Cross-linguistic variation in disjunction and two-dimensional semantics

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Intro and conclusion

$$\phi \textit{ or } \psi$$

Dynamic ⇓ Analysis

$$\phi \textit{ or } (\neg\phi \textit{ and } \psi)$$

Q: Does $\neg\phi$ exist in every language?
A: Yes and No for Japanese.

Background

- Presupposition p of ψ projects in (1a) but not in (1b).
- Presuppostions must be entailed by its *local context*. (Stalnaker 1974)
- $\neg\phi$ as the local context for ψ in ϕ *or* ψ.
- Numerous independent supports – (3), (5), (7), (9).
- Examples are always from English...

Conclusion

- (1) is replicated in Japanese, but (3), (5), (7), (9) are not!
- Treat presuppositions separately – hence *2D semantics*.
- $\neg\phi$ is present in Japanese only in the presupposition dimension.
- Future Task – The source of desrepancy?
  - *inquisitivity* (Shimoyama 2006; Ciardelli ea all 2019)
  - *Syntax* (Uegaki 2018)

Data

Presupposition projection (Karttunen 1973)

(1) a. Either [$_\phi$ John is out of money] or [$_\psi$ he **quit** smoking].
(Presup. John has smoked.)

b. Either [$_\phi$ John has never smoked] or [$_\psi$ he **quit** smoking].
(Presup. None)

(2) a. [$_\phi$ *John okane-ga nai*] *ka,* [$_\psi$ *kare-wa tabako-o suu-no-o* ***yame-ta***] *(ka da).*
John-TOP money-NOM NEG or he-TOP smoke-ACC smoke-NMNL-ACC stop-PAST or COP
(*Presup. John used to smoke.*)

b. [$_\phi$ *John-wa tabako-o sut-ta koto-ga nai*] *ka,*
John-TOP smoke-ACC smoke-PAST experience-NOM NEG or
[$_\psi$ *kare-wa tabako-o suu-no-o* ***yame-ta***] *(ka da).*
he-TOP smoke-ACC smoke-NMNL-ACC stop-PAST or COP
(*No presupposition*)

Bathroom sentence

(3) Either [$_\phi$ there is no bathroom in this building]
or [$_\psi$ **it**/**the bathroom** is in a funny place] .

(4) #[$_\phi$ *Kono tatemono-ni-wa toire-ga nai*] *ka,*
This building-DAT-TOP bathroom-NOM NEG or,
[$_\psi$ { ***sono toire***-*ga* / ***sore***-*ga* } *hen-na tokoro-ni aru*] *ka da.*
the bathroom-NOM it-NOM funny place-DAT exists or TOP

Polarity-reversed sluicing (Kroll 2019)

(5) Either [$_\phi$ John didn't do an extra credit problem],
or [$_\psi$ he didn't mark which one <~~**he did**~~>].

(6) #[$_\phi$ *John-wa tsuika kadai-o yara-nak-atta*] *ka,*
John-TOP extra assignment-ACC do-NEG-PAST or
[$_\psi$ *dore-o*$_1$ [< ~~***kare-ga***~~ t_1 ~~***ya-tta***~~ >] *ka kiroku-si-nak-atta*] *(ka da).*
which-ACC he-NOM do-PAST Q record-do-NEG-PAST (or COP)

Domain restriction of modal (Rothchild 2013)

(7) Either [$_\phi$ John is in the basement],
or [$_\psi$ he **must** be in the kitchen].

(8) #[$_\phi$ *Taroo-wa chika-ni iru*] *ka* [$_\psi$ *Taroo-wa kicchin-ni iru* ***nichigainai***] .
Taro-TOP basement-DAT present or Taro-TOP kitchen-DAT present must

Non-truth tabular (Klinedinst and Rothchild 2012)

(9) [$_\phi$ John has no friends] or [$_\psi$ he would throw a party].
⇝ ...**if he had a friend**, he would throw a party.

