On D-Trees, Beans, and B-Accents

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In this paper I present a comprehensive pragmatic theory of contrastive topic and its relation to focus in English. I discuss various constructions involving contrastive topics and show how these are captured by the theory proposed. The approach presented spells out a proposal sketched in Roberts (1996:121ff), using the formal tools found in Büring (1994), (1997).[1] It improves on existing accounts in the accuracy with which it predicts the (non-)occurance of the accent patterns associated with focus and contrastive topic, and locates the analysis of contrastive topics within a broader picture of discourse and information structure.

1 Introduction: A-Accent and B-Accent

The term contrastive topic here is used to refer to a linguistic category manifested by linguistic means: in English, a fall-rise pitch accent. It is to be kept distinct from more abstract notions such as *topic* (e.g. Reinhart (1982), *theme* (Steedman (2000)) or *address* (Vallduví (1990), which may but need not be distinctively realized in a given sentence (see the instructive survey in McNally (1995)).

Most recent works about the phenomenon at hand take as their point of departure Jackendoff's (1972) discussion of the difference between the *A-accent* and the *B- accent*. The two are phonologically distinct, and, as Jackendoff points out, the choice between them is not free:

> "We presuppose ... that there were a number of people and a number of different things to eat, and that various people ate various things. Speaker A in the discourse is asking questions of the form *Who ate what?* and Speaker B is answering. For the first intonation pattern, A is asking person by person:

(1)   A: Well, what about FRED? What did HE eat?

           \/   \

     B: *FRED ate the BEANS.*

> For the second pattern, A is asking by foods:

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(2)   A: Well, what about the BEANS? Who ate THEM?

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B: FRED ate the BEANS.

In each example we find the typical fall-rise of the B pitch accent and the fall of the A accent, but in different positions: (1) has B on *Fred* and A on *beans*, and (2) is the other way around." (Jackendoff 1972:261, example numbers amended)

It is worth stressing again that the choice of accent patterns — A+B versus B+A — is context dependent: (1B) would be inappropriate in the context of (2A), and (2B) would be inappropriate in the context of (1A). We are thus led to conclude that A- and B-accents are conventionally associated with different functions, or, in other words, different appropriateness conditions. These appropriateness conditions must predict which accent, A or B, is possible on which constituent in which context, i.e. which constituent can or must be A/B-marked in which context.

It is useful to have a name to refer to the constituents marked by A- and B-accents, respectively. An obvious choice would be 'A-focus' and 'B-focus'. I consider it likely, however, that other languages have the same or very similar pragmatically distinguished categories, though their (prosodic) realization may be very different from that in English. I therefore prefer to use the terms *focus* to refer to a constituent marked by the A-accent in English, and *contrastive topic* for a constituent marked by the B-accent. In what follows, I will simply mark foci and contrastive topics by subscript F and CT, respectively, the understanding being that all and only contrastive topics are marked by a B-accent, and all and only foci by an A-accent. These will be the only information structure categories assumed.

Though Jackendoff, as many following him, has offered a characterization of the semantic/pragmatic difference between focus and contrastive topic, no work up to today has attempted to formulate the conditions connected to contrastive topics with the formal rigor found in the recent literature on focus (e.g. Jacobs (1991/2b), Rochemont (1986), Selkirk (1984), (1995), von Stechow (1989) among many others). That is, there is no theory that predicts when the presence of a contrastive topic is obligatory, optional, or impossible. I will present such a theory in what follows, taking as a starting point what is to my knowledge the most sophisticated attempt to date, Roberts (1996).

2   A Preview

I believe that Jackendoff's remarks, quoted above, contain all the relevant observations to characterize when a contrastive topic is used: There is an issue about 'Who ate what?', and there are two ways of approaching the issue (going by people or going by food). Recent frameworks of discourse structure are rich enough to model this formally. Adopting e.g. Roberts' (1996) proposal the general issue is represented by the question (3).

(3)   Who ate what?

This question which is 'split up' into sub-questions such as 'Who ate the beans? Who ate the carrots?...' or 'What did Fred eat? What did Joanna eat?...' Question and sub-question form

what Roberts calls a *strategy*. As she notes, such a strategy is what characterizes Jackendoff's example. Regarding A- and B-accents, Roberts writes:

> "...(1B) and (2B) both presuppose (3) by virtue of identical placement of prosodic focus [i.e. A- or B-accents; DB]. But the location of a L-H boundary sequence [i.e. a B-accent; DB] ... presupposes a subquestion to the prosodically presupposed question. Because this boundary sequence is located differently in (1B) and (2B), they presuppose distinct sub-questions. The fact that for (1B), the presupposed questions (3) and (1A) form a question/sub-question strategy, means that (1B) itself presupposes such a strategy; similarly for (2B) ...Hence, on this account utterances which contain both [B-accent marking and A-accent marking] ...presuppose not just a question under discussion, but a possibly complex strategy of questions." (123f, example numbers amended)

The gist of this proposal is thus that sentences containing both an A- and a B-accent are related to two contextually given questions at the same time, which form a question-sub question-strategy.

I believe the notion of question-subquestion-strategies to be a congenial implementation of Jackendoff's characterization of the pertinent contexts. It turns out, however, that Roberts' treatment of focus falls short of implementing the kind of relation she alludes to in the above quote. The reason is that both the A-accented and the B-accented constituent — focus and contrastive topic in my terms — are treated as foci (cf. the first sentence in the above quote), and that no further reference to the A/B-distinction is made in the rules relating accent placement to discourse structure. So both versions of *Fred ate the beans* receive the same appropriateness conditions, regardless of the choice between A- and B-accent. The only question Roberts' treatment predicts them to presuppose is 'Who ate what?' The crucial distinction between the two different sub questions is not be formally captured. This shortcoming will be remedied in the following two sections.

# 3   Strategies and Discourse-Trees

As said above, we want a hierachical model of discourse structure, in particular one which comprises Roberts' idea of a *strategy*. The framework used in the present paper — *discourse trees* — directly imports the notions of super-/sub-questions and strategies. I furthermore borrow the terms *Relevance* and *Question under Discussion*, though they are defined slightly differently. The major departure from Roberts' framework lies in the proposed treatment of *Congruence*, the condition which governs the distribution of F- and CT-marking, and thus ultimately accent marking. For one thing I supplement a notion of CT-congruence (which we saw above is missing from the original proposal), for another I substantially revise the conditions on F-marking, resulting in a quite different and arguably more parsimonious account of the division of labor between Congruence and Relevance.

Consider the discourse in (4), which has the more abstract structure given in (5):

(4)   How was the concert?
                    Was the sound good?   No, it was awful.
                    How was the audience?   They were enthusiastic.
                    How was the band?
                            How was the drummer?   Just fantastic.
                            And what about the singer?   Better than ever.
                    Did they play old songs?   Not a single one.
            So what did you do after the concert? ...

