Formal Pragmatics: The Case of Contrastive Topic

Katsuhiko Yabushita
yabuchan@naruto-u.ac.jp
Department of English
Naruto University of Education

形式語用論
形式化からみえること

The 87th General Meeting of the English Literary Society of Japan
Rissho University
May 23-24, 2015

Table of Contents

1. Review of the Two Existing Approaches to Contrastive Topic

- CT as an information-structural discourse-regulating device (Roberts 1996, Büring 1999, Kadmon 2001)
- CT as a focus-sensitive operator (Hara 2006, Hara & van Rooij 2007, Lee 1999, 2006, Oshima 2002)

2. Alternative Approach to Contrastive Topic

- Review of Partition Semantics of Question and Answer (Groenendijk 1999, Groenendijk & Stokhof 1984)
- Proposal of Partition Semantics and Pragmatics of Contrastive Topic

Crosslinguistic realizations of CT:

- As a morpheme: Japanese –***wa***, Korean –***nun***
- Prosodically:
  - **‘B-accent’** as opposed to ‘A-accent’ in English (Jackendoff 1972)
  - **H*LH%** or **L+H*LH%** in English (Pierrehumbert 1980)
  -
  -
  -

In the following, a contrastive topic-marked constituent is subscripted with ‘CT’.

1.1 CT as an information-structural discourse-regulating device (Roberts 1996, Büring 1999, Kadmon 2001)

1.1.1 Roberts (1996): CT as a "strategy of inquiry" to resolve QUD

Roberts (1996) proposed to model the structure of a discourse, among whose constructs the most relevant one here is that of QUESTION UNDER DISCUSSION (QUD). QUD is a question to be resolved at a given point in a discourse. Sometimes QUD is not directly resolved; instead, a "sub-question" is made into an immediate question as a "strategy of inquiry" to facilitate the resolution of the original QUD.

Example Discourse Involving a CT-sentence

(1) a. Who kissed whom?

b. Well, who did Larry kiss?

c. $[\text{Larry}]_{CT}$ kissed $[\text{Nina}]_{F}$

c′. $^{\#}[\text{Larry}]_{F}$ kissed $[\text{Nina}]_{CT}$.

Observation: the questions and the answer are congruent with each other as they occur in the order in which they do. To use Robert's terms, the congruence can be described as follows: (1c) directly answers (1b), and (1b) is a sub-question of (1a), or, (1b) is part of "strategy of inquiry" aimed at answering (1a).
It is clear that the configuration of contrastive topic and focus has something to do with the congruence.

Japanese Counterpart Example

(1)′ a. Dare-ga dare-ni kisu-o shi-ta no/ka.
who-Nom who-Dat kiss-Acc do-Past Q
'Who kissed who(m)?'

b. Dewa, Rarii-wa dare-ni kisu-o shi-ta no/ka.
well Larry-CT who-Dat kiss-Acc do-Past Q
'Well, who(m) did Larry_{CT} kiss?'

c. Rarii-wa Niina-ni kisu-o shi-ta
Larry-CT Nina-Dat kiss-Acc do-Past
'Larry_{CT} kissed Nina_{F}.'

c′. #Rarii-ga Niina-ni-wa kisu-o shi-ta
Larry-Nom Nina-Dat-CT kiss-Acc do-Past
'Larry_{F} kissed Nina_{CT}.'

Question:

What should the meaning or the function of CT be like to account for the congruence in question?

1.1.2 Büring (1999): Topic Semantic Value

Based on Rooth's (1985, 1991) *focus semantic value* of a sentence, Büring proposed a (contrastive) topic phrase induces another yet different kind of semantic value called "topic semantic value":

(2) **Topic Semantic Values = Sets of Focus Semantic Values**

Notational Conventions:

For a given expression α, the ordinary meaning, the focus meaning, and the topic meaning of α are denoted as follows:

$[\![\alpha]\!]^{o}$: the ordinary meaning of α

$[\![\alpha]\!]^{f}$: the focus meaning of α

$[\![\alpha]\!]^{t}$: the topic meaning of α

(3) a. $[\![(1c)]\!]^{f} = [\![[\text{Larry}]_{CT} \text{ kissed } [\text{Nina}]_{F}]\!]^{f}$; (Focus meaning)

$\lambda p \exists x[p = \text{KISSED}(\text{larry}, x)]$, where $x \in \{\text{Nina, Sue, Mary}, \ldots\}$:

