Scope Inversion in Japanese: 
Contrastive Topics require Implicatures

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Japanese Scope Inversion

Japanese has a scope inversion phenomenon by Contrastive Topic (CTopic) marking that is similar to:

- the Korean Contrastive Topic marking (see Lee 2000)
- the Topic-Focus contour observed in German (see Büring 1997 among others)
Japanese Scope Inversion

(1) a. sensei-ga minna-o shikara-nakat-ta
teacher-Nom everyone-Acc scold-Neg-Past
‘The teacher scolded no one.’ (∀¬)
‘it is not the case that the teacher scolded everyone.’ (¬∀)

b. sensei-ga minna-wa shikara-nakat-ta
teacher-Nom everyone-Top scold-Neg-Past
‘it is not the case that the teacher scolded everyone.’
(¬∀ only)
Another observation of *wa*

Contrastive Topic induces implicatures.

(2) a. Who came to the party?

b. JOHN-wa  ki-ta  
John-CTop come-Past

As for John, he came

(Implicature: I don’t know about others)

(3) a. How many people came to the party?

b. 3-nin-wa  kita  
3-Class-CTop came

3 people came

(Implicature: I don’t know whether more than three came. (At least 3 people came.))
My claim

• The scope inversion is due to this property of CTopic: CTopic always induces implicatures.
• If a sentence contains a CTopic, only the reading that has implicatures can survive.

(4) MINNA-wa ko-nakat-ta
Everyone-CTop come-Neg-Past

• Two logical operators:
• Quantifier ‘everyone’ ∀ and Negation
• Two possible propositions
Implicatures

¬∀ reading: Not everyone came
Implicatures

∀¬ reading: No one came
Implicatures

$\neg \forall$ reading: Not everyone came
   $\sim \rightarrow$ Some people came

$\forall \neg$ reading: No one came
   (no implicatures)
   $\asymp \rightarrow$ Some people came (Contradicted)
   $\Rightarrow \rightarrow$ Most people didn’t come (Entailed)

Contrastive Topic requires implicature
$\rightarrow$ Only $\neg \forall$ reading can survive.
How do we compute Implicatures?

Büring 1997: Disputability

German: Topic-Focus contour

(5) a. Alle Politiker sind nicht korrupt
all politicians are not corrupt
‘No politician is corrupt.’ (\(\forall \neg\))
‘Not all politicians are corrupt.’ (\(\neg \forall\))

b. /ALLE Politiker sind NICHT\ korrupt
‘Not all politicians are corrupt.’
(\(\neg \forall\) only)(Büring 1997)
Ordinary Value and Focus Value

The falling accent on the negation *nicht* generates a Focus value, which is a yes-no question (a set of propositions).

(6) /ALLE Politiker sind [NICHT\_]\_F korrupt

(7) a. \[\lnot \forall \]^o = \lnot all(politician)(\lambda x.\text{corrupt}(x))

b. \[\lnot \forall \]^f = \{\lnot all(politician)(\lambda x.\text{corrupt}(x)), all(politician)(\lambda x.\text{corrupt}(x))\}
Further, the rising accent on alle ‘all’ generates a Topic value, which is a set of questions.

\( (8) \quad [\neg \forall]^t \)

a. \([[\text{not}]_F \, [[\text{all}]_T \, \text{politician} \, [\, [\, \text{corrupt} \, ]]]]]

b. \{\neg\ \text{all}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{all}(\text{politician})(\lambda x.\text{corrupt}(x))\}, \{\neg\ \text{most}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{most}(\text{politician})(\lambda x.\text{corrupt}(x))\}, \{\neg\ \text{some}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{some}(\text{politician})(\lambda x.\text{corrupt}(x))\}, \{\neg\ \text{one}(\text{politician})(\lambda x.\text{corrupt}(x)), \text{one}(\text{politician})(\lambda x.\text{corrupt}(x))\}
∀¬ reading

(9) /ALLE Politiker sind [NICHT\]_F korrupt

(10) a. [∀¬]₀=all(politician)(λx.¬corrupt(x))
    b. [∀¬]ⁿ={all(politician)(λx.≡corrupt(x)),
               all(politician)(λx.corrupt(x))}
∀¬ reading