(5)   question
                    sub-question   answer
                    sub-question   answer
                    sub-question
                            subsub-question   answer
                            subsub-question   answer
                    sub-question   answer
            question ...

As a perspicious way to represent this kind of structure I propose a new notational device, a
d(iscourse)-tree as in (6):

(6)
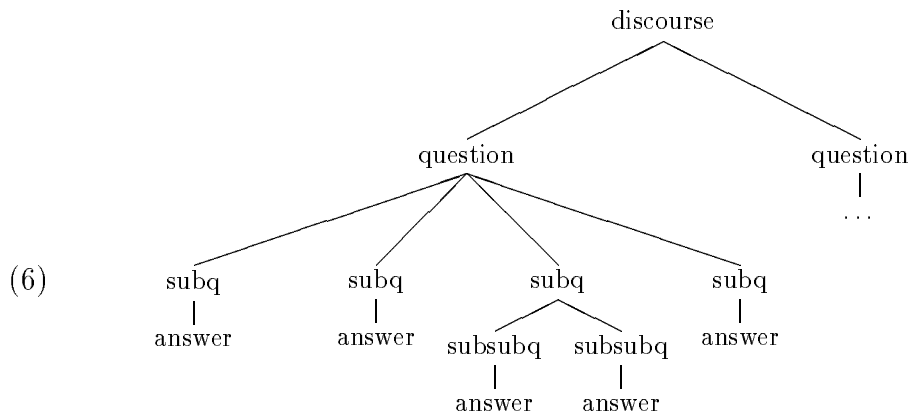
Each node in such a d-tree will be called a *Move* (cf. Carlson (1983)). Each Move is a
syntactic phrase marker representing a sentence, including CT and F marking (henceforth its
CTF-pattern). The d-tree encodes a total ordering of moves in it, corresponding to their linear
order, as defined by standard tree traversal (see appendix (54)).

A theory of discourse is a generative grammar which generates the set of all admissible d-
trees. Whether or not, say, a question-answer pair Q-A is well-formed, then, is the same as
asking whether there can be a d-tree which contains the constituent (7a) as a sub-part:

(7)   a. Q
                |
                A

        b. Q1
                |
                Q2

Whether or not a Q1-Q2 sequence is well-formed can be determined by asking whether there
can be a d-tree in which Q1 immediately dominates Q2 as in (7b).

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What determines the set of well-formed d-trees? I distinguish two essential sorts of constraints: One which solely concerns the propositional content of the nodes in a d-tree, i.e. which does not look at CT- or F-marking. Since these are not my concern in this paper I will only sketch two of them for the sake of illustration:

(8)   a.   Informativity: Don't say known things, don't ask for known things!

        b.   Relevance: Stick to a question until it is sufficiently resolved!

Informativity can straightforwardly be implemented using Stalnaker's (1978) notion of a *common ground*, which represents the shared knowledge of the participants, see appendix (57).

As for Relevance, we will follow Roberts (1996) in defining it relative to a *question under discussion*, QUD (the *D-topics* of Büring (1994), (1997)). For any move M, the question under discussion is the move M' immediately dominating it.[2] For a move to be relevant, it must answer or at least address this question under discussion. I will resort to the rather vague formulation that A is an *answer to Q* if A *shifts the probabilistic weights among the propositions denoted by Q*.[3] Relevance can then be stated as in (9):

(9)   Relevance:

        a.   an assertion A is relevant in a d-tree DT iff A is an answer to the QUD for A in DT

        b.   a question Q is relevant in a d-tree DT iff at least one answer to Q is an answer to the QUD for Q in DT

Notions like Relevance and Informativity will restrict the class of admissible d-trees. In addition, and central to the present paper, moves within d-trees will have to meet what I call — again with a term borrowed from Roberts — *Congruence*. Congruence only regards the CTF-patterns of the moves in a d-tree. I distinguish two sub-conditions, a general *Givenness Condition*, and a specific, novel *CT-Condition*, to be introduced in turn; 'Congruence' *simpliciter* refers to the conjunction of these conditions, i.e. the sub-theory which regards intonational marking. A d-tree is well-formed iff each of its moves meets Relevance and Informativity, as well as Congruence (appendix (53)).

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[2]The understanding is thus that relevance is only defined for moves immediately dominated by a question. It thus exludes any d-tree in which assertions occur as non-terminal nodes.

[3]Stricter definitions such as in Roberts (1996:104), which requires an assertive move to entail at least a partial answer to the QUD, exclude cases like (i).

    (i)   Q: Will you come to the party?
          A: Presumably.

(i) entails neither a positive nor a negative answer to Q, even though it strongly shifts the probability to the positive one and should certainly count as a relevant answer. To implement my proposal, one would have to utilize Kratzer's (1981) technique of ordering one set of propositions (the propositions denoted by the QUD) using another one (e.g. the common ground, or some other realistic background) as an ordering source. The requirement then is that adding an answer to the ordering source yields a different ordering on QUD. Spelling out these definitions is beyond the scope of this paper.

4   CT-Congruence

Given what was said in the last section, we can straightforwardly define the notion of a strategy:

(10)   Any subtree of a d-tree which is rooted in an interrogative move is a *strategy*.

We now want to be able to express the idea that CT-marking indicates ('presupposes' in Roberts' words) a strategy. What is needed is a formal device to relate the *location* of CT (and F) within a sentence to the particular strategy it occurs in. The function $[\![\,]\!]^{ct}$ as defined in Büring (1995), (1997, esp. pp.75ff.) (called $[\![\,]\!]^{t}$ there) can serve exactly this purpose.[4] Applied to a declarative sentence α, $[\![\alpha]\!]^{ct}$ yields a *CT-value*. A CT-value is a set of question meanings, as illustrated in (12b) below. For the sake of perspicuity we can think of it as a set of questions instead, as derived by the following algorithm, which I call *CT-value formation* (see appendix (52)):

(11)   CT-value formation:
      step 1:   Replace the focus by a *wh*-word and front
                the latter; if focus marks the finite verb or
                negation, front the finite verb instead
      step 2:   Form a set of questions from the result of
                step 1 by replacing the contrastive topic by
                some alternative to it.

The output of CT-value formation for e.g. the sentence (12) is the set of questions listed in step 2 in (12a). This set corresponds to the set of question meanings in (12b), the 'official' CT-value of $FRED_{CT}$ *ate the* $BEANS_F$:

(12) $FRED_{CT}$ ate the $BEANS_F$.

      a.   CT-value formation:
           step 1:   What did Fred eat?
           step 2:   What did Fred eat?
                     What did Mary eat?
                     What did ...eat?
                     ...

      b. $[\![FRED_{CT}\ \text{ate the}\ BEANS_F]\!]^{ct} = \{\{x\ \text{ate}\ y \mid y \in D_e\} \mid x \in D_e\}$

Regarding CT-congruence, the proposal is this...