{'Larry kissed Nina', 'Larry kissed Sue', 'Larry kissed Mary',…}

b. $[\![(1c)]\!]^{t} = [\![[\text{Larry}]_{CT} \text{ kissed } [\text{Nina}]_{F}]\!]^{t}$; (Topic meaning)

$\lambda \wp \exists y \exists p[\wp(p) = 1 \ \& \ \exists x[p = \text{KISSED}(y, x)]]$, where $y \in \{\text{Larry, John, Tom}, \ldots\}$, and $x \in \{\text{Nina, Sue, Mary}, \ldots\}$:

{{'Larry kissed Nina', 'Larry kissed Sue', 'Larry kissed Mary'},
{'John kissed Nina', 'John kissed Sue', 'John kissed Mary'},
{'John kissed Nina', 'John kissed Sue', 'John kissed Mary'},…}

1.1.3 Kadmon (2001): Exposition of CT as a "strategy of inquiry" based on Topic Semantic Value

- **Topic Semantic Values = Sets of Focus Semantic Values = Sets of Questions**;
  on the assumption that the meaning of an interrogative, a question is the set of possible answers, a focus semantic value.

$[\![(1c)]\!]^{f} = [\![[\text{Larry}]_{CT} \text{ kissed } [\text{Nina}]_{F}]\!]^{f}$; (Focus meaning)

$\lambda p \exists x[p = \text{KISSED}(\text{larry}, x)]$, where $x \in$ {Nina, Sue, Mary, …}:

{'Larry kissed Nina', 'Larry kissed Sue', 'Larry kissed Mary',…}

$= [\![(1b)]\!]^{o} = [\![$'Who does Larry kiss?'$]\!]^{o}$

- That the focus meaning of (1c) is identical to the meaning of (1b) accounts for the congruence between (1b) and (1c), i.e. that (1c) is a direct answer to (1b); $[\![(1c)]\!]^{f} = [\![(1b)]\!]^{o}$

- That (1b) is an element of the topic meaning of (1c), i.e. the set of "subquestions" of (1a) accounts for the intuition that (1c) answers (1b) as "part of inquiry" aimed at answering (1a);
  $[\![(1b)]\!]^{o} \in [\![(1c)]\!]^{t}$ & $\cup [\![(1c)]\!]^{t} = [\![(1a)]\!]^{o}$

(1) a. Who kissed whom?

b. (Well,) who did Larry kiss?

c. $[\text{Larry}]_{CT}$ kissed $[\text{Nina}]_{F}$

c′. $^{\#}[\text{Larry}]_{F}$ kissed $[\text{Nina}]_{CT}$.

(4) “Discourse Tree” (Büring, 2003) for (1)

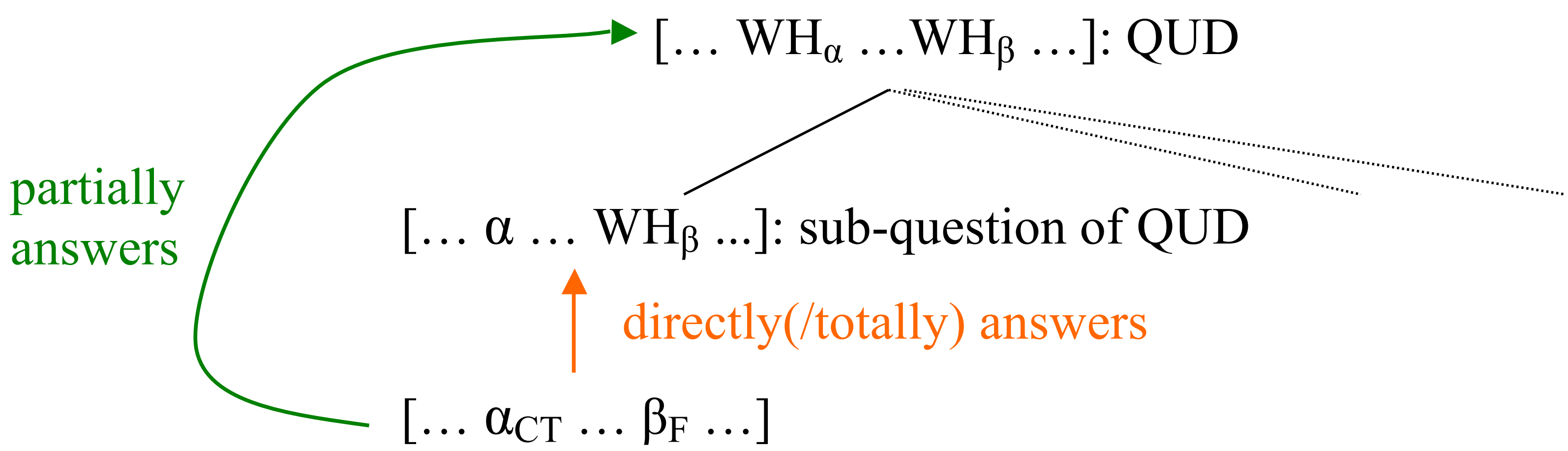
$\llbracket$ QUD: (1a)$\rrbracket^{o} = \cup \llbracket(1c)\rrbracket^{t}$

