

A Compositional Analysis of Contrastive Topics*

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1. Decomposing Contrastive Topics

According to Büring (1997, 2003), an utterance involving a *contrastive topic* (CT) usually goes along with another constituent that invokes alternatives, a focus (FOC), and together form what I will henceforth call a contrastive topic configuration (CTFC).

Büring (1997, 2003) follows Jackendoff (1972) in assuming that that CTs in English are marked by ‘B-Accents’ (in ToBI notation: L*+H followed by a L-H% boundary), and FOCs by ‘A-accents’ (H*, followed by a L- L% boundary). In German, CTs often also involve a rising pitch accent (possibly L* H) and FOCs a sharply falling one (a H* L according to Féry 1993, although the fall seems much sharper than in English). The two are linked with high level pitch, a configuration often referred to as ‘hat-’, ‘bridge-’, or ‘root-contour’ (Féry 1993, Jacobs 1997). In the following, I use a simplified notation: Accented words are in capitals, and I mark as ‘\’, rises as ‘/’, and fall-rises as ‘v’.

A typical use of a CTFC is what Büring (1997, 55–56) calls the contrastive ‘aboutness topic’. Here, the question under discussion is addressed by the answer and its focus is marked by FOC, but in addition a CT is employed to invoke a set of additional questions:

- (1) A: What did you buy on 59th street?
- a. CT < FOC in English: ‘B-Accent’, followed by ‘A-Accent’:
B: On /FiftyNINTH Streetv, I bought the SHOES.
- b. CT < FOC in German: ‘Hat Contour’
B: Auf der /NEUNundfünfzigsten Straße habe ich die SCHUHE\ gekauft.
on the 59th street have I the shoes bought

*This work benefited from a visit at ZAS Berlin in July 2007. Thanks for helpful discussions to Marta Abrusan, Chris Barker, Gennaro Chierchia, Jeroen van Craenenbroeck, Danny Fox, Andreas Haida, Laura Downing, Yurie Hara, Stefan Hinterwimmer, Manfred Krifka, Rainer Ludwig, Ad Neeleman, Sophie Repp, Robert van Rooij, Uli Sauerland, Benjamin Spector, Edwin Williams, and Malte Zimmermann, to the audiences at the ZAS semantics circle, at Cornell, BCGL2, NELS38, MIT, and in particular to Jon Gajewski and Mats Rooth.

The analysis of CTFCs in Büring (1997, 2003) has two main ingredients. The first is that of the ‘topic-semantic value’. Just as an expression can be associated with a focus-value (Rooth 1992), i.e., a set of alternatives, in addition to its regular denotation, an expression can also be associated with a topic-semantic value, which consists of a set of sets of alternatives, in the case of propositions, a set of questions. Büring (2003, 519) provides the following procedure to obtain the topic semantic value, based on the assumption that there is one constituent marked as a FOC and one as a CT:

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

The topic-semantic value of the answer in (1) would then be the set {What did you buy on 59th street?; What did you buy on 58th street?; What did you buy on 57th street?, ...}. The final notation for the topic-semantic value given in Büring (2003) looks as follows:

- (3) $\llbracket \text{On } 59\text{th}_{CT} \text{ street, I bought the SHOES}_{FOC} \rrbracket^{CT} = \{ \{ \text{at } x, \text{I bought } y \mid y \in D_e \} \mid x \in D_e \}$

This analysis marking constituents with CT and FOC features predicts that the linear order between the two should be free. Indeed, as observed in Jackendoff (1972), CTs in English can either precede or follow the FOC-marked constituent. The word in (1a), for example, can be reversed:

- (4) FOC \prec CT in English: A: What did you buy on 59th street?
B: I bought the SHOES on /FiftyNINTH Street \vee .

However, this is not true in other languages. In German, e.g., if the linear order of (1b) is inverted, there is no felicitous pronunciation such that both constituents are accented:¹

- (5) FOC \prec CT in German: A: What did you buy on 59th street?
B: # Ich habe die SCHUHE auf der NEUNundfünfzigsten Straße gekauft.
I have the shoes on the 59th street bought

That word order in German CTFCs is more restricted was already observed in Büring (1997), but the proposed analysis for contrastive topic remains mute with respect to the source of such syntactic restrictions. The solution proposed in this paper is based on an empirical observation: In English, when two focus operators are nested, they can take either scope with respect to each other—at least under certain syntactic conditions. This is not the case in German, where the focus operator taking wider scope must occur to the left

¹The locative can be *deaccented*, but then it is simply marked as given and the sentence does not invoke a set of alternative questions.

of the one they outscope. This restriction, it is argued, also explains the restrictive relative word order in CTFCs: The contrastive topic configuration involves two recursively nested focus operators, and the associate of the one taking wider scope is what we call a CT.

