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Contrastive topics and implicature cancellation *

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Abstract This paper is concerned with the so-called ‘Problem of the Last Answer’, which arises in the context of the research on the semantics of Contrastive Topic, on the one hand, and on the distribution of the presupposition trigger *too*, on the other hand. Our goal is to argue that we can find a simple and elegant answer to this problem if we take into consideration more general constraints on implicature cancellation.

1 Introduction

This paper explores the restrictions of occurrence of contrastive topics (CTs, henceforth), illustrated in (1). In (1), both ‘Peter’ and ‘Pia’ are marked with fall-rise CT accents (sometimes called B-accents), while ‘pasta’ and ‘salad’ receive falling focus accents (sometimes called A-accents).

- (1) A: What did Peter and Pia eat?
B: Peter_{ct} ate pasta_f and Pia_{ct} ate salad_f.

In particular, we will be concerned with the so-called ‘Problem of the Last Answer’, illustrated in (2). As noted by Krifka (1999) and Hara & van Rooij (2007), among others, CTs are incompatible with the type of utterance shown in (2), while the presence of the additive particle *too* renders the discourse acceptable, as shown in (3).

- (2) A: What did Peter and Pia eat?
B: #Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta_f.
(3) A: What did Peter and Pia eat?
B: Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta too_f.

Several researchers have approached this problem not from the semantics of CTs, but by trying to account for the obligatory nature of presupposition conveyed by *too* (see,

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for instance, Bade 2013, Amsili & Beyssade 2013, Winterstein 2009, Saebø 2004). Our take will be quite different and our aim will be to account for the above contrast by appealing to independently motivated properties of conversational implicature cancellation.

The paper is structured as follows. Section 2 reviews in more detail the semantics of CTs and the Problem of the Last answer. Section 3 presents the constraints implicature cancellation is subject to, and section 4 contains our solution to the Problem of the Last Answer. Finally, section 5 concludes.

2 Properties of Contrastive Topics: its semantics and constraints

This section will briefly review the semantic contribution of CTs, as well as the constraints they are subject to. According to Büring (1999, 2003), an utterance A with a CT generates a CT-value (henceforth, $[[A]]_{ct}$). This CT-value is triggered in two steps.

First the the focus value (Rooth 1985) of A is generated by replacing the focus marked constituent by its alternatives. Thus, the focus value of the utterance in (4) is (5); that is, a set of propositions of the shape ‘Peter ate x ’ or, in other words, the question ‘What did Peter eat?’.

- (4) Peter_{ct} ate pasta_f.
 (5) Focus value: {Peter_{ct} ate pasta, Peter_{ct} ate chicken, Peter_{ct} ate fish, ... } = What did Peter_{ct} eat?

Second, from the result of the first step, a set of questions is created by replacing the CT-marked constituent by some alternative to it. That is, we end up with a set of questions of the shape ‘What did x eat?’ or, in other words, with the question ‘Who ate what?’.

- (6) CT value: {‘What did Peter eat?’, ‘What did Pia eat?’, ‘What did your friends eat?’, ... } = Who ate what?

Moreover, a CT-marked utterance indicates a *strategy* to answer a Question Under Discussion. For instance, to answer a question such as (7), one could proceed by people (Strategy A below), in which case the CT marking would fall on the subject, or one could proceed by food (Strategy B below), in which case the CT accent would fall on the object.

- (7) Who ate what?
 a. Strategy A: { { x ate y | $y \in D_e$ } | $x \in D_e$ }
 (by people)

- Fred_{ct} ate pasta_f.
- b. Strategy B: $\{ \{ x \text{ ate } y \mid x \in D_e \} \mid y \in D_e \}$
 (by food)
 Fred_f ate pasta_{ct}.

CTs are subject to several conditions. One of these conditions is the Question/Answer Condition (Büring 1999), which states that the meaning of the question Q must match one element in the CT value of its answer A ($[[A]]_{ct}$). This explains the unacceptability of (8-b): the CT value of A, corresponding to Strategy A (i.e. by people) in (7-a), does not contain the denotation of Q in (8-a), but elements of the shape illustrated above in (6).

- (8) A: Who ate pasta?
 B: #Peter_{ct} ate pasta_f

In contrast, (9-b) is acceptable because the CT value of the answer, in (10), does contain the question Q in (9-a).

- (9) A: Would Fritz buy this suit?
 B: Well I_{ct} certainly wouldn't_f.
- (10) CT value: { 'Would Fritz buy this suit?', 'Would I buy this suit?', 'Would Mary would this suit?' ... }

Furthermore, Büring (1999) proposes that a CT triggers a Topic Implicature, such that, given a sentence A, containing a CT, there is an element Q in $[[A]]_{ct}$ such that Q is still under consideration after uttering A. The Topic Implicature expresses the idea that an answer containing a CT cannot answer completely all the questions in the CT-value. This explains the unacceptability of (11-b) (from Büring, 2003): Since (11-b) answers question (11-a) completely, (11-b) cannot be CT-marked.