$\llbracket$subq$_1$: (1b)$\rrbracket^{o} = \llbracket(1c)\rrbracket^{f} \in \llbracket(1c)\rrbracket^{t}$, subq$_2$: “Who does John kiss?”, …, subq$_n$

$\llbracket(1c)\rrbracket^{o} \in \llbracket(1b)\rrbracket^{o} = \llbracket(1c)\rrbracket^{f} \in \llbracket(1c)\rrbracket^{t}$, “Lary kissed Sue”, …

(1) a. Who kissed whom?
b. (Well,) who did Larry kiss?
c. [Larry]$_{CT}$ kissed [Nina]$_F$

Schematic Summary of Roberts-Büring-Kadmon Analysis of CT



The function of a sentence, [… α_{CT} … β_F …] is to signal the (explicit or implicit) existence of a question (denoted by) [… WH$_\alpha$ …WH$_\beta$ …] as QUD and indicate that the sentence is not a direct answer to the QUD, but to one of its sub-questions.

1.1.4 Empirical Problems with Roberts-Büring-Kadmon Line of Analysis

The line of analysis in question seems to have for consideration, only examples of exactly one instance of contrastive topic phrase and focus phrase each. However, there are plainly examples in which more than one instance of CT and no (explicit) instance of focus occur, like (5).

(5) Jon-wa Mearii-wa Biru-ni-wa shookai-shi-ta.
John-CT Mary-CT Bill-to-CT introduction-do-Past
'John$_{CT}$ introduced Mary$_{CT}$ to Bill$_{CT}$.'

- **It is not clear how the current line of analysis could be extended to "non-canonical" examples like (5).**

  What should the topic semantic value of (5) be like? (For detailed arguments against the topic-semantic-value analysis of CT, see Constant (2014).)

- **They do not address the implicational features of CT that will be reviewed in the following.**

1.2 CT as a focus-sensitive operator (Hara 2006, Hara & van Rooij 2007, Lee 1999, 2006, Oshima 2002)

Thesis: CT-marker is a focus-sensitive operator on a par with particles like English *even*, *only*, and *also*, or their counterparts in other languages.

1.2.1 Lee 1999, Hara 2006: RPI as a conventional implicature

Lee (1999, 2006) and Hara (2006) argued that Reversed Polarity Interpretation (RPI) was a conventional implicature, which is not cancellable; furthermore, it was a scalar implicature:

(6) Semantics and Pragmatics of CT

a. CT($\langle\beta, \alpha\rangle$), where $\langle\beta, \alpha\rangle$ is a structured meaning composed of the background and the focus. (von Stechow 1991, Krifka 2001)

b. $\beta(\alpha)$ (assertion)

c. $\exists y[y \neq \alpha \wedge \alpha < y \wedge \neg[\beta(y)]]$ (conventional implicature)

(7) Jon-wa paatii-ni kita ga, Meari-wa ko-naka-tta.
John-CT party-to came but Mary-CT come-not-Past
‘[John]$_{CT}$ came to the party, but [Mary]$_{CT}$ did not.’

(8) a. John [touched]$_{CT}$ Bill(, but didn’t hit him).

touch < hit

b. Jon-wa Biru-ni fure-wa shi-ta
John-Top Bill-Dat touching-CT do-Past

(ga, tataki-wa shi-naka-tta).
but hitting-CT do-Neg-Past

Problem: there are obvious counterexamples in which the alleged conventional implicature is canceled, or does not simply hold like (9) and (10).

(9) Jon-wa kita ga, sonohokano hito nikanshitewa shira-nai.
John-CT came but the-other people about know-not
‘[John]$_{CT}$ came, but as for the other people, I don’t know whether they came.’

(10) Jon-wa Biru-ni fure-wa shi-ta ga,
John-Top Bill-Dat touching-CT do-Past but
tatai-ta kadooka wa shira-nai.
hit-Past whether Top know-not
‘John touched Bill, but (I) don’t know whether he hit him or not.’

