Against Syntactic Neg-raising: Evidence from polarity-reversed ellipsis in Japanese

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It has been observed that the sentence (1) is ambiguous. In one interpretation (1a) the speaker is agnostic whether the god exists. On the other hand, the interpretation (1b) makes a stronger claim that the speaker believes that the god does not exist. There have been two analyses proposed for the reading (1b): the syntactic *Neg-raising* (Filmore, 1963; Ross, 1973; Collins and Postal, 2014) and the semantic-pragmatic inference (Bartsch, 1973; Horn, 1978, 1989; Gajewski, 2007, a.o.). This study argues against the former and for the latter, by investigating a *polarity-reversed ellipsis* in Japanese.

(1)   I don't believe the god exists.

     a.   The speaker does not have an belief that the god exists.

     b.   The speaker believes that the god does not exist.

1 Two Strategies for the Stronger Reading

The stronger reading in (1b) is generally observed with attitude predicates such as *believe* or *think*, and is derived by either syntactic Neg-raising or a pragmatic-semantic inference. The former analysis claims that the negation in the matrix clause in (1) is originated in the embedded clause, moving to the matrix clause in the surface (overt) syntax, and is reconstructed to the embedded clause for the relevant interpretation in covert syntax. The proposal is schematically represented in (2).

(2)   I believe the god not exists.

(movement / reconstruction arrows)
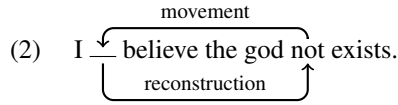
The latter analysis hinges on the semantic definition of the attitude predicate *believe*. Crucially, it assumes that *believe* has the *excluded middle presupposition*: when an attitude holder x believes p, it is presupposed that x believes p or x believes $\neg p$. Combined with this presupposition, negation of the matrix attitude makes an inference to the stronger reading. As illustrated in (3), the assertion negates the first disjunct of the presupposition. Hence, the stronger claim in (3c) is inferred.

(3)   [[*x does not believe p*]]

      a.   Assertion: $\lambda w.\ \neg \forall w' \in B_{x,w}\ [p(w) = 1]$

      b.   Presupposition: $\forall w' \in B_{x,w}\ [p(w') = 1]\ \lor\ \forall w' \in B_{x,w}\ [p(w') = 0]$

      c.   (a) + (b): $\lambda w.\ \forall w' \in B_{x,w}\ [p(w) = 0]$

A crucial difference between these two analyses is that there is a *syntactic* realization of the negation in the embedded clause under the syntactic Neg-raising account, but not in the semantic-pragmatic inference. The purpose of this study is to show that the syntactic presence of negation in the embedded clause makes wrong predictions, arguing for the semantic-pragmatic inference. The argument comes from *polarity-reversed* ellipsis (observed for English by Kroll (2019)) in Japanese. In a nutshell, given the identity condition on ellipsis we cannot assume the syntactic realization of a negation within an embedded clause, contrary to what the syntactic Neg-raising analysis predicts. The rest of this paper is organized as follow. Section 2 sets up a background on the syntax of Japanese, summarizing the argument of Sakamoto (2016) that clausal anaphora *soo* involves ellipsis. Section 3 discusses a polarity reversed ellipsis in Japanese, introducing the identity condition on ellipsis. Section 4 is the main part of this study, laying out two arguments against the syntactic Neg-raising. Section 5 concludes and discourses remaining issues.

2 *Soo* Anaphora as Ellipsis

In Japanese, clausal anaphora *soo* can replace a redundant clause. In (4b), for instance, the anaphora replaces the embedded clause in (4a).

(4) a. *Boku-wa* [*Ayane-ga   ninshinsiteiru to*] *omotteiru.*
       I-TOP   Ayane-NOM pregnant   C   think.ASP

       'I think that Ayane is pregnant.'

   b. *Isya-mo   soo omotteiru.*
       doctor-ALSO SOO think.ASP

       'A doctor thinks so too.'

Sakamoto (2016) argues that the *soo*-construction involves ellipsis and that (4b) has the covert structure in (5).

(5) *Isya-mo   * [*Ayane-ga   ninshinsiteiru to*] *soo omotteiru.*
     doctor-ALSO   Ayane-NOM pregnant   C   SOO think.ASP

One piece of evidence for his argument is that A-movement is possible out of a 'replaced' *soo*-site (for other evidence and more discussions see Sakamoto (2016)). Consider the ECM construction in (6). As argued by Hiraiwa (2005), Kuno (1976) and Tanaka (2002), in Japanese an accusative-marked ECM subject is base-generated within an embedded clause and can move to a matrix clause. In (6a), the accusative-marked subject appears left to the adverb modifying the matrix predicate, which assures that *Ayaka-o* is located in the matrix clause. Crucially, this movement is possible even out of a *soo*-site, as illustrated in (6b').