A challenge for this compositional view of contrastive topics is posed by the pragmatic effects of CTFCs. CTFCs seem to have a special pragmatic import, which nested focus operators usually lack. These pragmatic effects were one of the arguments used in Büring (1997) to argue against analyzing CTFCs as multiple focus constructions. The pragmatic implicature of CTFCs proposed in Büring (1997) can be paraphrased as follows:²

- (6) There is a disputable question in the topic semantic value that remains open.

The proposed response to this challenge is to further decompose the meaning of contrastive topics: The pragmatic implications must be dissociated from the CTFC. They are the result speech-act related focus sensitive operators that are realized as intonational tunes, such as the English Rise-Fall-Rise contour (RFR), (cf. Constant 2006). Their meaning interacts with the focus operators that a sentence may contain, but this relation is indirect.

2. Nested Focus Operators

Krifka (1992, 24) identifies five configurations for multiple focus constructions:

- (7) a. John only₁ introduced [Bill]_{F1} to [Sue]_{F1}
 b. Even₁ [John]_{F1} drank only₂ [water]_{F2}
 c. John even₁ [only₂ drank [water]_{F2}]_{F1}.
 d. john even₁ only₁ drank [[water]_{F2}]_{F1}.
 e. John even₁ drank [only₂]_{F1} [water]_{F2}.

Suppose that a sentence can include two separate unpronounced focus operators. They might occur in any or all of these configurations. Here, I will explore the hypothesis that the configuration relevant for CTFCs as they are discussed in the literature is (7b), and that we call the associate of the focus operator that takes wide scope CT, and that of the one that takes narrow scope FOC. A straightforward prediction of this view is the syntax of CTFCs should mirror the distribution of *overt* focus operators.³

2.1 The case of English

In English, a focus operator can outscope material to its left (from Taglicht 1984, 150):

- (8) They were advised to learn only Spanish.
 a. They were advised not to learn any other language than Spanish.
 b. They were not advised to learn any other language than Spanish.

²Büring (2003) states the implicature in terms of ‘strategies’ (Roberts 1996), with similar effects.

³Some earlier arguments against a multiple focus analysis of CTFCs compared them to multiple foci bound by a *single* operator. This is arguably the case in Büring (1997) and Neeleman and van de Koot (2007).

One analysis of (8b) is that ‘only Spanish’ undergoes covert movement (or overt movement as in Kayne (1998)). An alternative is that there is an unorthodox surface structure bracketing as proposed in the categorial grammar analysis in Blaszcak and Gärtner (2005). Both approaches correctly capture that the ambiguity disappears with VP-only:

- (9) They were advised to only learn Spanish.
- a. They were advised not to learn any other language than Spanish.
 - b. * They were not advised to learn any other language than Spanish.

This kind of scope-taking is further restricted in that it seems to be clause-bound:

- (10) They were advised that they should learn only Spanish.
- a. They were advised not to learn any other language than Spanish.
 - b. * They were not advised to learn any other language than Spanish.

What happens when two focus operators occur in one sentence? Let’s consider ‘only’ and ‘even’. A sentence including ‘only’ presupposes the prejacent and excludes all alternatives that are not already entailed by the presupposition (cf. Horn 1969, von Stechow 1999):

- (11) Only John read *Moby Dick*.
- a. Presupposed: John read *Moby Dick*.
 - b. Asserted: For all x, such that x read *Moby Dick*, John read *Moby Dick* \rightarrow x read *Moby Dick*.

A sentence including ‘even’ asserts the prejacent and implicates that there are alternatives that are true but less remarkable (cf. Karttunen and Peters 1979, 25/26):

- (12) Even John read *Moby Dick*.
- a. Asserted: John read *Moby Dick*.
 - b. Conventional Implicature of ‘even’:
 - i. There are other x under consideration besides John s.t. x read *Moby Dick*.
 - ii. For all x besides John, the likelihood of x reading *Moby Dick* is greater than or equal to the likelihood of John reading *Moby Dick*.