1.2.2 Oshima (2002)

Oshima (2002) proposed the following interpretation rule for a Japanese CT marker *wa* as an operator taking a structured proposition as its argument:

(11) a. CT ($\langle\beta, \alpha\rangle$)

b. $\beta(\alpha)$ (assertion)

c. $\exists x[x \neq \alpha \wedge -[\beta(x)]]$ (presupposition), where − is a weak negation in three-valued logic. ('− p' means 'It is not known that p is the case'.)

Problem: It is doubtful that '$\exists x[x \neq \alpha \wedge -[\beta(x)]]$' is a presupposition for 'CT ($\langle\beta, \alpha\rangle$)' to be felicitous.

(12) Q: Dare-ga paatii-ni ki-mashi-ta ka.
who-Nom party-to come-Polite-Past Q
'Who came to the party?'

A: Jon-wa ki-mashi-ta (kedo).
John-CT come-Polite-Past (but)
'John_{CT} came.'

Simply, (12A) can be used perfectly felicitously in contexts where it is not presupposed that someone other than John is not known to have come to the party; for example, it is not necessary for the questioner to assume that someone other than John is not known to have come to the party.

1.2.3 Hara & van Rooij (2007)

Hara & van Rooij (2007) proposed an interpretation rule for CT that is very similar to Oshima's proposed independently:

(13) a. CT ($\langle\beta, \alpha\rangle$)

b. $\beta(\alpha)$ (assertion)

c. $\exists x[x \neq \alpha \wedge \neg K_{sp}[\beta(x)]]$ (implicature), where K_{sp} is an epistemic operator and '$\neg K_{sp}\varphi$' reads 'The speaker doesn't knows φ'.

Problem: It is doubtful that '$\exists x[x \neq \alpha \wedge \neg K_{sp}[\beta(x)]]$' is an implicature of (the utterance) of CT ($\langle\beta, \alpha\rangle$).

Consider the following scenario. A test was administered to a class of pupils, the teacher knows of all the pupils who passed the test or not and the father of Mary, a pupil, who is rather nosy asks the teacher who passed the test. To the question, the teacher can answer perfectly felicitously as in (14).

(14) Mary-wa goukakushimashi-ta ga,
Mary-CT pass (the test)-Past but

(hokano seito nikanshite-wa iemase-n.)
other pupils as-to-CT can-tell-not
'Mary$_{CT}$ passed the test, (but I can't tell as to the others if they passed it or not).'

In (14), the speaker, i.e. the teacher knows of all the students including Mary if they passed the test or not, but she can felicitously utter "Mary$_{CT}$ passed the test", which is incompatible with Hara & van Rooij's analysis. The use of CT in (14) is not so much characterized as ignorance on the part of the speaker as confidentiality, or secrecy.

“Non-canonical” examples of CT like (5) is problematic to the current approach as well.

(5) Jon-wa Mearii-wa Biru-ni-wa shookai-shi-ta.
John-CT Mary-CT Bill-to-CT introduction-do-Past
‘John_{CT} introduced Mary_{CT} to Bill_{CT}.’

Question: What would the following alleged semantic representation for (5) mean and presuppose/implicate?

$$\text{CT}(\langle \lambda x.\text{CT}(\langle \lambda y.\text{CT}(\langle \lambda z.\text{INTRDUCED-TO}(x, y, z), \text{bill}\rangle), \text{mary}\rangle), \text{john}\rangle)$$

2 Alternative Approach: Partition Semantics and Pragmatics of Contrastive Topic

2.1 Partition Semantics and Pragmatics of Question and Answer: Groenendijk (1999), Groenendijk & Stokhof (1984)

(15) Definition (*Context*)

A context is an equivalence relation on a subset of the set of possible worlds, or equivalently, a partition of the subset.

(16) Definition (*Abstract, or Predicate Meaning of an Interrogative*)

The abstract meaning of an interrogative sentence is a lambda abstract binding the variables substituted for the wh-phrases in the interrogative sentence.

N.B. The abstract meaning of an interrogative sentence corresponds to the background meaning of a sentence in the structured-meaning approach to focus on the assumption that a wh-phrase is (inherently) focused.

E.g.

Interrogative Sentence	*Abstract Meaning*
Did John come to the party?	came-to-the-party´(j)
Who came to the party?	λx.came-to-the-party´(x)
Who bought what?	λyλx.bought´(x, y)
Who ate what at which place?	λzλyλx.ate-at´(x, y, z)

N.B. When the number of wh-phrase instances in an interrogative sentence is *n*, the abstract meaning is an *n*-place predicate; notably, the abstract meaning of a Yes-No question sentence is a zero-place predicate, i.e. a proposition.