(13)   CT-Condition:
      A contrastive topic CT in a move M within a d-tree D indicates a strategy in D.

    ...where to 'indicate a strategy' is defined as...

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[4]The *-notation proposed in a recent paper by Steedman (2000:660) yields a very similar distinction, as noted there. The following definitions provide a concise implementation of what Steedman might have in mind when he talks about "...the prior existence or accommodability of a theme differing ...only in those elements corresponding to ...[CT-marked; DB] items" (Steedman (2000))

(14)   CT in M indicates a strategy in D iff there is a set Q' of questions such that for each $Q \in Q'$, i) Q is identical to or a sister of the question that immediately dominates M, and ii) $[\![Q]\!]^o \in [\![M]\!]^{ct}$

The prediction of (13) is that (12) should be able to occur in a strategy whose sub-questions are drawn from the set of questions in (12b). As (15) shows, this is correct:

(15)   Who ate what?

        What did Fred eat? FRED_{CT} ate the BEANS_F.

        What did Mary eat? MARY_{CT} ate the EGGPLANT_F.

        What did ...   ...

Let us next see whether we also get the correct results when applying CT-value formation to the twin example:

(16) FRED_F ate the BEANS_{CT}

    step 1: Who ate the beans?

    step 2: Who ate the beans?

            Who ate the eggplant?

            Who ate ...?

CT-Congruence in (13) predicts that *FRED_F ate the BEANS_{CT}* $FRED_F$ *ate the* $BEANS_{CT}$ can occur in a strategy consisting of questions as those listed in step 2 in (16). Again, this is the case:

(17)   Who ate what?

        Who ate the beans? FRED_F ate the BEANS_{CT}.

        Who ate the eggplant? MARY_F ate the EGGPLANT_{CT}.

        Who ate ...

Finally, note that the questions in (17) are not in the CT-value in (12b), and those in (15) are not in the CT-value in (16). CT-Congruence in (13) thus also predicts that the two intonational variants of *FRED ate the BEANS* — CT+F and F+CT — cannot be exchanged.

Summing up, I have adopted Roberts' definition of a strategy to a framework using d-trees. I provided a formal means to predict in which kinds of question+sub-question environments CTs occur, and what determines their placement within the sentence. In the next section I will extend this treatment to other types of contexts.

Before doing so, let me demonstrate how the treatment just proposed improves on Roberts' (1996) proposal. As said above, the problem with Roberts' proposal is the lack of a formal distinction between A- and B-accent in the semantics. In Roberts' system, both versions of *Fred ate the beans* — (12) and (16) — receive the same focal value, namely:

(18) $\{x \text{ ate } y \mid x, y \in D_e\}$

This is the meaning of the question *Who ate what?* So both sentences are predicted to presuppose that question, and nothing else.[5] As it stands, Roberts' theory thus predicts that

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[5]Two paragraphs later, Roberts (p.124) claims "...the answer, here [(1B/12)], is congruent to both the immediate question under discussion, [(1B)], and the super-question [(3)]." As far as I can determine, this is not what her theory predicts.

both (1B/12) and (2B/16) are felicitous in the same contexts, which is not the case, as discussed at length above.

In contradistinction we now have a more complex object than just the focal value, the CT-value. Even though the actual questions within the sets in, say $[\![FRED_{CT}\ ate\ the\ BEANS_F]\!]^{ct}$ — repeated in (19a) below — are the same as those in Roberts' (18), they are partitioned in a particular way (this is why the CT-value needs to be a set of sets of propositions rather than just a set of propositions). And that partitioning is crucially different for the two CTF-patterns, as demonstrated again in (19):

(19)   a. $[\![\text{FRED}_{CT}\text{ ate the BEANS}_F]\!]^{ct} = \{\{x \text{ ate } y \mid y \in D_e\} \mid x \in D_e\}$

    b. $[\![\text{FRED}_F\text{ ate the BEANS}_{CT}]\!]^{ct} = \{\{x \text{ ate } y \mid x \in D_e\} \mid y \in D_e\}$

CT-congruence makes use of exactly that distinction, providing the necessary distinctions missing from Roberts' proposal.

5   Parts of Strategies

Let us now return to Jackendoff's original example:

(20)   Q: What about Fred? What did he eat?
    A: FRED$_{CT}$ ate the BEANS$_F$.

    a. $[\![(20A)]\!]^{ct} = \{\{x \text{ ate } y \mid y \in D_e\} \mid x \in D_e\}$

    b. $\approx \{$ What did Fred eat?, What did Mary eat?, What did Joey eat?,... $\}$

$[\![20A)]\!]^{ct}$ is a set of question meanings, sketched in (20b). If CT in (20A) is to indicate a strategy, such a strategy — by the definition in (14) — would have to look like in (21):

(21)

Who ate what?

What did Fred eat?   What did Mary eat?
         | |
FRED$_{CT}$ ate the BEANS$_F$.   MAry$_{CT}$ ate...
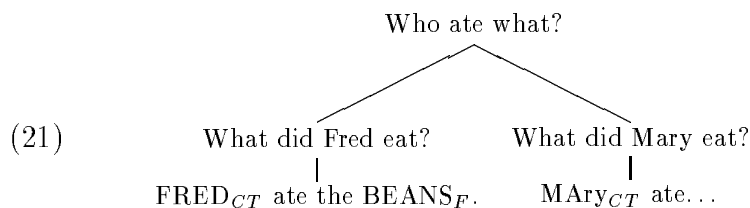
Is there such a strategy in (20)? No! All there is is in (20) is the material corresponding to the *left* branch of the strategy in (21). Remember, however, what I said above; namely that for a question-answer sequence Q-A to be well- formed, there must be one d-tree *containing* Q-A as a sub- tree. And this *is* the case for (20), which, again, is the left branch of (21).

This might strike the reader as a rather technical maneuver, but it is not. While (20) is certainly a well-formed question-answer sequence, native speakers will typically attribute to the answer *FRED$_{CT}$ ate the BEANS$_F$* some sort of indication that other people ate other things (note that Jackendoff's characterization of the context, as well as his choice of the question *What about Fred? What did he eat?*, rather than just *What did Fred eat?*, hint at this, too). I submit that it is exactly the presence of a more complex discourse structure, containing questions like

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What did X eat?, that people infer upon hearing sentence (20) with a contrastive topic in it. The answer $FRED_{CT}$ *ate the* $BEANS_F$ thus contrasts with the equally adequate *Fred ate the* $BEANS_F$, which lacks any such indication. Thus the formulation that a question-answer pair is well-formed as long as there is some well-formed d-tree containing it is not just a trick to neutralize contrastive topic effects in simple sequences. Even in such cases the sentence with a contrastive topic conveys additional, discourse-related meaning.