Here’s an example in which both focus operators appear in one sentence:

- (13) **Context I: even > only:** Except for Bill, the kids in this summer camp have no respect for animals and the potential dangers, which makes them take too many risks, including with poisonous snakes.
- a. Even the most poisonous snake only frightens Bill.
 - b. Even the most poisonous snake frightens only Bill.

In this context, ‘even’ must outscope ‘only’ in order for it to make sense. Consider the alternatives relevant for ‘only’ and ‘even’:

- (14) a. **alternatives for only (exclude ‘even’)**: {The most poisonous snake frightens Bill; the most poisonous snake frightens Bill and individual x; ... ; the most poisonous snake frightens everyone.}
- b. **alternatives for even (include ‘only’)**: {The most poisonous snake frightens only Bill (least likely); average poisonous snakes frighten only Bill (more likely); mildly poisonous snakes frighten only Bill (yet more likely); ... }

‘Only’ must take low scope and be part of every alternative considered for ‘even’ since otherwise the probabilities in (14b) reverse and the use of ‘even’ should be infelicitous. It is clearly *more* likely that a more poisonous snake frightens Bill, but it is *less* likely that it would frighten *only* Bill. So the meaning of this sentence can be characterized as follows:

- (15) $[\lambda P_1.\text{even}([\text{the most poisonous snake}])(P_1)]([\lambda x.(\text{only} (\text{Bill}) (\lambda y. x \text{ frightens } y))].$

In (13), word order matches the scope. What about switching the word order?

- (16) **Context I: even > only**
- a. Only Bill is afraid of even the most poisonous snake.
- b. # Only Bill is even afraid of the most poisonous snake.

When ‘even’ directly attaches to the focus, inverse scope is possible. The fact that (16b) is bad constitutes evidence that movement is involved. The wide-scope reading can be obtained by moving the constituent ‘even the most poisonous snake’ to a position dominating ‘only Bill’. We can conclude that in English, a focus operator can take scope over focus operators to its left—as long as constraints on movement are obeyed.

There is a controversy about whether apparent wide-scope uses of ‘even’ are not in fact due to a lexical ambiguity (a ‘least likely’ vs. a ‘most likely’ version, Rooth 1985, Rullmann 1997), although see Wilkinson (1996), Guerzoni (2003) who argue for the scope view. To circumvent this issue here, we can simply use a context motivating a reading with the inverse scope (this reading seems easier to access with emphasis on ‘least’):

- (17) **Context II: only > even**: The kids in the summer camp are afraid of snakes to some degree, but it depends on how dangerous they are. Everyone is afraid of rattlesnakes, since they’re really poisonous, but almost everyone is ok with some less poisonous snake.
- a. Only Bill is afraid of even the *least* poisonous snake.
- b. Only Bill is even afraid of the *least* poisonous snake.

In this context, ‘only’ must outscope ‘even’ for the probabilities to come out right:

- (18) a. **alternatives for even (exclude ‘only’)**: {Bill is afraid of the least poisonous snake (least likely); Bill is afraid of more poisonous snakes (more likely); ... ; Bill is afraid of the most poisonous snakes (yet more likely).}
- b. **alternatives for only (include ‘even’)**: {Bill is afraid of even the least poisonous snake; Bill and individual x are afraid of even the least poisonous snake; ... ; everyone is afraid of even the least poisonous snake.}

Once again, the inverse linear order is possible keeping the scope constant:

(19) **Context II: only > even**

- a. ? Even the *least* poisonous snake would frighten only Bill.
- b. # Even the *least* poisonous snake would only frighten Bill.

Sentence (19a) improves when the moved constituent is heavier:

(20) Even the *least* poisonous snake would frighten only my truly pathetic roommate Bill Johnson.

To sum up: In English, a focus operator can outscope a focus operator to its left, provided that movement constraints are obeyed. The observed pattern provides an argument in favor of the scope analysis of ambiguities involving ‘even’, and against the lexical ambiguity theory. As expected, the distribution of wide-scope focus operators mirrors that of CTs.