- Questions partition the context into (mutually exclusive) blocks.

(17) Definition (Context Update by Interrogatives)

Suppose that $\lambda\vec{x}\phi$ is the abstract meaning of an interrogative and C is a context. The update of C by the interrogative, denoted $C + \lambda\vec{x}\phi$ is defined as follows:

$$C + \lambda\vec{x}\phi = \{\langle w, w'\rangle \in C\text{: } [\![\lambda\vec{x}\phi]\!]^{w} = [\![\lambda\vec{x}\phi]\!]^{w'}\}.$$

An illustration:

(18) A context consisting of three possible worlds, w_1, w_2, w_3:

$$C = \begin{Bmatrix} \langle w_1, w_1\rangle & \langle w_2, w_1\rangle & \langle w_3, w_1\rangle \\ \langle w_1, w_2\rangle & \langle w_2, w_2\rangle & \langle w_3, w_2\rangle \\ \langle w_1, w_3\rangle & \langle w_2, w_3\rangle & \langle w_3, w_3\rangle \end{Bmatrix}$$

Suppose that John came to the party in worlds, w_1 and w_2.

(19) C + came-to-the-party′(j) ‘Did John come to the party?’

$$= \left\{ \begin{array}{lll} \langle w_1, w_1 \rangle & \langle w_2, w_1 \rangle & \\ \langle w_1, w_2 \rangle & \langle w_2, w_2 \rangle & \\ & & \langle w_3, w_3 \rangle \end{array} \right\} \; (= C')$$

In the form of partition:

$C' =$

(the set of possible worlds where) John came to the party.
(the set of possible worlds where) John didn’t come to the party

NB: Each block corresponds to a complete and exhaustive answer.

- Indicatives eliminate blocks in which they are false from the context.

(20) Definition (Context Update by Indicatives)

Suppose that ψ is the meaning of an indicative and C is a context. The update of C by the indicative, denoted $C + \psi$ is defined as follows:

$$C + \psi = \{\langle w, w'\rangle \in C\colon [\![\psi]\!]^{w} = [\![\psi]\!]^{w'} = 1\}.$$

An illustration:

(21) C' + 'Yes, he came to the party' (came-to-the-party′(j))

$$= \left\{ \begin{matrix} \langle w_1, w_1\rangle & \langle w_2, w_1\rangle \\ \langle w_1, w_2\rangle & \langle w_2, w_2\rangle \\ & \end{matrix} \right\}$$

=	(the set of possible worlds where) John came to the party.

In the following, we will use only the partition format for the ease of illustration.

Another example:

(22) *C* + 'Who came to the party?' (λx.came-to-the-party´(x))

Suppose Mary and John are the only relevant people to consider whether they came to the party.

(23) C′=

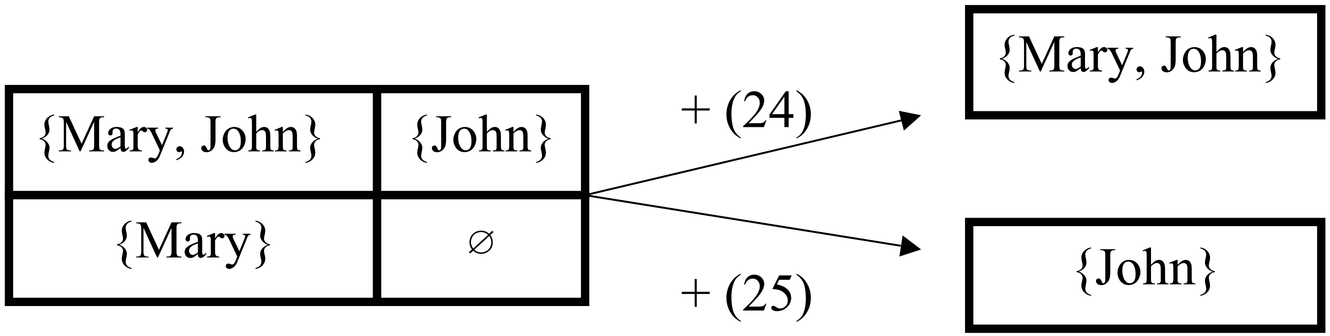
{Mary, John}	{John}
{Mary}	∅

In the partition, the block with $\{a_1, a_2, \ldots, a_n\}$ represents the one for the set of possible worlds in which $a_1, a_2, \ldots, a_n$ and only $a_1, a_2, \ldots, a_n$ came to the party.