(11)  \([∀¬]^t\)

a. \([\text{all}_T \text{ politician } [ \text{not}_F [ \text{corrupt } ]]]\]

b. \{\text{all}(\text{politician})(λx.¬\text{corrupt}(x)),
\text{all}(\text{politician})(λx.\text{corrupt}(x))\},
\{\text{most}(\text{politician})(λx.¬\text{corrupt}(x)),
\text{most}(\text{politician})(λx.\text{corrupt}(x))\},
\{\text{some}(\text{politician})(λx.¬\text{corrupt}(x)),
\text{some}(\text{politician})(λx.\text{corrupt}(x))\},
\{\text{one}(\text{politician})(λx.¬\text{corrupt}(x)),
\text{one}(\text{politician})(λx.\text{corrupt}(x))\}\}
Disputability

Büring (1997) claims that a Topic-marked sentence seeks for disputable ‘questions’ in the Topic value.

¬∀ Disputable:
Are there actually some corrupt politicians?
or how many are not corrupt?

∀¬ Not Disputable:
It is not true that some politicians are corrupt
It is entailed that most politicians are such that they are not corrupt
(12)  a. sensei-ga minna-o shikara-nakat-ta
    teacher-Nom everyone-Acc scold-Neg-Past
    ‘as for everyone the teacher did not scold them.’
    (\(\forall \neg\))
    ‘it is not the case that the teacher scolded everyone.’ (\(\neg\forall\))

    b. sensei-ga MINNA-wa shikara-nakat-ta
    teacher-Nom Everyone-CTop scold-Neg-Past
    ‘it is not the case that the teacher scolded everyone.’ (\(\neg\forall\) only)
Going back to Japanese

• In German, the negation was marked by Focus accent, which generates the Focus value in Büring’s term.

• In Japanese, it is not clear whether the negation is Focus-marked in the CTopic sentences.

• The negation morpheme *nakat* does not indicate any phonological nor morphological difference relative to non-CTopic counterpart.
Presupposition Failure

- I employ the mechanism developed by Sauerland (2001) to compute implicatures.
- I propose that if a sentence contains a CTopic, it presupposes a particular subset of scalar alternatives.
- Sauerland (2001) states that a scalar alternative becomes an implicature ‘only if the scalar alternative is stronger than the assertion.’
- In our case, since CTopic-marked sentences always induce implicatures, they must have a scalar alternative stronger than the assertion in order to be interpreted properly.
Presupposition

(13) **CONTRASTIVE**\(<B, T>\)

\[\exists T'[T' \in \text{ALT}_C(T) \& B(T') \text{ entails } B(T) \& B(T) \text{ doesn’t entail } B(T')]\] (presupposition)

(14) a. MINNA-wa ko-nakat-ta
    Everyone-CTop come-Neg-Past
    Everyone did not come.

    (available reading)

b. It is not the case that all the people came.

    (available reading)

c. All the people are such that they didn’t come.
    (unavailable reading)

(15) \(B = \lambda \varphi \in D <<e, t>, t> \cdot \neg \varphi(\lambda y. \text{come}(y))\)

(16) \(T = \lambda P. \forall x[\text{person}(x)][P(x)]\)

(17) \(T' = \lambda P. \text{some}(x)[\text{person}(x)][P(x)]\)
\neg \forall: \text{ Presupposition}

(18) \text{CONTRASTIVE}(\langle B, T \rangle) \\
\exists T'[T' \in ALT_C(T) \& B(T') \text{ entails } B(T) \& B(T) \text{ doesn’t entail } B(T')] \text{ (presupposition)}

(19) \neg \forall x[[\text{person}(x)][\text{come}(x)]] \quad (=B(T))

a. scalar alternative:
   \neg \text{some}(x)[[\text{person}(x)][\text{came}(x)](=B(T'))

b. B(T') entails B(T)

c. B(T) doesn’t entail B(T')
\(\neg\forall:\ C\text{-Topic Induces Implicatures}\)

(20) CONTRASTIVE(\(\langle B, T \rangle\)) ⇔
   a. B(T) (assertion)
   b. \(\forall T' [T' \in ALT_C(T) \& B(T') \text{ entails } B(T) \& B(T) \text{ doesn't entail } B(T')]\)
      \(\rightarrow Poss(\neg B(T'))\) (implicature)

(21) a. \(\neg\forall x [\text{person}(x)\text{[come}(x)\text{]}\]
   b. Implicature:
      \(Poss\)
      \(\neg\exists x [\text{some}(x) [\text{person}(x)\text{[come}(x)\text{]}\]
      (=\neg B(T'))}
∀¬: Presupposition Failure