How do we get from 'there are other questions of the form *What did X eat?*' (which is what contrastive topic conventionally expresses) to 'other people ate different things'? I claim that this is a standard conversational implicature: First, given that we just heard what Fred ate, the question will be about someone other than him (Informativity). Second, if the speaker knew that someone else ate beans, too, they could have been briefer and more informative if they had said 'Fred and Y ate the beans' instead. We therefore conclude that the speaker is aware of other people having eaten, and is not aware that any of them ate beans. From this, the stronger statement that the speaker is aware that they did not eat beans is derived in the way familiar from e.g. generalized quantity implicatures (cf. Gazdar (1979)). So while it is part of the conventional meaning of (20A) that there are other questions in a local strategy, it is merely a (cancellable) conversational implicature that other people ate other things. It is thus perfectly fine to follow up on (20A) saying *...but I don't know what the others ate* or *...and maybe Mary ate beans, too* (a more detailed discussion can be found in Büring (1997)).

In previous work I called these cases *purely implicational topics*, stressing the fact that the presence of a contrastive topic is understood as a rethorical device here, as e.g. in (22) (Roberts 1996:122 discusses a parallel example):

(22)   Q: Where were you (at the time of the murder)?
         A: I_{CT} was at $HOME_F$.

As before, choice of the CT-marked structure over a plain *I was at* $HOME_F$ serves to indicate the presence of a more complex strategy which could be rooted in a question like *Where was everyone (at the time of the murder)?* The speaker might use it to suggests that another sub-question of that strategy should be discussed, that is, that other people might not have as waterproof an alibi.

In sum, this section showed how discourses consisting of only one question and one answer can be treated in the current framework. A contrastive topic indicates that the sequence is part of a larger discourse which — since it is not given in the actual example — the competent speaker can only guess at, using the information provided by the location of contrastive topic and focus in the sentence. Given this assumption, implicature-effects found with contrastive topics turn out to follow straightforwardly from the treatment given before.

6   Implicit Moves

Consider now another sort of question-answer pairs; (23a) is an adaption of Jackendoff's example, (23b) is the English counterpart of Büring's (1994) *partial topic* example:

(23)   a.   Who ate what? — $FRED_{CT}$ ate the $BEANS_F$.

         b.   What did the pop stars wear? — The $FEMALE_{CT}$ pop stars wore $CAFTANS_F$.

Do these examples meet our definition of CT-congruence? No! The CT-values are given in (24a) and (24b), respectively:[6]

(24)   a. $[\![23a)]\!]^{ct} = \{\{x \text{ ate } y \mid y \in D_e\} \mid x \in D_e\}$
             $\approx$ What did x eat?

        b. $[\![23b)]\!]^{ct} = \{\{\text{the } P \text{ pop stars wore } x \mid x \in D_e\} \mid P \in D_{et}\}$
             $\approx$ What did the P pop stars wear?

The meanings of the overt *wh*-questions in (23) are *not* elements of the CT-values in (24). Note though that the questions in the CT-values are potential subquestions to the actual questions given in (23a/b). Put differently, an example like (23b) could be mapped onto the underlined moves in a discourse tree like (25):

(25)

So far we assumed that a question followed by an answer in a discourse needs to be mapped onto a question-move immediately dominating the answer-move in a well-formed d-tree. I submit that this is not the whole story; a mapping as indicated in (25) is perfectly fine. We will say that the sub-question 'What did the female pop stars wear?' is an *implicit* (as opposed to *explicit*) question in the d-tree. The claim is thus that examples like (23a) and (23b) must be mapped onto d-trees which contain an implicit, i.e. unpronounced, move in between those given by the examples. In (26) I give a more general definition incorporating this assumption:

(26)   A sequence of utterances $\langle U_0, \ldots, U_n \rangle$ is predicted to be grammatical iff there is a well formed d-tree DT such that $\langle U_0, \ldots, U_n \rangle$ can be mapped onto the explicit moves of some (possibly improper) part of DT.

Implicit moves — in particular implicit questions — are assumed by many authors (see e.g. van Kuppevelt (1995), (1996a), (1996b)). I am not aware, however, of any proposal which addresses how the implicit/explicit distinction interacts with CTF-marking. I will provide such a theory in the next section.

7   Givenness

As a starting point, notice that the CT-marking on *Fred* in (23a) and *female* in (23b) is obligatory. Contrast e.g. (23b), repeated here as (27b), with (27) (implicit moves marked by parentheses and italics):

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[6](23a) would be predicted fine under a theory which treats contrastive topics as foci, such as Roberts (1996). But (23b) would presuppose the question 'Which pop stars wore what?'; so no general solution along these lines seems tenable.

(27)   What did the pop stars wear?
         (What did the female pop stars wear?)

         a.   ♯The female pop stars wore CAFTANS$_F$.
         b.   The FEMALE$_{CT}$ pop stars wore CAFTANS$_F$.

One might suspect that CT is obligatory because there is a strategy here. The rule would thus be that strategies *must* be indicated by CTs. This, however, is not the case, as (28) shows. If the sub-question is explicit, CT is genuinely optional; it is up to the speaker to mark or not mark the strategy, as is particularly clear if the pertinent constituent is in addition pronominalized, as in (28c):

(28)   What did the pop stars wear?
         What did the female pop stars wear?

         a.   The FEMALE$_{CT}$ pop stars wore CAFTANS$_F$.
         b.   The female pop stars wore CAFTANS$_F$.
         c.   They wore CAFTANS$_F$.

The contrast between (27) and (28) suggests that CT-marking is obligatory only with implicit sub-questions. Intuitively, this is not surprising: A new element like the adjective *female* must bear an accent when first introduced into the discourse. This is done in the explicit sub-question in (28) (which, *nota bene*, requires an accent on *female*), but only in the answer in (27).

This reasoning, however, rests on two crucial premises: First that CTF-marking has something to do with the given/new distinction, and second that implicit moves, though crucial for Relevance and the CT-condition, cannot serve to introduce a new element and make it count as 'given' for moves to follow. But so far we haven't been assuming so.[7] To remedy this, let us follow Schwarzschild (1999) in assuming that (29) holds:

(29)   Givenness:
         Every constituent which is not given needs to be marked.