(24) Meari to Jon ga ki-mashi-ta.
Mary and John Nom come-Polite-Past
'Mary and John came.'

(25) Jon ga ki-mashi-ta.
John Nom come-Polite-Past
'John came.

(26)



Another example:

(27) *C* + (28) (‘Who ate what?) (λyλx.ate′(x, y))

(28)

Dare	ga	nani	o	tabe-mashi-ta	ka.
who	Nom	what	Acc	eat-Polite-Past	Q

‘Who ate what?’

Suppose that the relevant domain for the eater is John and Mary and that for the eatee is hamburger and salad.

(29)

⟨j, {h, s}⟩ , ⟨m, {h, s}⟩	⟨j, {h}⟩ , ⟨m, {h, s}⟩	⟨j, {s}⟩ , ⟨m, {h, s}⟩	⟨j, ∅⟩ , ⟨m, {h, s}⟩
⟨j, {h, s}⟩ , ⟨m, {h}⟩	⟨j, {h}⟩ , ⟨m, {h}⟩	⟨j, {s}⟩ , ⟨m, {h}⟩	⟨j, ∅⟩ , ⟨m, {h}⟩
⟨j, {h, s}⟩ , ⟨m, {s}⟩	⟨j, {h}⟩ , ⟨m, {s}⟩	⟨j, {s}⟩ , ⟨m, {s}⟩	⟨j, ∅⟩ , ⟨m, {s}⟩
⟨j, {h, s}⟩ , ⟨m, ∅⟩	⟨j, {h}⟩ , ⟨m, ∅⟩	⟨j, {s}⟩ , ⟨m, ∅⟩	⟨j, ∅⟩ , ⟨m, ∅⟩

Definitions of “Complete Answer”, “Partital Answer”, and “Sub-question”

Suppose that S is an indicative sentence, $[\![S]\!]$ is the proposition denoted by S, Q and Q′ are the abstract meanings of interrogative sentences, and W is the set of possible worlds.

(1) *Total Answer*

S is a total answer to Q iff $[\![S]\!] \in W+Q$. ($[\![S]\!]$ is identical to one of the blocks of W+ Q.)

(2) *Partial Answer*

S is a partial answer to Q iff $[\![S]\!] \neq \varnothing$ and there is an $X \subset W+Q$ such that $[\![S]\!] = \cup X$. ($[\![S]\!]$ is a union of more than one block of partition W+ Q.)

(3) *Sub-question*

Q is a sub-question of Q′ iff a total answer to Q is a partial answer to Q′. (Q partitions W more coarsely than Q′.)

2.2 Partition Semantics and Pragmatics of Contrastive Topic

(30) Semantics of CT

Suppose that

(i) γ is a sentence with CT marked phrases,

(ii) ?-γ is the interrogative sentence directly corresponding to γ in that only the focused phrases are replaced by the corresponding wh-phrases and if there are no focused phrase, ?-γ is a polar interrogative sentence.

(iii) the semantic representations for the CT-marked phrases and the corresponding variables for the wh-phrases are $\vec{t}$, and $\vec{x}$, respectively,

(iv) the abstract meaning of ?-γ is $\lambda\vec{x}.R$, and

(v) *wh*-γ is the interrogative sentence resulting from γ by replacing the CT marked phrases as well as the focused phrases if any with the corresponding wh-phrases,

(vi) the variables of the wh-phrases corresponding to the CT marked phrases are $\vec{y}$. Then,

(vii) the abstract meanings of *wh*-γ is $\lambda\vec{y}\lambda\vec{x}.R[\vec{t}/\vec{y}]$, where $R[\vec{t}/\vec{y}]$ is the result of replacing $\vec{t}$ in R with $\vec{y}$.

(31) Pragmatics of CT

Sentence γ explicitly or implicitly "presupposes" interrogative sentence *wh*-γ as QUD; however, the answerer, or the utterer of γ opts to answer ?-γ instead of *wh*-γ *for some reason*.

Roberts' (1996) Insight of CT as a Discourse-Regulating Device Captured Free from the "Non-Canonical Example" Problem

Given γ, ?-γ, and *wh*-γ as defined above, the following hold:

(i) γ is a total answer to ?-γ,
(ii) γ is a partial answer to *wh*-γ, and
(iii) ?-γ is a sub-question of *wh*-γ.

