strike you that there is no IP included in these structures. I follow Weerman (1989) in taking a principled position as to what categories are allowed to project by Universal X-bar theory: only those that assign some sort of a DS-role (as V assigns theta-roles). In what follows, you will see that COMP assigns mood at DS to the VP - I has no such function. All abstract functions that are usually associated with I or IP are captured by COMP (see also Jaeggli (1982), among others, for related ideas). Furthermore, as a positional node I is superfluous in Dutch and German. For English, Weerman proposes that I-elements specify V', just like certain adverbials and negators may do, without projecting to dominate the VP.

- (35) **S-identification:**
 - X^{\max} is S-identified at S-structure iff Y governs X and if the S-property of X is projected to X^{\max}
 - S-identification takes place from left to right or from right to left
- | | |
|--|--|
| <p>a. nominal specification
 S-property =
 (syntactic) Case
 X = N
 Y = [-N] (P or V)</p> | <p>b. verbal specification
 S-property =
 conjugation
 X = V
 Y = C
 (Weerman 1989:79-80)</p> |
|--|--|

4.3. The Interaction of COMP and Illocutionary Force

The illocutionary force is restricted or determined by structural considerations. That COMP plays a central role in this should come as no surprise: COMP provides mood, and the illocutionary force is for a large part derived from this. (36)-(40) give some examples of the interaction between syntactic and illocutionary force in English.

- (36) [_{CP}[_C∅] Carol has written many papers]
 (37) [_{CP}[_CHas] Carol ∅ written many papers?]
 (38) I said [_{CP}[_Cthat] Carol has written many papers]
 (39) I said [_{CP}[_C∅] Carol has written many papers]
 (40) I said [_{CP}[_Chas] Carol ∅ written many papers?]

In (36), the clause has the illocutionary force of a declarative, but (37) is interrogative. A verbally filled COMP in the Germanic languages triggers an interrogative reading (Weerman 1989). Notice first that this does not imply that questions have to have verbally filled COMPs: with a rising intonation, virtually every declarative (try (36)) can be a question. Second, V2-languages like Dutch and German show that a structure with a verbally filled COMP is not interrogative if some constituent is topicalized, i.e. moved to a position immediately preceding the COMP that contains the finite verb.

- (41) [_{CP}[_CHeeft] Carol veel papers geschreven?]
 (Has Carol many papers written?)

- (42) [_{TOP}Carol] [_{CP}[_C heeft] veel papers geschreven]³
 (Carol has many papers written)

This also holds for the exclamative type utterances in English where the verbally filled COMP is preceded by a so called "affective operator" (43)-(44).

- (43) Never [_Chas] Carol written so many papers

- (44) *Never Carol has written so many papers

Again, parallel to (36), a sentence with declarative word order like (42) could be interrogative purely through intonation. The interaction between syntactic structure and illocutionary force is part of the 'verbal specification of the binding theory' in Weerman's theory. I will not get into the details, but summarize the part that is relevant here:

- (45) **Verbal specification of the binding theory**
 a. If COMP contains a complementizer, the clause is **dependent**.
 b. If COMP contains a verb, the clause is **independent**.

Weerman relativizes both principles to allow for the margins where (a) can be independent, and (b) can be dependent. If the verbal binding theory is to be parallel to the nominal one, we expect this, since in certain contexts anaphors can be free, and R-expressions can be bound. I will propose a specific amendment to (45b) in section 4.6.

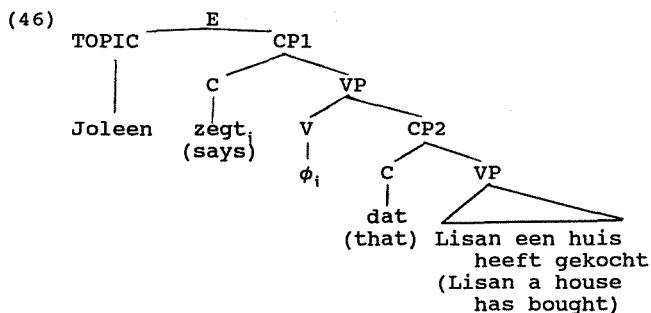
What (45) boils down to is the following:

- (A) When a complementizer fills the COMP node, the clause is **dependent**, i.e. it will have to appear embedded.