For the purposes at hand we equate 'given' with 'previously mentioned' (or Rochemont's (1986) *c-construable*). Crucially, givenness will only 'see' explicit moves. Implicit moves, just like any kind of hierachical relation such as question under discussion or strategy are irrelevant for it. If we understand 'marked' in (29) to mean 'F- or CT- marked', the accurate prediction results: CT cannot be omitted if the element it marks occured in an implicit question only.

It is worth pointing out that the addition of (29) introduces an interesting factorization into the present theory. CT-marking now is subject to certain general appropriateness conditions *qua* being an accent (those regulated by (29), which apply to F- and CT-marking all the same); these are determined with respect to only the explicit moves. But it also is subject to other, more specific appropriateness conditions *qua* being a CT-accent (as opposed to an F-accent), namely

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[7]And in fact, the two frameworks this theory is built on — Roberts (1996) and Büring (1994, 1997) — don't. They both assume that F- (and in the case of Büring, CT-) placement is determined with respect to the QUD, and neither of them makes the relevant distinction between implicit and explicit moves

those stated in the CT-condition, which do not discriminate between implicit and explicit moves, as shown in the previous section.

Note furthermore that (29) also takes care of an aspect that we have ignored so far: Accenting in CT-less clauses. It predicts, for example, that F will be on *caftans* in (28b) and (28c) above, rather than on, say, *wore*. It also carries over to focus in questions, predicting e.g. that the explicit sub-question *What did the female pop stars wear?* in (28) will have an accent on *female*.[8] For a more general exposition of this theory of F-marking I refer to the seminal work of Schwarzschild (1999).

At this point our account is by and large complete. We have developed a theory of d-trees which embodies a theory of CTF- marking. D-trees consist of explicit and implicit moves which are ordered linearly and hierachically. For a d-tree to be well-formed, each move has to obey principles such as Informativity and Relevance, which regard only the truth-conditional content (the 'ordinary semantic value' in terms of Rooth (1992)) of moves. In addition, all overt moves must conform to Congruence, which governs the CTF- patterns, and, ultimately, the accenting. We have isolated two sub-principles of Congruence:

(30) a. Every constituent which is not given is CT- or F- marked.

  b. CT in a sentence indicates a strategy.

These two notions can be spelled out as in (31):

(31) a. Givenness: A constituent B in move M is given in a d-tree DT if it is previously mentioned in some overt move preceding M.

  b. CT-Congruence: CT in M in DT indicates a strategy if there are moves $Q_1,\ldots,$ Q_n which are identical to or sisters of the question minimally dominating M, such that $\{[\![Q_1]\!]^o,\ldots,[\![Q_n]\!]^o\} \subseteq [\![M]\!]^{ct}$

We have seen that these conditions can capture various examples involving B-accents, among them Jackendoff's original cases as well as answers to multiple *wh*-questions, and various cases of isolated question-answer sequences, parallel to the German cases discussed in my earlier work. The following sections discuss some extensions and refinements of this basic approach.

8   F and CT

In the last section we established under which circumstances CT- *or* F-marking is obligatory, namely if an element is not given. Restricting our attention to sentences with two such elements, we end up with four logical possibilities: CT+CT, F+F, CT+F and F+CT. What determines the choice?

First of all, there must be a strategy for CT to occur at all. Otherwise, CT-Congruence in (13) is violated. A case in which it is predicted to be violated is (32) (cf. Jacobs 1997:100 for a parallel German example):

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[8]With the same goal in mind, Roberts 1996:112 defines the focus alternative sets for questions and requires that they equal the local question under discussion. For *What did the FEmale$_F$ pop stars wear?* this set is { the q pop stars wore $x \mid x \in D_e, q \in D_{et}$ }, i.e. the meaning of the question 'Which pop stars wore what?' Although this is one possible super-question, it is not the only one, as (28) shows. I conclude that the treatment in terms of givenness is more general.

(32) Q: I don't get it. Did Carl sue the company, or did the company sue Carl?
    A: I told you: $CARL_F$ sued the $COMPANY_F$.
    A': ♯ I told you: $CARL_{CT}$ sued the $COMPANY_F$.

The question (32Q) cannot be broken down into subquestions of the form 'Who did X sue?' The answer *Carl sued the company* does not indicate a strategy but rather answers the question directly. Therefore the precondition for using CT — the presence of a strategy — is not met and only F is predicted to be possible. This prediction is clearly verified for German (cf. e.g. Jacobs 1997:100), and presumably also for English, although the phonological facts in (32) are more complicated and deserving of further research.

To move to the other extreme, sometimes more than one strategy is possible. An explicit sub-question will indicate which one the speaker chooses; with an implicit sub-question, only the CTF-pattern of the answer will tell. The result is interchangeability of CT+F and F+CT with respect to a given question:

(33)   a.   Who ate what? / What did people eat?
            (Who ate the beans?)
            $FRED_F$ ate the $BEANS_{CT}$.

    b.   Who ate what? / What did people eat?
            (What did Fred eat?)
            $FRED_{CT}$ ate the $BEANS_F$.

Depending on what the speaker regards as the more promising strategy, she might choose to go dish-by-dish as in (33a) (making the dishes the 'sortal key', or as Jackendoff calls it the 'independent variable'), or person-by-person as in (33b).

In between these two cases (no strategy or multiple strategies) we find those in which only one strategies is feasible. This is the case in the pop star example:

(34)   a.   What did the pop stars wear?
            (What did the female pop stars wear?)
            The $FEMALE_{CT}$ pop stars wore $CAFTANS_F$.

    b.   What did the pop stars wear?
            ♯ *(Which pop stars wore caftans?)*
            ♯ The $FEMALE_F$ pop stars wore $CAFTANS_{CT}$.

To find out what the pop stars wore, it seems pointless to go through every piece of clothing. Rather one goes by sub-groups of pop stars. In such a situation, only one CTF-pattern will be possible.

In a case where there are plausible strategies, does one *have* to use one of them? Take (34) once more. We've established that both *female* and *caftans* are in need of marking (they are not given), and that *female*, but not *caftans* qualifies for CT-marking. Together this predicts that the pattern CT+F will be *possible* (and F+CT will not). But is F+F possible, too? Speakers seem inclined to judge (35A) as anomalous, if not unacceptable:

(35)   Q: What did the pop stars wear?
        A: ♯ The $FEMALE_F$ pop stars wore $CAFTANS_F$.

It seem as though the option of using CT+F blocks using F+F (though the latter is in principle possible, cf. (32) above). So far, nothing accounts for this, since F does not impose any requirements on the elements it marks and should therefore be possible wherever CT is. The oddity of (35) then suggests that a principle like (36) holds:

(36)   If a constituent needs to be marked due to Givenness, CT-marking is preferred over F-marking, where possible.