- (11) A: Did all the abstracts get accepted?
 B: #Yes, all_{ct} the abstracts DID_f get accepted.

Note, though, that (12-b) is acceptable. Even if it answers the question in the dialogue, we do get the feeling that it is a partial answer to a wider question the speaker has in mind, and that the speaker wishes to suggest that there are other relevant people that ate other things. This is exactly the implication that the Topic Implicature captures.

- (12) A: What about Fred? What did he eat?
 B: Fred_{ct} ate pasta_f.

Thus, one may conclude that CTs are incompatible with completely resolved

questions, which would also explain the unacceptability of (2), repeated below for convenience.

- (2) A: What did Peter and Pia eat?
 B: #Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta_f.

This, however, cannot be the whole story. It is not the case that CTs are always incompatible with completely resolved questions, as shown in (1), also repeated below (Hara & van Rooij 2007).

- (1) A: What did Peter and Pia eat?
 B: Peter_{ct} ate pasta_f and Pia_{ct} ate salad_f.

Krifka (1999) addresses this problem by proposing that, while the whole answer does not need to be partial, each conjunct separately does. That is, ‘Peter ate pasta’ does not resolve what Pia ate and ‘Pia ate polenta’ does not resolve what Peter ate. The problem with this approach is that the same line of reasoning could be applied to (2): ‘Peter ate pasta’ does not resolve what Pia ate and ‘Pia ate pasta’ does not resolve what Peter ate and, therefore, its unacceptability is not predicted so far.

Krifka attributes the unacceptability of (2) to a violation of the Distinctiveness Condition, which is an implicature derived from the Maxim of Manner and which states that if an answer to a question contains a CT, there is no alternative stronger to the CT that the speaker is willing to assert. In (2) the Distinctiveness Condition would be violated because the answer ‘Peter and Pia ate pasta’ would be such a stronger alternative, which would be preferred given that it is shorter, as well. In contrast, in (1), the Distinctiveness Condition does not apply given that there is no answer shorter than ‘Peter ate pasta’ (or ‘Peter ate polenta’) that the speaker could have said.

Now, if the Distinctiveness Condition is a conversational implicature that arises due to the Maxim of Manner, it should be cancellable, as it is the case with other implicatures derived from Manner. For instance, the temporal reading of *and* is thought to arise from the Maxim of Manner and it can be canceled as the underlined clause in (13) shows.

- (13) John arrived home and brushed his teeth, but not in that order.

So, at this point, two questions should be answered: First, what disallows the cancellation of the implicature in (2)? Second, what allows the cancellation in (3) (repeated below for convenience)?

- (3) A: What did Peter and Pia eat?
 B: Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta too_f.

As mentioned, there are other works that deal with this issue by focusing on the contribution of *too*, such as Winterstein (2009) and Saebo (2004). As far as we can tell, they share the same problem since they do not explain why this implicature is not cancellable.

In the next section, we address this problem by turning into the constraints on implicature cancellation.

3 Implicature cancellation

One of the main properties of conversational implicatures (Grice 1989) is that, unlike entailments, they can be cancelled, as shown in the underlined clause in (14).

(14) John passed some of his exams. In fact, he passed all of them.

The first sentence contains a scalar implicature (Horn 1972). The speaker used an item which can be located on the scale <all, most, some>. Crucially, in a Horn scale, the term on the left *entails* all the terms on its right hand side, and the terms on the right *implicate* the negation of the terms on their left hand side. The terms on the left are informatively stronger than the terms that they entail. Going back to (14), the reasoning we can do is the following: Since the speaker didn't use a stronger, more informative, term than *some*, it is conversationally implicated that the speaker doesn't believe it is true that John passed *all* of his exams. This "some but not all" inference, however, can be canceled, as shown by the underlined clause.

(15) and (16) present two naturally-occurring examples of implicature cancellations in real discourse. (15) comes from a blog entry entitled "Some things about trekking in Nepal". From the utterance in (15-a), it is clear that the author is only talking about trekking routes *in Nepal*. However, we conversationally implicate that this trek is regarded as one of the best trekking routes only in Nepal, because, given that the writer didn't use a stronger term, it is not considered one of the best trekking routes in Asia or in the world. This implicature is subsequently canceled with the utterance in (15-b).

- (15) a. The "Everest Base Camp" trek as well as the "Around Annapurna" trek are regarded as some of the best trekking routes in Nepal
b. and actually all over the world.
(<http://guyshachar.com/content/blog/1997/trekking-in-nepal/>)

The example in (16), in Catalan, comes from an interview to a painter.