If we think in terms of (referential) indexes for CP comparable to those for NP, every clause will carry an index. Comparable to nominal coindexation for anaphors, an embedded clause will have to be coindexed with the matrix clause, it cannot exist independently,

3. It has been argued extensively that the topic is not in [spec,CP]-position for Dutch, but in a position outside CP, bound by an empty operator in spec.CP. It would go beyond the scope of this paper to discuss the arguments here. Topic and CP are dominated by a node that Weerman calls "E" (Expression).

it has to be governed within the governing node, the same expression (=E (see note 3)):



The CP "dat zij een huis heeft gekocht" is dependent on, governed by, the matrix COMP "zegt". CP1 and CP2 are coindexed.

- (B) When a finite verb fills the COMP node, the clause is **independent**, i.e. it normally does not appear embedded:

- (47) *_[E]Joleen [_{CP}zegt [_{CP2}Lisan heeft een huis gekocht]]]
(Joleen says Lisan has bought a house)

What is important for the purposes here, is that Weerman's proposals allow us to account for the fact that different embedded structures, in accordance with specific governing matrix verbs, will lead to different possible interpretations. The distinction 'dependent' versus 'independent' indexation, or referentiality is crucial here. It is now time to get back to where we started: inversion in the lower clause.

4.4. Inversion in the Embedded Clause

In view of the theory outlined in the previous section, we can now try to answer questions I and II from the introduction, repeated here as (48) and (49).

- (48) Why is it possible for children acquiring Standard English to regard an inverted lower clause as a regular embedded clause, without a complementizer, as though there were no inversion involved, if this is not possible for the adult grammar?

- (49) Why is it possible for children acquiring Standard English to extract out of an embedded clause (to have Long Distance interpretation) when there is inversion in the embedded clause?

From Weerman's theory it follows that a structure where the COMP is verbal would normally not be embedded, but would be independent. That is why a structure like (50), could never be truly embedded, i.e. carry the same index as the matrix clause.

- (50) How did the father say can grandma ride a bike?

It is not true that the structure is syntactically impossible in standard English. The crucial fact is that it is impossible to get a dependent reading for the lower clause. It represents an independent clause, and has its own illocutionary reference. With the verb in first position, it forms a question. If an 'independent clause' appears embedded, we call it a quote. I propose that there is a direct relation between coindexation between matrix and embedded clause and the possibility of WH-extraction out of the embedded clause. I formulate this under (51):

- (51) WH-extraction (or Long Distance interpretation) is only possible when a matrix and embedded clause have the same referential index (i.e. when embedded clause is dependent on matrix clause).

For adult speakers of Standard English, an LD-interpretation is impossible because the embedded structure in (50) is a quote, which has independent reference. Notice that the particular effect a structure has for the illocutionary force is a fairly language particular issue. As mentioned before, in German and Black English it is possible to have 'inverted' subordinated (dependent) clauses. In the next part I will give relevant examples from those languages.

Within the view presented above, (48) and (49) would be directly related. When a finite sentence is a dependent embedded clause, extraction is predicted to be possible. If children allow LD-interpretation when there is an embedded clause that starts with a finite verb, they do not regard it as a quote, but as a truly subordinated (dependent) clause. The reason why children allow for inversion in a dependent subordinated structure seems to be that they mismatch

syntactic structures and illocutionary forces from the adult point of view. Independent evidence for the idea that children have a freer relationship between syntactic structures and possible illocutionary forces comes from Dutch. Children widely use 'independent infinitive structures' (i.e. non-embedded, non-finite clauses) as regular declaratives, where the exact same syntactic structures can only be used as exclamatives or questions in adult Dutch (Weverink 1989; 1990). Similar conclusions have been drawn in recent work on the acquisition of Italian (Schaeffer, 1990).

4.5. More Systems, More Structures

Since we do not have much evidence to confirm hypotheses about what the structure is for the child when it allows LD-interpretation over an inverted embedded clause (what constrains the possibilities?), it is insightful to take a closer look at other languages that typically do or do not allow verb movement in subordinated clauses. It is a theoretically attractive idea that the children would be using some grammatical principle that is not typical for child grammar, but instead applies to -at least- a range of languages. I will discuss facts about German, Black English and Dutch, to compare the grammars where inversion in a dependent clause is possible (children's English, Black English, German) with the ones where it is not (adult standard English, Dutch). I will not go into the data in great detail, but will point out the most important facts to you, under each list of examples.

German (SOV; V2)⁴

The relevant German data are listed under (52)-(58).