Perhaps (36) is derivable, namely from the assumption that F is generally avoided where not strictly speaking necessary (cf. Schwarzschild's (1999) principle *Avoid F*); F is barred not only on given constituents, but also on non-given ones which *could* alternatively be CT-marked (see Büring (1998) for an implementation of this). I leave investigation of this matter to further research, and assume (36) for the time being.

Arguably, (36) also accounts for the following contrast:

(37)   Do any of your students work on a Finno-Ugric language?

    a.   Well, let's see. RUFUS$_{CT}$ works on CALAUTEAN$_F$.
    b.   Well, let's see. RUFUS$_F$ works on CALAUTEAN$_F$.

Answer (37a) implies that Calautean is *not* a Finno-Ugric language. The CT-marking indicates a strategy of the type 'Which language does student X work on?', and at least some of these questions lead to answers which answer question (37) (e.g. *Sabina speaks Hungarian.*). (37b) on the other hand implies that Calautean *is* a Finno-Ugric language. If so, it is a direct and complete answer to the question. Hence, there is no strategy and CT-marking is impossible.

While the latter fact explains that (37a) is inappropriate if Calautean is Finno-Ugric (provided that complete answers cannot be part of a strategy, cf. section 9), nothing seems to prevent (37b) from being used if it isn't. Just because there is a strategy it doesn't need to be marked. And the fact that *Rufus* is not given could be taken care of by marking it F, as in (37b). The preference principle in (36) provides a solution to this puzzle: Double-F as in (37b) marking will be chosen only if there is no strategy available; otherwise, CT+F is preferred, as in (37a).

Another way of conceiving of (36) is thus to think of it as a means to avoid ambiguity: If there is a strategy, indicate it by using contrastive topic, so that multiple-F is used unambiguously in strategy-less context. The fact that CT may be omitted in cases like (28b) above would be explained by assuming that here the explicit sub-question serves to make the strategy visible already. Again, I won't speculate further on the issue here.

To sum up, the theory at this points predicts that F+F is possible only in the absence of a strategy. Otherwise, CT+F or F+CT will be chosen. The choice between the latter two depends on the choice of strategy, which may or may not be determinate given a particular main question. Apparent optionality between CT+F and F+CT reflects a discourse which — up to the utterance in question — is compatible with two different d- trees.

The question we haven't addressed here is whether we also find CT+CT patterns. In Büring (1997) I pointed out that a contrastive topic in German must be followed by at least one focus. Accordingly, CT+CT doesn't exist, just as little as F+CT or sole CT. In English the situation is different in that we do find sole B-accents, which should be indicative of sole contrastive topic. I

do not at this point have a complete account of these to offer. A cursory glance suggests that they indicate strategies made up of polar questions; the following example is taken from O'Connor and Arnold (1973), p.173:

(38)   Can Jack and Bill come to tea? — BILL$_{CT}$ can.

The implicit subquestion here is 'Can Bill come to tea?', the obvious other member being 'Can Jack come to tea?'. Would such a strategy be indicated by the answer in (38)? It would if we assumed the meaning of a polar question to be the singleton set containing its literal meaning, as in (39):

(39)   a. $[\![$Can Jack come to tea$]\!]^o$ = { Jack can come to tea }

        b. $[\![$Can Bill come to tea$]\!]^o$ = { Bill can come to tea }

        c. $[\![$BILL$_{CT}$ can$]\!]^{ct}$ = { { x can come to tea } | $x \in D_e$ }

On such an account, CT-Congruence is obeyed in (38). This then would lead us to predict that CT+CT patterns should be possible in English, too. I leave it to further research to (dis)confirm this prediction.

9   Attachment

Consider (40):

(40)   Q: How many abstracts got accepted?
        SQ1:   Did any abstracts get accepted?
        A1:   (Yes,) SOME$_{CT}$ abstracts DID$_F$ get accepted.
        SQ2:   Did most abstract get accepted?
        A2:   (Yes,) MOST$_{CT}$ abstracts DID$_F$ get accepted.

Assuming that focus on the finite verb can signal so-called *verum focus*, the CT-values of A1 and A2 are (41):

(41) $[\![(40A1)]\!]^{ct} = [\![(40A2)]\!]^{ct} = \{\{Q$ abstracts got accepted $\} \mid Q \in D_{et,t}\} \approx$ Did X abstract get accepted?

Since the meanings of SQ1 — { some abtracts got accepted } — and SQ2 — { most abstracts got accepted } — are both members of that set, (40) is predicted to be fine.[9] But now consider the following continuation:

(42)   SQ3: Did all the abstracts get accepted?
        A3-1: ♮   (Yes,) ALL$_{CT}$ the abstracts DID$_F$ get accepted.
        A3-2:   (Yes,) ALL$_F$ the abstracts got accepted.
        A3-3:   (No,) ONE$_{CT}$ abstract was REJECTED$_F$.

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[9]I've stuck to the assumption (made in the previous section) that polar questions are represented by singleton sets. Nothing would change if we assumed them (and the members of the CT- values of sentences with verum focus) to denote two-membered sets of the form { p, W-p } instead.

Why is A3-1, with CT+F, bad? It cannot be because it is the last in its strategy, for so is A3-3. It cannot be because of the propositional content of A3-1, for that is the same as that of A3-2. The only thing that teases A3-1 apart from all of A1, A2, and A3-3 is that A3-1 is at the same time a complete answer to the main question Q, in (40). Apparently, an answer which doesn't just end a strategy, but completely subsumes it, cannot be marked to to indicate that strategy. I propose to implement this by forcing (40)+(42A3-2) to be represented as in (44) rather than in (43):

(43)   not:

```
                    Q
             ┌──────┼──────┐
           SQ1    SQ2    SQ3
            │      │      │
           A1     A2     A3-2
```

(44)   but:

```
                    Q
             ┌──────┼──────┬────────┐
           SQ1    SQ2    SQ3      A3-2
            │      │
           A1     A2
```
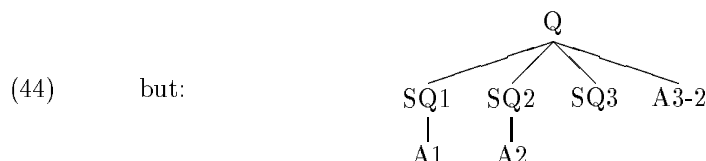
According to (44), A3-2 is not in a position to indicate the strategy rooted in Q. Therefore it cannot contain CT-marking as in A3-1 in (42). To block (43) we need to invoke an additional principle which requires 'highest attachment':

(45)   Principle of highest attachment:
        If M is a complete answer to Q, Q immediately dominates M.