- (16) a. La textura era molt important en aquells primers quadres
'Texture was very important in those first paintings'
b. i, de fet, sempre ho ha estat dins la meva obra quan el que he intentat

ha estat captar la natura.
 ‘and, actually, it has always been so in my work when I try to capture nature.”
 (<http://www.ub.edu/geocrit/b3w-329.htm>)

In the paragraph prior to the sentence in (16), the speaker is talking about his first paintings. The utterance (16-a) contains a temporal scalar item (the scale could be reconstructed as <in all of my paintings, in most of my paintings, in my first paintings>), so it has the potential implicature that texture was not important in most or all of his paintings. Since the speaker is not committed to the truth of these implicatures, he cancels them in (16-b).

Cancellations are often used by linguists to classify some meaning as an implicature, but they have rarely been studied by themselves (with the exception of [Matsumoto \(1997\)](#)), even though cancellation is an interesting phenomenon constrained in several ways. For instance, as we observed in previous work ([Mayol & Castroviejo 2013](#)), presuppositions cannot be used to cancel an implicature, see (17), which is surprising given that implicatures are often considered as a very weak, context-dependent meaning. In fact, even using assertions, some implicatures are not easily cancellable, see (18).

- (17) a. John passed some of his exams. In fact, he passed all of them.
 b. #John passed some of his exams. In fact, it’s amazing he passed all of them.
- (18) A: How many exams did John pass?
 B: #Some. In fact, he passed all of them.

In [Mayol & Castroviejo \(2013\)](#), we propose that canceling requires a particular discourse structure and, in particular, it requires addressing a new Question under Discussion (QUD). Therefore, cancellations are restricted to contexts where adding a new QUD is the right discourse move.

3.1 The QUD Constraint on Focus

We follow [Roberts \(1996\)](#) in assuming that the discourse topic can be modeled as a QUD. In particular, any utterance of B has the presupposition that the last QUD denotes the set of propositions which constitutes the focus semantic value of B. This is called ‘The QUD Constraint on Focus’ and is spelled out formally in (19).

- (19) The Question-Under-Discussion Constraint on Focus ([Kadmon \(2001\)](#) based on [Roberts \(1996\)](#))
 An utterance B whose logical translation is of the form β or $?\beta$, where β

is a formula, is felicitous only if $[[\beta]]^f = \text{last}(\text{QUD}[[B]]^o)$.

The QUD of the following a-sentences are illustrated in the corresponding b-sentences. In each case the QUD corresponds to the focus value of the a-sentence.

- (20) a. $[I_F]$ have two cars.
b. Who has two cars?
- (21) a. I have $[\text{two cars}_F]$.
b. What do you have?
- (22) a. I have $[\text{two}_F]$ cars.
b. How many cars do you have?

If there is CT-marking in an utterance, the QUD will correspond to its CT-value. As it will be shown in the next section, the notion of QUD is important to explain when an implicature cancellation is felicitous in a particular context.

3.2 The QUD constraint on Canceling

An implicature cancellation consists in a context update of $c + q$, where q entails the previous assertion p ($q \subseteq p$), but not its Conversational Implicature ($q \not\subseteq \text{ConvImplicature}(p)$), as illustrated in (23). The utterance in (23-b) cancels the implicature according to which it is not certain that it will rain over the weekend.

- (23) A: Do you think it's possible that it will rain over the weekend?
B: Yes. In fact, it's certain that it will rain.

In [Mayol & Castroviejo \(2013\)](#), we propose that, furthermore, cancellation obeys the QUD Constraint on Canceling, as defined in (24).

- (24) The operation of canceling presupposes a QUD $?q$, such that $\text{QUD } ?q \neq \text{last}(\text{QUD})$.

This constraint requires that the utterance carrying out the cancellation addresses a QUD different from the one that the previous utterance was addressing; that is, for a cancellation to be felicitous, there must be a change of QUD.

This proposal explains the difference in acceptability between (25) and (26).

- (25) a. Who passed some of the exams?
b. John did. In fact, he passed all of them.
- (26) A: How many exams did John pass?
B: #Some. In fact, he passed all of them.

In (25), there is a change of QUD: The first sentence of the answer addresses the explicit QUD ‘Who passed some of the exams?’, while the second addresses a new QUD: ‘How many exams did John pass?’. Therefore, the QUD Constraint on Canceling is satisfied and the discourse is acceptable. In contrast, the constraint is not satisfied in (26), given that both sentences in the answer address the same QUD (‘How many exams did John pass?’), which explains why this discourse is degraded. The reader can also check how the naturally occurring examples provided in (15) and (16) also comply with the QUD Constraint on Canceling.¹

In the next section, we’ll see how the QUD Constraint on Canceling can provide a solution to the Problem of the Last Answer.