- (52) Der Vater hat gesagt [_{CP}[_C dass] sie das Auto fahren kann]
(the father has said that she the car drive can)
- (53) *Der Vater hat gesagt [_{CP}[_C∅] sie das Auto fahren kann]
(the father has said she the car drive can)
- (54) Der Vater hat gesagt [sie [_{CP}[_C kann] das Auto fahren]
(the father has said she can the car drive)

4. I will use "#" to indicate "impossible as a truly subordinated clause", i.e. it can only be a quote.

- (55) #Der Vater hat gesagt [_{CP}[_Ckann] sie das Auto fahren]
(the father has said can she the car drive)
- (56) Wie hat der Vater gesagt [_{CP}[_Cdass] sie das Auto fahren
kann]
How has the father said that she the car drive can)
- (57) Wie hat der Vater gesagt [_{CP}[_Ckann] sie das Auto fahren]
(How has the father said can she the car drive)
- (58) #Wie hat der Vater gesagt [sie [_{CP}[_Ckann] das Auto fahren]
(How has the father said she can the car drive)

The following facts are noteworthy:

- (59) a. finite COMP can never be empty: it is either filled by a complementizer (52), (56), or by a finite verb (54)-(55), (57)-(58).
b. embedded clauses with verb-first (inversion) are only possible when there is a fronted WH-word in the main clause (and only with certain matrix verbs) (55) vs. (57).
c. where a finite complementizer is lexically filled in an embedded clause, but not preceded by any other constituent, LD-interpretation is possible (57 vs. (58).

Black English (SVO; non-V2)

- (60) The father said [_{CP}[_Cthat] she can drive the car]
- (61) The father said [_{CP}[_C∅] she can drive the car]
- (62) #The father said [_{CP}[_Ccan] she drive the car]
- (63) He didn't know [_{CP}[_Ccould] she drive the car]
- (64) #How did the father say [_{CP}[_Ccan] she drive the car]?
- (65) How did the father ask [_{CP}[_Ccan] she drive the car]?
- (66) How did the father say [_{CP}[_Cthat] she can drive the car]?
- (67) How did the father say [_{CP}[_C∅] she can drive the car]?

Comparable to (59), we can conclude the following:

- (68)a. finite COMP can be empty, like in standard English (61), (67).
 b. embedded clauses with verb-first (inversion) are only possible:
 - when there is a fronted WH-word in the main clause (dependent on matrix verb) (65)
 -when a matrix verb selects for an "if" complementizer (63) vs. (62)
 c. where a finite complementizer is empty, lexically filled by a complementizer or a finite verb, but not preceded by any other constituent, LD-interpretation is possible (65)-(67).

Dutch (SOV; V2)

- (69) De vader zei [_{CP}[_{CDAT}] zij de auto kan wassen]
 (the father said that she the car can wash)
 (70) *De vader zei [_{CP}[_{CØ}] zij de auto kan wassen]
 (the father said she the car can wash)
 (71) #De vader zei [_{CP}[_{CKAN}] zij de auto wassen]
 (the father said can she the car wash)
 (72) (#)De vader zei [zij [_{CP}[_{CKAN}] de auto wassen]
 (the father said she can wash the car)
 (73) Hoe zei de vader [_{CP}[_{CDAT}] zij de auto kan wassen]?
 (How said the father that she the car can wash)
 (74) #Hoe zei de vader [_{CP}[_{CKAN}] zij de auto wassen]?
 (How said the father can she the car wash)
 (75) #Hoe zei de vader [zij [_{CP}[_{CKAN}] de auto wassen]?
 (How said the father she can the car wash)

For Dutch, conclusion (c) is similar to German and Black English, but (b) differs crucially, and is parallel to standard English. (a) involves the typical distinction between V2 and non-V2 systems.

- (76)a. finite COMP can never be empty: it is either filled by a complementizer (69), (73), or by a finite verb (71)-(72), (74)-(75).
- b. truly subordinated clauses with verb-first (inversion) are never possible, with or without a fronted WH-word (71), (74).
- c. where a finite complementizer is lexically filled in an embedded clause, but not preceded by any other constituent, LD-interpretation is possible (73).

4.6. The Influence of [SPEC,CP]

We can conclude a number of interesting facts from the cross-linguistic exploration that may bring us closer to an explanation of what may be happening in English child language.