(10) #[$_\phi$ *John-ni-wa tomodachi-ga inai*] *ka,* [$_\psi$ *paatii-o sita darou*] *(ka da)*
John-DAT-TOP friend-NOM absent or party-ACC did would (or COP)

Proposal and formal Detail – two dimensional update semantics

Update semantics

- **State** $(s, s', \ldots)$: a set of worlds
- **Updates** are recursively defined as
  - $s[p] = s \cap p$
  - $s[\neg\phi] = s \setminus s[\phi]$
  - $s[\phi \wedge \psi] = (s[\phi])(\psi)$
  - $s[\phi \vee \psi] = s[\phi] \cup s[\neg\phi][\psi]$
- Updates with a **presupposition** p
  - $s[\phi_p] = \begin{cases} s[\phi] & \text{if } s[p] = s \\ \star & \text{otherwise} \end{cases}$

Two-dimensional update semantics

- $c[\phi] = \begin{cases} c[\phi]_A & \text{if } c[\phi]_P = c \\ \star & \text{otherwise} \end{cases}$
- $c[\phi_p]_A = c[\phi]$
- $c[\phi_p]_P = c[p]$

English *or* and Japanese *ka* differ in $c[\phi \vee \psi]_A$

- $c[\phi \vee \psi]_P = \begin{cases} c & \text{if } c[\phi]_P = c \text{ and } c[\neg\phi]_A[\psi]_P = c[\neg\phi]_A \\ \star & \text{otherwise} \end{cases}$
- $c[\phi \ \vee_{or} \ \psi]_A = c[\phi]_A \cup c[\neg\phi]_A[\psi]_A$
- $c[\phi \ \vee_{ka} \ \psi]_A = c[\phi]_A \cup [\psi]_A$ $\quad \Leftarrow \neg\phi$ is absent!

A Prospect– *Why* English and Japanese differ in this way?

Answer 1: –because semantics is different.

- Japanese disjunction as $\exists\chi \in \{\phi, \psi\} : \chi = 1$ (Shimoyama 2006)
- Recent renormalization in Inquisitive Semantics (Ciardelli et al 2018)
- Dynamicization of Inquisitive Semantics (Roelofsen and Dotlačil 2023)

⇒ Jpn-style inquisitive disjunction may update context differently than Eng-style boolean disjunction does.

Caveats

- Inquisitive Semantics voids the semantic difference
  – Eng *or* also is analyzed as Shimoyama-style disjunction.
- The presupposition data (2) must still be explained w/o 2D.
  - DRT style accommodation (van der Sandt 1993)
  - Local accommodation (Beaver and Krahmer 2001)

Answer 2: –because syntax is different.

- Eng *or* can be CP-disjunction, but Jpn *ka* is TP-disjunction.
(Uegaki 2015)

⇒ TP is too small to have a local context?

- But sub-clausal local context does seem to exist.
(Anvari and Blumberg 2022)

References

Anvari and Blumberg (2022) ***Subclausal Local Contexts***. Beaver and Krahmer (2001) ***A Partial Account of Presupposition Projection***. Ciardelli et al 2018 ***Inquisitive Semantics***. Karttunen 1973. ***Presuppositions in Compound Sentences***. Klinedinst and Rothchild 2012. ***Connectives without truth tables***. Kroll 2019. ***Polarity Reversals Under Sluicing***. Roelofsen and Dotlačil 2023 ***Wh-questions in Dynamic Inquisitive Semantics***. Rothchild 2013. ***Do Indicative Conditionals Express Propositions?***. Shimoyama 2006. ***Indeterminate Phrase Quantification in Japanese***. Stalnaker 1974. ***Pragmatic Presuppositions***. Uegaki 2018. ***A unified semantics for the Japanese Q-particle ka in indefinites, questions and disjunctions***. van der Sandt (1993) ***Presupposition Projection as Anaphora Resolution***.

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