2.2 The Case of German

German does not allow for Taglicht-like ambiguities in which a focus operator or negation outscopes material to its *left*⁴:

(21) Ihnen wurde geraten nur Spanisch zu lernen.

They were advised only Spanish to learn.

- a. They were advised not to learn any other language than Spanish.
- b. # They were not advised to learn any other language than Spanish.

There are only ambiguities with respect to how much material to the *right* is in the scope of a negation or focus operator in the German Mittelfeld (examples in Blaszczyk and Gärtner 2005). The same restriction holds for the relative scope between two focus operators:

(22) **Context I: even > only:**

- a. **even < only**

Sogar die GIFTIGSTE Schlange ängstigt nur BILL.

Even the most poisonous snake frightens only Bill

- b. # **only < even**

Nur den Bill ängstigt sogar die GIFTIGSTE Schlange.

only the Bill frightens Even the most poisonous snake

And in the context motivating the inverse scope, linear order must be reversed:

(23) **Context II: only > even:**

- a. **only < even**

⁴There are some exceptions to this generalization when considering the ‘Vorfeld’ in a V₂ sentence, cf. Jacobs (1983) and Jaeger and Wagner (2003).

Nur den BILL ängstigt sogar die am WENIGSTEN giftige Schlange.
 only the Bill frightens even the at least poisonous snake

b. #? **even** < **only**

Sogar die am wenigsten giftige Schlange ängstigt nur den Bill.
 Even the at least poisonous snake frightens only the Bill

The contrast between English and German with respect to the scopal constraints on overt focus operators exactly mirrors the restrictions of a CT relative to FOC in CTFCs.

2.3 Other Languages

In general, we expect now that the syntax of contrastive topics mirrors that of the syntax of nested focus operators. There is some indication that this might be on the right track. In Hungarian, while the verb in general precedes all but one constituents in a sentence, CTFCs are realized with SOV word order (cf. Sauerland 2005), e.g. in pair-list contexts:

- (24) A: Ki mit ivott? B: János vizet ivott.
 Who what.acc drank? Janos water drank
 A: ‘Who drank what?’ B: ‘Janos drank water [...]’

As expected, the same is true of at least some focus operators nested in configuration (7b):

- (25) Hát ez unalmas party volt! Még János is csak vizet ivott!
 well this boring party was even John too only water.acc drank
 ‘This was a boring party! Even John drank only water.’

A more general explorations of cross-linguistic predictions would be necessary to further corroborate the correlation.

3. Decomposing Contrastive Topics

The hypothesis advanced in this paper is that CTFCs involve two unpronounced focus operators nested in the same way as ‘only and ‘even’ in (7b). The associate of the focus operator taking wider scope is what earlier approaches called a CT and the associate of the one taking lower scope FOC. I assume the following focus operator, a version of Rooth (1992)’s \sim , stated in terms of domain restriction (von Stechow 1994), and taking two overt arguments just like ‘only’ and ‘even’ (and similar to G_R in Wagner 2005, 2007):

- (26) $\forall\sigma: \llbracket \text{FOCUS} \rrbracket = \lambda x_\sigma. \lambda P_{\langle \sigma, t \rangle} : \exists a \in C : \wedge p(x) \not\Rightarrow \wedge p(a)). p(x)$

Here’s an example of a sentence involving a FOCUS:

- (27) FOCUS (Moby Dick) ($\lambda x. \text{John read } x$)
 a. Assertion: John read Moby Dick.
 b. Presupposition: There is a salient alternative $x' \in C$, such that *John read x'* is salient and John read Moby Dick $\not\Rightarrow$ John read x .

What happens when we nest two FOCUS operators?

(28) A: What did you buy on 59th street? B: /On 59th street\ I bought the shoes\ .

The proposed LF parallel to that of nested overt focus operators looks as follows:

(29) $[\lambda P_1. \text{FOCUS}(\text{on } 59\text{th street})(P_1)]([\lambda x.(\text{FOCUS}(\text{shoes})(\lambda y. \text{I bought } y \text{ at } x))]$.

The presuppositions introduced by the two focus operators can be paraphrased as follows:

- (30) Presuppositions (simplified)
- a. There is an alternative y' to *the shoes* such that *I bought y' on 59th street* is salient.
 - b. There is an alternative x' to *on 59th street* such that there is an alternative y' to *the shoes* such that *I bought y' at x'* is salient.