The analysis is equally applicable to the so-called "non-canonical", or multiple-CT examples, for the types of semantic values involved are constant no matter how many CT-marked phrases appear in a sentence.

An illustration of the current analysis: γ: (32), *wh*-γ: (33), ?-γ: (34)

(32) γ: Jon-wa paatii-ni ki-mashi-ta.
John CT party-to come-Polite-Past
'John$_{CT}$ came to the party.'

(33) *wh*-γ: Dare-ga paatii-ni ki-mashi-taka ka
who-Nom party-to come-Polite-Past Q
'Who came to the party?'; λx.came-to-the-party´(x)

(34) ?-γ: Jon-wa paatii-ni ki-mashi-taka ka
John-CT party-to come-Polite-Past Q
'Did John come to the party?'; came-to-the-party´(j)

According to the current analysis, the utterance of (32) "presupposes" interrogative sentence (33), or question denoted by it as QUD; however, instead of directly answering the question, the speaker answers interrogative sentence (34) for some reason.

In terms of partition semantics of questions and answers, instead of answering the question represented by the partition in (35), the speaker opts to answer that in (36).

(35)

{Mary, John}	{John}
{Mary}	∅

(36)

{Mary, John}	{John}
{Mary}	∅

The question is why.

Possible Reason 1 (Lack of Information)

As for John, the speaker knows for sure that he came to the party, but for other people, in this case, Mary, she doesn't know if they came to the party. So she restricts her assertion only to that John came, shying away from the issue as to whether the other people came to the party or not. This will nicely account for the continuation displayed in (37).

(37) Jon-wa paatii-ni kita ga, sonohokanohito nikanshitewa shira-nai.
John-CT party-to came but the-other-people about know-not
'John$_{CT}$ came to the party, but I don't know about the other people.'

This feature of CT, i.e. that it can be used when the speaker doesn't have enough information to resolve the original question under consideration, is what Oshima's analysis, (9) and Hara & van Rooij's, (13) captured.

If the answerer uttered (38) instead of (37), she would be taken by the hearer to imply that the other people did not come to the party due to the exhaustification mechanism (See van Rooij & Schulz 2006 for a formal formulation), which would violate the Maxim of Quality.

(38) Jon-ga paatii ni ki-mashi-ta.
John Nom party to come-Polite-Past
'John came to the party.'

Possible Reason 2 (Secrecy)

When the answerer wants to keep it secret whether the other people than John came to the party or not, she answers question (34), whose partitional meaning is (36). Its blocks are specified with respect to whether John came to the party or not, but not for the other people. The proposed use of CT in conjunction of secrecy is motivated by the natural continuation observed between the first and the second sentences in examples like (39).

(39)	Jon-wa/$^{?}$ga	paatii-ni	ki-ta	ga,
	John CT/Nom	party-to	come-Past	but

sonohoka-no	hito	nikanshite-wa	ie-nai
the-other-of	people	about can	tell-not

‘John$_{CT}$ came to the party, but I can’t tell about the other people.’

Possible Reason 3 (Extension Specification by Positive and Negative Instances)

When the extension of a one-place predicate is asked by an interrogative sentence like (33), one way to specify the extension is to specify the positive instances of the extension and let the exhaustification imply that the rest of the domain is in the negative extension of the predicate. Another way is to specify both the positive and the negative instances of the extension. Specifically, for the positive instances of the predicate, the answerer specifies that it is true that they are in the extension of the predicate, and for the negative instances, she specifies that it is not true that they are in the extension the predicate. This can be seen as she answers a wh-question by answering two Yes-No questions. To use (32) as an example, in our current analysis, (32) can be seen as the part of specifying the positive instances by answering the (implicit) question ‘Did John come to the party?’ in the two-part way of specifying the extension of the predicate under discussion. Then, (32) is expected to be followed by a sentence specifying some of the negative instances.

In terms of partition,

(40)

{Mary, John}	{John}
{Mary}	∅

Suppose that John, but not Mary came to the party. To specify who came to the party, instead of choosing the right-upper block of the partition of (40) induced by (33), the speaker can adopt a two-stage specification; first, choosing the upper block of the (coarser-grained) partition, (41) by (42) and then, choosing the right-hand block of the partition, (43) by (44).

(41)

{Mary, John}	{John}
{Mary}	∅

(42) Jon-wa ki-ta.
John-CT come-Past
'John$_{CT}$ came.'

