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’ $\forall$ and Negation
- Two possible propositions

Implicatures

- $\neg\forall$ reading: Not everyone came

Implicatures

$\forall\neg$ reading: No one came

Implicatures

$\neg\forall$ **reading:** Not everyone came

$\rightsquigarrow$ Some people came

$\forall\neg$ **reading:** No one came

(no implicatures)

$\not\rightsquigarrow$ Some people came (Contradicted)

$\not\rightsquigarrow$ 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 currupt

‘No politician is corrupt.’ (∀¬)
‘Not all politicians are corrupt.’(¬∀)

b. /ALLE Politiker sind NICHT\ korrupt

‘Not all politicians are corrupt.’
(¬∀ 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 $[\text{NICHT}\backslash]_F$ korrupt

(7) a. $[\![\neg\forall]\!]^o = \neg$ all(politician)(λx.corrupt(x))

b. $[\![\neg\forall]\!]^f = \{\underline{\underline{\neg}}$ all(politician)(λx.corrupt(x)), all(politician)(λx.corrupt(x))$\}$

Topic Value

Further, the rising accent on *alle* 'all' generates a Topic value, which is a set of questions.

(8) $[\![\neg\forall]\!]^t$

a. [[not]$_F$ [[all]$_T$ politician [[corrupt]]]]

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

$\forall\neg$ reading

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

(10) a. $[\![\forall\neg]\!]^o$=all(politician)(λx.$\neg$corrupt(x))

b. $[\![\forall\neg]\!]^f$={all(politician)(λx.$\underline{\underline{\neg}}$corrupt($x$)),
all(politician)(λx.corrupt(x))}

$\forall\neg$ reading

(11) $[\![\forall\neg]\!]^t$

a. [[all]$_T$ politician [[not]$_F$ [corrupt]]]

b. {~~all(politician)($\lambda x.\neg$corrupt(x))~~,
~~all(politician)(λx.corrupt(x))~~},
{~~most(politician)($\lambda x.\neg$corrupt(x))~~,
~~most(politician)(λx.corrupt(x))~~},
{~~some(politician)($\lambda x.\neg$corrupt(x))~~,
~~some(politician)(λx.corrupt(x))~~},
{~~one(politician)($\lambda x.\neg$corrupt(x))~~,
~~one(politician)(λx.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

Going back to Japanese

(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.’ (∀¬)
‘it is not the case that the teacher scolded everyone.’ (¬∀)

Stress No Stress

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

(14) a. MINNA-wa ko-nakat-ta
Everyone-CTop come-Neg-Past

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=$\lambda\wp \in D_{<<e,t>,t>}.\neg\wp(\lambda y.\text{come}(y))$

(16) T=λP.$\forall x$[person(x)][P(x)]

(17) T'=λP.some(x)[person(x)][P(x)]

$\neg\forall$: Presupposition

(18) CONTRASTIVE(<B, T>)
$\exists$ T'[T'$\in$ALT$_C$(T) & B(T') entails B(T) & B(T) doesn't entail B(T')] (presupposition)

(19) $\neg\forall x$[[person(x)][come(x)]] (=B(T))

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

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

c. B(T) doesn't entail B(T')

¬∀: C-Topic Induces Implicatures

(20) CONTRASTIVE(<B, T>) ⇔

a. B(T) (assertion)

b. ∀ T'[T'∈ALT$_C$(T) & B(T') entails B(T) & B(T) doesn't entail B(T')] → $Poss$(¬B(T'))] (implicature)

(21) a. ¬∀x[[person(x)][come(x)]]

b. Implicature:
$Poss$
(some(x)[[person(x)][came(x)]])
(=¬B(T'))

$\forall\neg$: Presupposition Failure

(22) $\forall x$[[person(x)][$\neg$come(x)]] (=B(T))

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

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

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

We get the same results for:

- few(x)[[person(x)] [$\neg$came(x)]]
- most(x)[[person(x)][$\neg$came(x)]]
- more-than-half(x)[[person(x)][$\neg$came(x)]]

C-Topic Requires Implicatures

- None of its scalar alternatives entails $\forall x$[[person(x)][$\neg$came(x)]]
- $\nexists$ T'[T'$\in$ALT$_C$(T) & B(T') entails B(T) & B(T) 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
- $\forall x$[[person(x)][came(x)]]
- none of its scalar alternatives entails it
- some(x)[[person(x)][come(x)]],
  most(x)[[person(x)][come(x)]],
  few(x)[[person(x)][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
- $\forall x$[[person(x)][came(x)] does not entail takusan(x)[[person(x)][came(x)]]
- 'some', 'one', etc do not entail it either
- hence Presupposition Failure

Ooku: Proportional 'Many'

affirmative semantically felicitous with CTopic

- one $<$ some $<$ ooku $<$ all
- $\forall x$[[person(x)][came(x)]] does entail ooku(x)[[person(x)][came(x)]]
- Implicature: $Poss(\neg\forall x$[[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

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