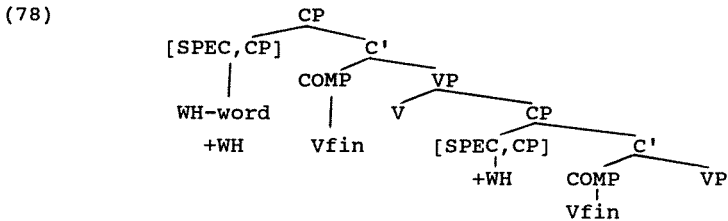
The most important conclusion that can be drawn from the data above is that the phenomenon of inversion in the embedded clause is crucially centered around a fronted WH. In German, a structure like (58), where there is no fronted WH, is not possible as a "truly subordinated" structure, whereas it is possible for (60). The same seems to hold for Black English, in a slightly different way. It is plausible to think that the 'if-cases' in Black English involves a WH-feature as well. I will not explore this interesting fact however.

I propose that the structure where a finite verb appears in the COMP-position of the embedded clause, is indirectly triggered by the WH-word of the matrix clause. The [+WH] feature, given a particular ('bridge') matrix verb, can cause inversion in the embedded clause, just as in the matrix clause. This is not odd if it is true that embedded clauses are dependent on the matrix clause: they have the same referentiality, and a verbally filled COMP triggers interrogativeness. The inversion in the subordinated clause is not obligatory however because a finite complementizer is an option for a dependent clause. A dependent clause does not have its own illocutionary force, so it would not clash with the interrogative nature of the matrix clause.

I propose that the following principle would hold, overruling Weerman's principle (44b) that states that a verbally filled COMP triggers independency. (45b) holds, unless (77) is the case:

- (77) Amendment to (45b)
 If an embedded clause has a verbally filled (finite) COMP that is not preceded by any other constituent, a [+WH] matrix COMP will trigger a dependent reading for the embedded clause⁵

The structure under (78) exemplifies this:



This explains why the [SPEC,CP] has to be 'free'. If topicalization has taken place, the [SPEC,CP] cannot be [+WH] anymore. WH-movement and topicalization typically exclude each other, as can be seen in (79).

- (79) *Was_i hat er gesagt [er_k [_{CP}ϕ_k [_{CS}oll] bringen t_i]?
 (What has he said he will bring)

This brings us to the second conclusion that can be drawn from the cross-linguistic exploration. It is not so much that elements in COMP block LD-interpretation, but elements in [SPEC,CP] or in topic position do (recall that elements in topic position would be bound by an empty operator in [SPEC,CP], i.e. the [SPEC,CP] would not be truly empty). An empty COMP, COMP filled by a finite verb or by a complementizer can all allow for long distance extraction in principle (language specific variation) - as long as the structure is dependent - but the [SPEC,CP] crucially determines whether the [SPEC,CP] of the matrix clause can have any influence on the embedded CP. This immediately explains the difference between English (80) and German (81):

5. It seems that (in German at least) the [+WH] [SPEC,CP] has to be lexical to be able to influence the embedded clause. This relates to the role assignment of COMP: COMP has to be lexical in V2-languages to assign a modal role to the VP; [+WH] spec.CP has to be lexical to assign a WH-feature.

- (80) How_i did the father say she can drive the car t_i?
- (81) *Wie_i hat der Vater gesagt sie kann das Auto fahren t_i?
(How has the father said she can the car drive)

In English, a non-V2 language, there is no V-to-C or topicalization when we find main clause word order as in (81). The COMP can be empty in English but never in Dutch or German. Therefore, the word order in (80) would not necessarily trigger independency because there is no verbal COMP (see (45b)).

Structures such as (80) are usually analyzed as involving 'that-deletion'. Within Weerman's framework, they are just another instance of main clause word order in an embedded clause. The reason why they look so much like their 'that-counterparts' is that both are truly subordinated, as opposed to Dutch where the subordinated clause would carry an independent index. This explains rather nicely why the phenomenon of '"that"-deletion' in English is related to specific matrix verbs, as is the case for subordination of 'main clause structure' in German. But, in a non-V2 language like English, a missing "that" does not entail obligatory V to C, since COMP can be empty.

5. Conclusions; Back to Child Language

5.1. Conclusions, Related Evidence

The important conclusion we can draw for English child language from the above is that the child does not seem to be aware of the fact that in adult English a verbal COMP specifically triggers an independent reading. They allow for inversion in a lower clause if there is a [+WH] word. Whether they go by the same restrictions as for instance Black English or German is not clear on the basis of the limited evidence we have so far. This conclusion is particularly interesting in view of two other facts from English child language.