(43)

{Mary, John}	{John}
{Mary}	∅

(44) Meari-wa ko-naka-tta.
Mary-CT come-not-Past

This feature of CT, i.e., the specification of the extension of the predicate under question by specifying the positive instances and the negative instances separately is considered to be the property of CL which has been traditionally described as Reversed Polarity Implicature (RPI) in the literature.

Conclusions

- We have reviewed two representative approaches to Contrastive Topic and have pointed out empirical problems.
- We have proposed CT should be analyzed in terms of partition semantics of questions and answers.
- We have proposed that a CT-marked phrase "presuppose" the wh-question, but instead of answering the question directly, for some reason, the speaker answer a question minimally different from the presupposed question in that the wh-phrase's value is fixed to that of the CT-marked phrase.
- We have seen that the proposed analysis is free from the empirical problems for the existing approaches; especially, it is applicable to sentences with more than one instance of CT-marked phrase.
- We have demonstrated that the current analysis captures the insights of both of the two existing approaches to CT; i.e. CT as a discourse

regulator for question answering and CT as a conventional-implicature inducing operator; specifically,

  - the "immediately corresponding" question is a sub-question of the "presupposed" question, i.e. QUD, and
  - what has been described as "conventional implicatures" of CT in the literature is now analyzed as conversational implicatures due to the various reasons why the speaker answers a sub-question instead of the QUD.

- In the above sense, the current analysis can be said to have the best of both worlds of the two existing approaches to CT and more.

Thank you very much!

References

Büring, D. (1999) "Topic". In: Bosch, Peter & Rob van der Sandt (eds) *Focus -- Linguistic, Cognitive, and Computational Perspectives*. CUP. 142-165.

Büring, D. (2003) "On D-trees, Beans, and B-accents". Linguistics and Philosophy 26(5): 511-545.

Constant, N. (2014) Contrastive Topic: Meanings and Realizations. Ph.D. thesis. University of Massachusetts, Amherst.

Groenendijk, J. (1999) "The Logic of Interrogation" In *Proceedings of the Ninth Conference on Semantics and Linguistic Theory*

Groenendijk, J. and M. Stokhof (1984) *Studies on the Semantics of Questions and the Pragmatics of Answers*. Doctoral Dissertation. University of Amsterdam.

Hara, Y. (2006) "Implicature Unsuspendable: Japanese Contrastive *wa*". In *Proceedings of Texas Linguistics Society 8* , Cascadilla Press.

Hara, Y. & R. van Rooij (2007) "Contrastive Topics Revisited: a Simpler Set of Topic-Alternatives". Talk given at NELS 38.

Jackendoff, R.S. (1972) *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

Kadmon, N. (2001) *Formal Pragmatics*. Blackwell Publisher.

Krifka, M. "For a structured meaning account of questions and answers" (revised version). In C. Fery & W. Sternefeld (eds.), *Audiatur Vox Sapientia. A Festschrift for Arnim von Stechow*, Akademie Verlag (= studia grammatica 52), Berlin 2001, 287-319.

Lee, C. (1999) "Contrastive Topic: A Locus of the Interface—Evidence From Korean and English". In K. Turner (ed) *The Semantics/Pragmatics Interface from Different Points of View* (CRiSPI 1), Elsevier Science.

Lee, C. (2006) "Contrastive Topic/Focus and Polarity in Discourse". in K.von Heusinger and K. Turner (eds.), Where Semantics Meets Pragmatics, CRiSPI 16, Elsevier. 381-420.
Oshima, D. (2002) "Contrastive topic as a paradigmatic operator". Handout for Workshop on Information Structure in Context. Universität Stuttgart, November 2002.
Pierrehumbert, J.B. (1980) *The Phonology and Phonetics of English Intonation*. Ph.D. thesis, MIT.
Roberts, C. (1996) "Information Structure: Towards an integrated formal theory of pragmatics". In Jae Hak Yoon and Andreas Kathol (eds.) OSUWPL Volume 49: Papers in Semantics The Ohio State University Department of Linguistics.
Rooij, R. van & K. Schulz (2006) "Pragmatic Meaning and Non-monotone Reasoning: The Case of Exhaustive Interpretation". Linguistics and Philosophy 29: 205-250.
Rooth, M. (1985) *Association with Focus*. Ph.D. thesis., University of Massachusetts, Amherst.
Rooth, M. (1992) "A Theory of Focus Interpretation". Natural Language Semantics 1(1):75-116.
Stechow von, A. (1991) "Focusing and background operators" In Werner Abraham (ed.), *Discourse Particles: Descriptive and theoretical investigations on the logical, syntactic and pragmatic properties of discourse particles in German*. John Benjamins Publishing Company.