I can see no particular reason why (45) holds, but the data clearly tell us in this case.[10]

10   Accenting

While it is not the goal of this paper to provide a comprehensive theory of the prosodic realization of CT and F where they mark larger constituents, I would like to close with some speculations about the issue (see Steedman (2000) for a very recent, elegant, and somewhat radical proposal

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[10]Perhaps more striking are the German scope inversion data (i), discussed in Büring (1995, 1997), and (ii):

Q: How many politicians are corrupt?/ Are all politicians corrupt?
(i) ALLE$_{CT}$ Politiker   sind NICHT$_F$ korrupt.
    all   politicians are   not   corrupt

(ii) ALLE$_{CT}$ Politiker   SIND$_F$ korrupt.
    all   politicians are   corrupt

Both sentences indicate a strategy including questions like 'Are X politicians corrupt?'. (Ii), however, answers the very super- question 'How many politicians are corrupt?' and is therefore unacceptable with CT. (I) does the same on a reading where it means 'all politicians are non-corrupt', but not on one where it means 'not all politicians are corrupt'. It therefore only has the latter reading with CT, even though it is ambigous without.

which is mostly compatible with the pragmatics devised in this paper [11]). Above we assumed that both CT- and F-marking can serve to mark a non-given element; while this is in fact the only function of F, it is something CT does 'along the way'. Its primary function is to indicate a strategy. It is tempting to try and separate out these two functions. The idea is that the non-givenness marking function of CT is really the effect of an F-marking, while CT exclusively marks the strategy. What we used to refer to as CT is thus a combination of an F-mark and a CT-mark, the latter dominating the former. (46) illustrates this idea:

(46)   Q: Who ate what?
         A: $[[\text{FRED}]_F]_{CT}$ ate the BEANS_F.

If this idea could be sustained, the resulting picture would be very simple: F marks non-givenness and non-givenness is marked by F; CT marks strategies. There are two suggestive pieces of evidence for this view.

First, it is well-known that within a larger F, subconstituents must remain unstressed if they are given. This phenomenon is generally referred to as *deaccenting* and can be accounted for by assuming that F is licit *only* on non-given constituents.[12] Strikingly, we find the same phenomenon with contrastive topics:

(47)   Q: Who won the awards?
         (SQ1:   *Who's the best FEMALE LEAD?*
                 A1:   The best $[\text{FEMALE LEAD}]_{CT}$ is $[\text{SUSAN SARANDON}_F$
         (SQ2:   *Who's the best MALE lead?)*
                 A2:   The best $[\text{MALE lead}]_{CT}$ is $[\text{NICOLAS CAGE}]_F$
                 A2': ♯   The best $[\text{MALE LEAD}]_{CT}$ is $[\text{NICOLAS CAGE}]_F$

The crucial contrast is that between A2 and A2', which can now be explained as follows: Given the hypothesis that CTs contain F-marks, the contrast is between (48a) and (48b):

(48)   a. $[\text{MALE}_F \; \text{LEAD}_F]_{CT}$

         b. $[\text{MALE}_F \; \text{lead}]_{CT}$

The noun *lead* in A2/A2' is given (through A1), but in (48a) it is nonetheless (thus wrongly) F-marked; in (48b) on the other hand, it is (correctly) unmarked, hence unaccented.[13]

As for the second piece of evidence, let us look at the actual phonological realization of the two accents. In the tradition of Pierrehumbert (1980), the contour realizing focus is analyzed as

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[11]Here's how: The feature CT corresponds to the 'theme' part of the theme-rheme distinction in Steedman (2000), and F, on the proposal to be introduced in this section, to his 'focus' (both within the theme and within the rheme); Steedman's notions 'rheme', 'background within the theme', and 'background within the rheme' correspond closely to 'F not dominated by another F', 'F dominated by CT', and 'F dominated by another F', respectively, though the privative nature of these features in the present theory reflects the hypothesis that none of the latter needs to be referred to by any rules of prosody or pragmatics.

[12]The truth is more complicated, as discussed perspicuously in Schwarzschild (1999); his treatment in terms of the *Avoid F!* principle is fully compatible with the story told here.

[13]Note that this effect cannot be achieved through a condition against superfluous CT-marking, since, as we have seen in section 7, CT-marking is generally possible if there is a strategy, regardless of givenness.

a plain high pitch accent, H∗ (the falling contour is the result of that accent being followed by a (default) L- phrase tone). The fall-rise that comes with the contrastive topic, on the other hand, is characterized as a combination of a pitch accent plus a high *boundary tone*, H%. The pitch accent in this 'tune' is variously described as a plain high tone, H∗, or a rise, L+H∗; combined with the default L- phrase accent, both variants will result in a fall-rise pattern, either H∗ L- H% or L+H∗ L- H%. In an example like (47A2)/(b), the pitch accent is realized on (the strongest syllable of) *male*, while the boundary tone is realized on the last syllable of *lead* (capitals indicate main stress syllables in accented words):

(49)   (L+)H∗   L-   H%   H∗ L-   H∗ L- (L%)
        The best   [MALE_F *lead*]_{CT} *is* [NIcolas_F CAGE_F]_F

(49) suggests a very simple relation between CT/F- marking and accents: CT-marking is realized by a boundary tone on the constituents so marked, F-marking is realized by a pitch accent on the constituents so marked (if the B-accent contains really just an H∗ pitch accent, this is even the same one in both environments). If the two of them coincide, we get a complex accent:

(50)   H∗ L-H%
        FRED

11   Summary

The aim of this paper was to outline a theory of CT- and F- marking. Two assumptions I hope to have motivated are:

- The theory needs to include both F- and CT-marking; neither is reducible to the other.

- CTF-theory needs to make reference to a complex model of discourse, in particular one that allows to define the notion of strategy in addition to question under discussion and common ground.

I have shown that, given these assumptions, a variety of phenomena can be given a uniform treatment. More examples, in particular regarding contrastive topic, can be found in the literature. Importantly, the characterization of contrastive topics advocated here seems to be applicable not only to other Germanic languages, but also to typologically unrelated languages such as Hungarian, Japanese and Korean (cf. Kiss (1998), Uechi (1996), Lee (forthcoming) on the latter, and Büring (1994, 1997, 1998) on German and English).

The model I have proposed presents a high degree of factorization (or modularity if you like) regarding its principles. First, I have consistentently separated the question of what constitutes a relevant and informative move from the question of how a move must be pronounced (or, more abstractly, what its CTF-patterns is). That is, content and form are treated by two disjoint sets of principles. Second, both these sets consist of a linear and a hierachical part: On the content side, informativity merely regards the content of a move relative to the sum total of all preceding

moves. Hierachical notions are irrelvant for it; it couldn't for example differentiate between a super-question and a sub-question. Relevance, on the other hand, only regards vertical structures; it couldn't, for example, draw a difference between the first and the second sub-question within a strategy.