First, English children may fail to use inversion in WH-questions, where it is obligatory for adults. Within Weerman's framework, the facts around the different inversion phenomena in English can get a natural explanation. V to C in main WH-questions is not syntactically obligatory, since COMP does not have to be lexicalized in English. But a WH-word in [SPEC,CP] would entail an embedded clause in English if COMP is empty, as in (82):

- (82) I don't know [_{CP}[_{spec}where/why/how/what/who(...)] [_Cϕ] you are eating]

That is why COMP has to be lexicalized in WH-questions according to Weerman. (If there is no WH-word at all, the structure can become interrogative through a verbalized COMP, and/or intonation, as I have explained in section 4.2.). This could be related to the somewhat peculiar interrogative structures that involve "how come".⁶ "How come" does not have this ambiguity between a complementizer and a WH-word, therefore we do not expect inversion to take place in the main clause. (83)-(85) show that this is borne out.

- (83) How come you are eating?
 (84) *How come are you eating
 (85) *I don't know how come you are eating

This way, the lack of inversion in main clauses fits into the picture that children do not have insight into the interaction between verbal COMP and (in)dependency yet.

The second fact is, although I don't have the necessary data here, it seems that children acquiring English also overgeneralize by inverting in a WH-initial embedded clause as in (86) - without intending a quote reading (Bernadette Plunkett, p.c.):

- (86) I want to know what is she writing

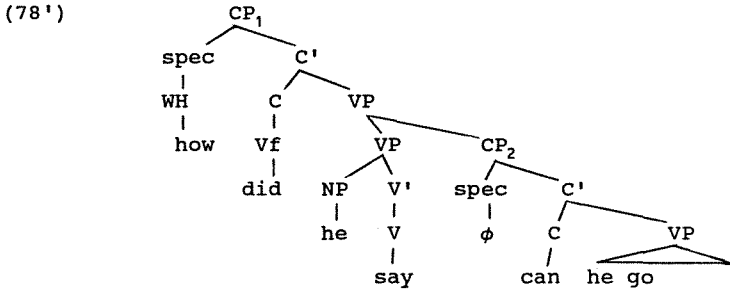
The word structure of the embedded clause in (86) would trigger an independent reading in the adult language. Therefore, inversion does not occur in embedded clauses, according to Weerman. Again, the children do not seem to realize this tight connection between syntactic structure and illocutionary force.

From the above, one may conclude that the child has a poor understanding of the distinction between main and embedded clauses in general. This idea can be found in Lebeaux (1988), where he argues that early apparently subordinated structures are in fact conjoined. However, if inversion in the embedded

6. This holds true only if "how come" is viewed as one lexical item, not as a dominating CP.

clause is crucially related to a WH-word in the matrix [SPEC,CP] and the structure of the embedded clause is just 'matching up' to the main clause interrogative structure, the children must already know that an embedded finite clause is dependent on the matrix clause: a verbal COMP is associated with interrogative structure. What they do not realize is that a verbalized COMP is the sole privilege of a main clause in adult English.

This implies that the CP must be truly embedded, not 'conjoined' at this point in the development. The necessary structure for the coindexation idea is as in (78); not as in (78'), which would be conform to the 'conjoined-hypothesis':



In (78'), there is no coindexation between the two CPs, CP2 is not dependent on CP1. Conforming to principle (51), we do not expect the matrix [SPEC,CP] trigger inversion in the embedded clause in a conjoined structure.

5.2. Transition

A theory about child language should relate to the developmental problem of language acquisition. How do children figure out the target grammar restrictions for the matching of syntactic structure to illocutionary force? As I mentioned earlier, there are not enough relevant data available to conclude much about the necessary transition. The transition away from allowing inversion in a truly embedded sentence should occur when the children realize that a verbalized COMP triggers independent interrogative structure, and is therefore restricted to main clauses. It seems to be a general property of the languages I discussed that long distance WH-extraction is in

principle possible out of a finite clause, as long as the [SPEC,CP] is not occupied (dependent on the matrix verb). Whether this restriction works similarly in English child language is not entirely clear from the evidence we have so far. I believe that further language comparative research, plus necessary further experiments and data searches should bring us closer to an answer to the child's system concerning the matching of syntactic structure to illocutionary force, and extraction out of embedded clauses.

I hope to have set a direction in which to look for a possible answer to the problem of inversion-phenomena in the lower clause. I have listed some specific issues for future research under (87).

- (87)a. Do children produce WH-questions with inversion in an embedded clause?
- b. Do children restrict inversion in truly embedded sentences to structures where there is a fronted WH, like in German/Black English?
- (i) she asked can she ride a bike versus
(ii) she asked she can ride a bike
- (NB: one has to be sure that (i) is NOT a quote for child; this is virtually undetectable in data searches however)
- c. What other evidence is found in child language that confirms that young children confuse dependent/independent structure and illocutionary roles?

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