(22) \( \forall x[[\text{person}(x)][\neg\text{come}(x)]] \) \( (=B(T)) \)

a. scalar alternative:
   some\( (x)[[\text{person}(x)][\neg\text{came}(x)]] \)
   \( (=B(T')) \)

b. \( B(T') \) doesn’t entail \( B(T) \)

c. \( B(T) \) entails \( B(T') \)

We get the same results for:

- \( \text{few}(x)[[\text{person}(x)][\neg\text{came}(x)]] \)
- \( \text{most}(x)[[\text{person}(x)][\neg\text{came}(x)]] \)
- \( \text{more-than-half}(x)[[\text{person}(x)][\neg\text{came}(x)]] \)
C-Topic Requires Implicatures

- None of its scalar alternatives entails $\forall x[[\text{person}(x)][\neg\text{came}(x)]]$
- $\not\exists T' [T' \in \text{ALT}_C(T) \& B(T') \text{ entails } B(T) \& B(T) \text{ doesn’t entail } B(T')]$
- $\forall \neg$ causes Presupposition Failure
- Only $\neg \forall$ meets the presupposition and has an implicature.
- Only $\neg \forall$ is the available reading.

Disambiguation by CTopic:
- Filtering out the propositions that do not induce implicatures.
Further Data 1: Affirmatives

(23) # Minna-wa kita.
Everyone-CTop came

• Only one logical operator: only one possible reading
• $\forall x[[\text{person}(x)][\text{came}(x)]]$
• none of its scalar alternatives entails it
• $\text{some}(x)[[\text{person}(x)][\text{come}(x)]]$, $\text{most}(x)[[\text{person}(x)][\text{come}(x)]]$, $\text{few}(x)[[\text{person}(x)][\text{come}(x)]]$
• the proposition causes presupposition failure
• This proposition is not compatible with the CTopic marker
Further Data 2: ‘Many’

- Two types of ‘many’: *takusan* (cardinal) and *ooku* (proportional)
- *takusan* behaves just like *minna* everyone.

(24) **TAKUSAN-no-hito-wa ko-nakat-ta**
    Many-people-CTop come-Neg-Past
    ‘It is not the case that many people came.’
    (¬many only)

(25) # **Takusan-no-hito-wa ki-ta.**
    Many-people-CTop come-Past
    ‘Many people came’
Further Data 2: ‘Many’

*ooku* behaves differently.

(26) OOKU-no-hito-wa ko-nakat-ta
Many of the people are such that they didn’t come. (*many* ¬)
It is not the case that many of the people came. (¬many)

(27) Ooku-no-hito-wa  ki-ta.
Many-people-CTop come-Past
‘Many of the people came’
Takusan: Cardinal ‘Many’

affirmative semantically infelicitous with CTopic

- one < some < takusan
- $\forall x[[\text{person}(x)][\text{came}(x)]$ does not entail $\text{takusan}(x)[[\text{person}(x)][\text{came}(x)]]$
- ‘some’, ‘one’, etc do not entail it either
- hence Presupposition Failure
One < Some < Ooku < All

∀x[[person(x)][came(x)]] does entail
Ooku(x)[[person(x)][came(x)]]

Implicature: Poss(¬∀x[[person(x)][came(x)]]).
Summary

• The scope disambiguation by CTopic is the result of filtering out the propositions that do not induce implicatures.

• Büring (1997) defines implicatures in terms of Disputability: A Topic-marked sentence seeks for a disputable question in a set of yes-no questions (Topic value) which is generated by Topic accent on *alle* ‘all’. The Topic value is generated based on the Focus value which is in turn generated by Focus accent on the negation.

• In Japanese, it is not clear whether the negation is in Focus or not.
Summary

• With Sauerland’s (2001) mechanism, we can capture the same intuition as Büring (1997) observed without assuming that the negation is in Focus.

• CTopic presupposes a scalar alternative that is stronger than the original proposition.

• If the proposition fails to have a stronger scalar alternative, it causes a presupposition failure, therefore that reading disappears.

• The explanation for the scope disambiguation can further account for the infelicity of the CTopic-marked universal quantifier in affirmative context and the difference between two ‘many’s in Japanese.
References