There is an asymmetry in the strength of the presupposition associated with the two focused constituents, and switching the roles in this context changes the meaning:

(31) $[\lambda P_1. \text{FOCUS}(\text{the shoes})(P_1)]([\lambda x.(\text{FOCUS}(\text{on } 59 \text{ street})(\lambda y. \text{I bought } x \text{ at } y))]$.

- (32) Presuppositions (simplified)
- a. \exists an alternative y' to *on 59th str.* such that *I bought the shoes at y'* is salient.
 - b. \exists an alternative x' to *the shoes* such that there is an alternative y' to *on 59th street* such that *I bought y' at x'* is salient.

This accounts why switching the roles of CT and FOC in (28) is infelicitous:

(33) A: What did you buy on 59th street? B: # On 59TH street I bought /the shoes\.

In some of the contexts listed as typical uses of contrastive topic in Büring (1997, 2003), CT and FOC in fact *can* be fairly freely exchanged (cf. Neeleman and van de Koot 2007):

- (34) A: Who invited whom?
B: John invited Mary, Bill invited Sue, and Sarah was invited by Jill.

This can be explained now since in a pair-list context, the presuppositions of *either scope* are fulfilled. So two a nesting of two FOCUS operators introduces presuppositions that together can account for some of the distributional facts regarding contrastive topics.

The claim when foci are nested in this way the associate of the operator with wider scope is what earlier approaches called ‘contrastive topic’. It is crucial to note that it is the relative scope of the *focus operator* but not that of *its associate* that is claimed to be wide. Any analysis that would hold that contrastive topics *themselves* must take wide scope would be doomed, since, as is well-known, the intonation contour that often accompanies CTFCs often has the effect of scope reversal, such that a CT is outscoped by a FOC. How is this compatible with the presented analysis?

A look at the LF in (29) provides the answer: While the higher focus operator is interpreted taking scope over the embedded one, the constituent it associates with is

actually interpreted in its base position via λ -abstraction, and may take wide or narrow scope relative to the associate of the lower focus operator, depending on where it starts out. That operator and associate can take different scope is in fact a general property of focus operators—including *overt* ones. Overt focus operators in German cannot reconstruct, *yet their associate is free to do so* (Büring and Hartmann 2001, 262):⁵

- (35) Nur ein Bild von seiner Frau besitzt jeder Mann t.
 only a picture of his wife possesses every man
- a. LF: only ___ possesses every man_i [a picture of his_i wife]
 The only person every man possesses a picture of is his wife.
- b. * LF: ___ possesses every man_i [only a picture of his_i wife]
 Every man only possesses a picture of his wife.

The scope of the associate of the higher focus operator is thus expected to be whatever its scope is before associating with it (as in Jacobs 1997). I will return to why it is that sometimes contrastive topics seem to favor scope inversion in the next section.

There have been at least two earlier attempts to derive the semantics of CTFCs by recursively nesting two focus operators. Williams (1997) proposes such an analysis, but posits that contrastive are *embedded* foci and take *narrow* scope. This, however, conflicts with the scope facts discussed here. Sauerland (2005) proposes that contrastive topics involve two nested givenness operators, leading to entirely symmetric presuppositions for the operators associating with CT and FOC:

- (36) John_T saw Mary_F.
- a. Presupposition 1: John saw someone.
- b. Presupposition 2: Someone saw Mary.

Just as the approach in Büring (1997), this wrongly predicts that CT and FOC should *always* be interchangeable, and there should not be any syntactic constraints on relative word order. An non-compositional approach with very different predictions about the syntactic distribution of CTFCs is presented in Neeleman and van de Koot (2007). A detailed discussion of any of these alternative approaches is beyond the scope of this paper.

4. The Pragmatic Effects of Contrastive Topics

What about the pragmatic implications and the special intonation attributed to CTFCs in Büring (1997, 2003)? Aren't these good reasons to distinguish contrastive topics from two nested focus operators, as argued in Büring (1997)? The response proposed here is that the pragmatic effects and the intonational tune associated with them in fact must be dissociated from CTFCs. If this response is valid, then there are two expectations: First, the tune and pragmatic effects should be able to occur *without* a CTFC; and second, CTFCs should be possible without these pragmatic effects and without the correlating intonation.