4 Implicature Cancellation and the Problem of the Last Answer

Recall that our original goal was to find an explanation for the the asymmetry between (2) and (3). In a nutshell, our proposal is that, in both (2) and (3), there is an attempt to cancel the Distinctiveness Condition, an implicature derived from Manner (Krifka, 1999). (2) does not comply with the QUD Constraint on Canceling and, thus, is unacceptable. In contrast, the particle *too* creates the appropriate context for a cancellation in (3), the QUD Constraint on Canceling is obeyed and the implicature can be canceled.

- (2) A: What did Peter and Pia eat?
B: #Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta_f.
- (3) A: What did Peter and Pia eat?
B: Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta too_f.

Let us spell out in detail how the attempt to cancel would proceed in each case. In both (2) and (3), the first conjunct is addressing the same QUD, shown in (27), given that the CT marking is identical:

- (27) QUD = ‘Who ate what?’

Following Krifka’s Distinctiveness Condition, if the speaker believed that Pia also ate pasta, he would have said ‘Peter and Pia ate pasta’. Therefore, it is implicated that Pia did not eat pasta. In both cases, the second conjunct attempts to cancel this implicature.

In (2), the second conjunct has the same CT-marking as the first one. It is addressing the same QUD (‘Who ate what?’) and, therefore, the QUD Constraint on Canceling is not obeyed and the cancellation is not felicitous.

¹ See also Mayol & Castroviejo (2013) for some experimental evidence in support of this proposal.

On the other hand, in (3), the presence of *too* in focus position forces a new CT-value and hence a new QUD. We follow Krifka in assuming that stressed *too* realizes *verum focus*, in which case the focus value of the sentence would be {Pia ate pasta, Pia didn't eat pasta}, i.e. the denotation of the polar question 'Did Pia eat pasta?'. Now, its CT-value corresponds to 'Who ate pasta?'. Moreover *too* presupposes that someone else ate pasta, which constrains the QUD into the resulting QUD 'Who *else* ate pasta?'. There is, thus, a change of QUD and the Constraint on Canceling is satisfied.

4.1 Two problematic cases

In this section, we will briefly address two cases which are *prima facie* problematic for our account. Consider first the example in (28).

- (28) A: What did Peter and Pia eat?
 B: #Peter_{ct} ate pasta_f, and Pia_f ate pasta.

The first clause addresses the QUD 'Who ate what?', while the second clause addresses the QUD 'Who ate pasta?'. Although the QUD of the second conjunct is different from the QUD of the first one, the answer is not acceptable.

Unlike the previous examples our proposal can account for, in (28-b), the first conjunct indicates a Strategy (which shows via CT-marking), while the second conjunct doesn't, since it does not contain any CT-marking. What this indicates is that a CT-marking is obligatory when we have implicit subquestions to the main QUD. That is, if the first conjunct uses a Strategy via CT-marking to answer the main QUD, the second conjunct must do so as well.

The situation is different in the case of (29). Here, the second conjunct contains CT-marking and it changes the QUD. Still, the answer is not acceptable.

- (29) A: What did Peter and Pia eat?
 B: #Peter_{ct} ate pasta_f, and Pia_{ct} ate pasta in the garden_f.

What is going on here is that the first conjunct addresses the QUD in (30), the second one addresses the QUD in (30-b). What we observe is that QUD₂ is not allowed because, conversationally, we expect the second conjunct of a coordination to address a sub-question of QUD₁.

- (30) a. QUD₁: Who ate what?
 b. QUD₂: Who ate pasta where?

Thus, we propose that the problems that the examples in (28) and (29) incur in do not have to do with the constraints on implicature cancellation or solely CT marking.

Rather, this is a constraint on a coordination of the shape “ β_1 and β_2 ”. Pending further research, we summarize these conditions as follows:

- (31) a. If β_1 indicates a Strategy, β_2 also has to indicate a strategy.
 b. β_2 has to address a QUD $?q$ such that $?q \subseteq \text{last}(\text{QUD})$

5 Conclusions

In this paper, an explanation has been provided for two open questions regarding the Problem of the Last Answer. Unlike previous approaches, which concentrate on the obligatory use of *too* in certain contexts, here we have resorted to the properties of implicature cancellation. The main advantage of this move is that the Problem of the Last Answer is solved, while Krifka’s claim that the Distinctiveness Condition has the status of a conversational implicature can be maintained.

We have also argued that two potential counter examples to this approach can be attributed to the restrictions on coordinated sequences rather than to the constraints on implicature cancellation. These cases merit attention and further research.

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