Interestingly, the same distinction is found on the form-side. Givenness only regards the sum total of all preceding (explicit) moves. Again, hierachical relations are entirely irrelevant for it. CT-Congruence exclusively takes hierachical structure into consideration. It does not care about linear order or the explicit/implicit distinction.

It is worth pointing out in this connection that within the literature on contrastive topic, considerable attention has been paid to the question in which ways contrastive topics are different from, and in which ways they are similar to F. While there is a broad consensus that the grammatical category focus is related to the pragmatic notion of 'newness' (or its inverse, givenness), no such consensus exists regarding contrastive topics. Some authors regard them as essentially old, e.g. sub-sets of the background (Ladd (1980)), old foci (Williams (1997), Kanerva and Gabriele (1996)), Links to the Common ground (Vallduví (1990)). Others take them to be essentially new, e.g. shifters of topics, markers of deviance from the question (Büring (1994, 1997), focus within the topic (Steedman (2000)).

In the light of the theory presented here, the reason for these seemingly incompatible findings is that the distinction between new and old (or between the corresponding grammatical categories focus and background) is orthogonal to the function of contrastive topics. In some examples, CT-marked material is given, in others it isn't. But this is orthogonal to the characterizing function of the contrastive topic: indicating a strategy.

It is quite likely that the considerable dissent and confusion found in the literature about how these terms should be defined and how many of those dichotomies are relevant in the description of natural language stem from the misguided attempt to characterize contrastive topic in terms of given/new. It is of course possible that additional concepts like Topic-Comment or Rheme-Theme have a role to play in the explanation of other phenomena, but for those discussed here, I submit, they are irrelevant (see again McNally (1995) for a similar point of view).

12 Appendix: Formal Definitions

12.1 CT-Value

We presuppose a function $[\![A]\!]^o$ which delivers meanings in the domain of A (I ignore assignments).

(51)   For all A, B, let + abbreviate the composition rule applied in determining the ordinary meaning of a complex expression *[A B]*, i.e. $[\![A\ B]\!]^o = [\![A]\!]^o + [\![B]\!]^o$.

In addition, we assume a function $[\![A]\!]^{ct}$, which delivers meanings in the power set of the power set of $D_{type(A)}$; this is the function called $[\![\,]\!]^t$ in Büring (1997), a conservative extension of $[\![\,]\!]^f$ from Rooth (1992) (which delivers meanings in the power set of $D_{type(A)}$).

(52) $[\![A]\!]^{ct}$ equals

      a. $D_{type(A)}$ iff A is F marked, otherwise

b. $\{\{\alpha\} \mid \alpha \in D_{type(A)}\}$ if A is CT-marked, otherwise

c. $\{\{[\![A]\!]^o\}\}$ if A is terminal, otherwise

d. $[\![B]\!]^{ct}$ if A = [B], otherwise

e. $[\![BC]\!]^t = \{\beta \mid \exists b,c[b \in [\![B]\!]^{ct}\&c \in [\![C]\!]^{ct}\&\beta = \{\alpha \mid \exists b',c'[b' \in b\&c' \in c\&\alpha = b' + c']\}]\}$ if A = [B C]

12.2   D-Trees: Propositional Content

We assume a set $D*$ of all well-formed discourses (Roberts' (1996) information structures), such that :

(53) $\langle$ICG,D,EXPLICIT$\rangle \in D*$ iff

a.   ICG is a set of propositions (the *initial common ground* of the participants)

b.   D is a tree

c.   EXPLICIT is a function from nodes in D to { 0,1 }

d.   nodes in D are syntactic phrase markers representing a sentence nodes in D are called Moves.

e.   all moves in D are *Informative*

f.   all moves in D meet *Relevance*

g.   all moves in D are *Congruent* (if EXPLICIT(M)=1), i.e. meet the Givenness Condition and the CT Condition

(54)   Precedence:
For any Moves M1 and M2, M1 *precedes* M2 in D if

a.   M1 dominates M2, or

b.   there are Moves M3 and M4 which are sisters in D, M3 is to the left of M4, and M3 dominates or equals M1 and M4 dominates or equals M2

(55)   Predecessor:
Let $PRED_D(M)$ be that function which assigns to any move M the smallest set of moves M' such that

a.   M' precedes M in D

b.   EXPLICIT(M') = 1

(56)   Common Ground:
Let $CG_D(M)$ be a function from moves M in a d-tree D in $\langle$ICG,D,EXPLICIT$\rangle$ to sets S of propositions such that for any Move M in D, S is the smallest set such that

a.   ICG $\subseteq$ S

b. $[\![M]\!]^o \in S$ iff M is an assertive move in D and M' precedes M in D

20

(57)   Informative:
A move M in D is informative iff

    a.   M is an assertion and CG(M) does neither entail $[\![M]\!]^o$ nor W-$[\![M]\!]^o$, or

    b.   M is a question and for at least some element p in $[\![M]\!]^o$, CG(M) does neither entail p nor W-p

(58)   Immediate Question under Discussion:
Let $IQUD_D(M)$ be a function from moves M in a d-tree D to sets of propositions, such that $IQUD_D(M) = [\![Q]\!]^o$, where Q is the node immediately dominating M in D

(59)   Relevance:
A move M in D is relevant iff

    a.   M is assertive and $[\![M]\!]^o$ answers $IQUD_D(M)$, or

    b.   M is interrogative at least one answer to $[\![M]\!]^o$ answers $IQUD_D(M)$.

(60)   Answer:
A proposition p answers Q if Q is a set of propositions and p contextually entails a change in probabilistic weight for at least some $q \in Q$.

(61)   Minimality Condition:
If M is a complete answer to Q (i.e. if $[\![M]\!]^o$ logically entails p or W-p for every $p \in [\![Q]\!]^o$), Q immediately dominates M

12.3   Congruence

(62)   Givenness:
An element U counts as Given in a move M in a d-tree D iff it is mentioned in some move $M' \in PRED_D(M)$ (cf. Schwarschild (1999:151) for a much refined version)

(63)   Givenness Condition:
Any constituent in a move M in D that is not F- or CT- marked must be Given in D

    If the remarks in section 10 are adopted, the reference to CT-marking can be dropped from (63); likewise, (66) can be dropped.

(64)   CT Condition
If M in D contains CT, M indicates a strategy in D

(65)   Strategy:
CT in M in DT indicates a strategy if there are moves $Q_1, \ldots, Q_n$ which are identical to or sisters of the question minimally dominating M, such that $\{[\![Q_1]\!]^o, \ldots, [\![Q_n]\!]^o\} \subseteq [\![M]\!]^{ct}$

(66)   Preference Principle:
If a constituent α needs to be marked due to Givenness, CT-marking is preferred over F- marking, where possible.

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