⁵Büring and Hartmann (2001, 262) take this as evidence that 'only' + focus do not form a constituent, but it seems to me this is not the only interpretation of the facts, at least if focus movement to complement position is allowed (Wagner 2006). There is no space to elaborate on these syntactic issues in more detail.

As discussed in Constant (2006), the RFR contour accounts for certain cases of disambiguation: wide scope of the universal in (43) would rule out the possibility of any of the invoked alternatives to be true and therefore defeat the implicature.

(43) /ALL my friends didn't come \vee . * $\forall > \neg$; $\forall < \neg$

Büring (1997) proposes a similar explanation for disambiguating effects of CTFCs based on the implicature in (6). Note, however, that just as in (38, 40) there is only one accent in (43) and hence no CTFC in Büring's sense. The RFR contour is even compatible with a CT \prec FOC sequence, although AB according to Büring (2003) should go with FOC \prec CT:

(44) A: He's a picky shopper? B: Really? Where did you say did he buy his shoes?
A: He bought his SHOES on 5th AVENUE \vee ; (and what's more he, buys his suits in Paris. Clearly, he's very picky.)

Furthermore, the BA contour differs from the AB contour in that it is not incompatible with contexts in which no 'disputable question' is left open, and hence must have a weaker meaning than AB:

(45) A: Did John insult Mary? (46) A: Did John insult Mary?
B: No! Mary \vee insulted JOHN\ . B: No! # Mary insulted JOHN \vee .

Also, Constant (2006) observes that the BA- but not the AB-contour can occur on the last constituent in a pair-list answer:⁶

(47) a. A: Who kissed whom? B: ANNA \vee kissed JOHN, and JIM \vee kissed BERTA.
b. # A: Who kissed whom? B: ANNA kissed JOHN, and JIM kissed BERTA \vee .

That BA is possible here (first observed in Krifka 1999) sheds doubt on the claim that the two contours are pragmatically equivalent. Based on (39), the RFR is infelicitous at the end of a pair-list answer since all true alternatives have been asserted and others excluded, so it would be pragmatically odd to invoke an alternative that is merely possibly true. This speaks against approaches that take that take *all* instances of CTs to be accompanied by the same implicature, including the approaches advanced in (Büring 1997, 2003) and Hara and van Rooij (2007). The analysis here captures the difference between BA and AB, and also that a CTFC is possible when intonation and the concomitant implicature are absent:

(48) A: What did the popstars wear? B: The FEMALE Popstars wore KAFTANS. (I know you don't care what the male ones wore).

To conclude, the intonation and pragmatic effects attributed to CTFCs in earlier accounts can be dissociated from them, and we can thus decompose the notion contrastive topics as described in Büring (1997, 2003) into the part that relates to the 'topic-semantic value' (here: two nested focus operators), and the one related to the pragmatic import and discourse strategies (here: independent 'insinuation contour' RFR, that can be draped over utterances that in turn may involve focus presuppositions (e.g., those of a CTFC).

⁶It's actually possible if the *entire pair-list answer* is used to insinuate some other proposition. Suppose the dialogue was: 'A: This was a boring party.' Then B could say (47b.), to insinuate: 'No, it wasn't!' ('...what more scandalous behavior did you expect?')

5. Conclusion

This paper presented evidence that the syntactic distribution of CTs relative to FOCs mirrors the distribution of nested overt focus operators, and is more restricted than earlier approaches would predict. An explanation was provided in the form of a compositional theory that analyzes CTFCs as recursively nested focus operators. The associate of the focus operator taking wider scope is what earlier analyses called a ‘contrastive topic’. As with other focus operators, the scope operator and associate can split, and the associate can take narrow scope relative to that of the associate of the focus operator taking lower scope, as is often the case in CTFCs in German. The pragmatic import that CTFCs seem to have and other nested foci seem to lack were attributed to independently motivated operators that are realized as intonational tunes, such as RFR in English and HAT in German. RFR requires an alternative to be possibly true and HAT that an alternative *is* true. This difference explains that RFR but not HAT are excluded in the last answer of pair list questions, since in the former but not in the latter a stronger statement could have been made using a stronger operator (e.g. EXH). The use of CTFCs is neither a sufficient nor a necessary condition on the presence of RFR or HAT, or the pragmatics associated with them.

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