(6) a. *Taro-wa Ayaka$_i$-o   orokanimo* [$_{CP}$ t_i *tensai da   to*] *omotteiru.*
       Taro-TOP Ayaka-ACC stupidly   genius COP C   think.ASP

       'Taro stupidly thinks that Ayaka is genius.'

   b. *Ziro-wa   Kana$_i$-o   orokanimo* [$_{CP}$ t_i *tensai da   to*] *omotteiru.*
       Ziroo-TOP Kana-ACC stupidly   genius COP C] think.ASP

       'Ziro stupidly thinks that Kana is genius.'

   b'. *Ziroo-wa   Kana$_i$-o   orokanimo soo omotteiru.*
       Ziroo-TOP Kana-ACC stupidly   soo think.ASP

       'Ziro stupidly thinks soo.'

If there were no underlying syntactic structure in the *soo*-site, no movement should be possible out of its domain (Depiante (2000), Johnson (2001), Merchant (2013), a.o.). Thus, Sakamoto concludes that Japanese clausal *soo* anaphora involves ellipsis and the structure as in (5). In a later section we base our discussion on Sakamoto's conclusion and take the *soo*-construction as an instance of ellipsis.

3   Polarity-Reversed Ellipsis in Japanese

Kroll (2019) observes ellipsis cases in English where an elided site has the opposite polarity to its antecedent clause. In (7), for instance, the elided clause has the opposite polarity to the affirmative antecedent clause.

(7)   I don't think that [California will comply],
           but I don't know why [~~California won't comply~~]. (Kroll, 2019, 2)

A similar paradigm is also observed in the Japanese *soo*-construction, as shown in (8). Notice in (8b) that the matrix predicate is not negated in, and that the additive particle *mo* on the matrix subject forces a reading where the speaker and the doctor have the same opinion on the pregnancy of Ayane. Thus, we should interpret the elided part as 'Ayane is not pregnant,' having the opposite polarity to the antecedent CP in (8a).

(8) a.   *Boku-wa* [$_{CP_A}$ *Ayane-ga   ninshinsiteiru to*] *omottei-**nai** si,*
         I-TOP   Ayane-NOM pregnant   C   think-NEG   and

     'I don't think that Ayane is pregnant, and'

    b.   *Isya-mo*   [$_{CP_E}$ ~~*Ayane-ga   ninshinshitei-**nai** to*~~] *soo   omotteiru.*
         doctor-also   Ayane-NOM pregnant-NEG   C   SOO think.ASP

     'The doctor thinks so too.'

3.1   An Issue: Polarity-reversed Ellipsis and Neg-raising

It is widely recognized that ellipsis requires a certain *identity* between the antecedent and the elided clause (Ross, 1963; Rooth, 1992; Merchant, 2001, a.o.). There are two lines for the identity condition; *syntax identity* and *semantic identity*. The former requires a syntactic isomorphism for ellipsis, while the latter licenses ellipsis via semantic notions like (mutual) entailment. However, it appears that no proposed identity condition licenses ellipsis of CP_E anteceded by CP_A in (8), due to the opposite polarity. Here is where the discussion in section 1 becomes relevant.

As reviewed in section 1, the stronger reading in (1) can be accounted for by either syntactic Neg-raising in (2) or the semantic-pragmatic inference in

(3). Since the matrix predicate in (8) is also an attitude verb that licenses the stronger reading, we can appeal to (2) or (3) to meet the elliptical identity. The former theory reconstructs the negation in the matrix clause in (8a) to the embedded clause as in (9a). Being completely identical, CP_A and CP_E will meet any kind of elliptical identity condition, regardless of syntactic or semantic.

(9) Polarity Reversed Ellipsis with Syntactic Neg-raising

    a. I think [$_{CP_A}$ Ayane is not pregnant]

    b. The doctor thinks *soo* [$_{CP_E}$ Ayane is not pregnant]

On the other hand, the semantic-pragmatic way of deriving the stronger reading does not have to meet the syntactic isomorphism. It thus app leas to a semantic characterization of an elliptical identity, and this is a line of analysis pursued by Kroll (2019). Simplifying her proposal, she argues that CP_E can be elided if a local context (Karttunen, 1974; Schlenker, 2009) entails CP_E. She further argues that for an attitude predicate PRED, xPREDp asserts that the complement p is true in the local context. In (8), then, the excluded middle presupposition induced by the attitude predicate *omowu* 'think' and the assertion together makes an inference to the proposition that *The doctor thinks that Ayane is not pregnant*, in the same way as in (3). Since *omowu* 'think' is an attitude predicate, it further asserts in the local context that the complement *Ayane is not pregnant* is true. Then the local context entails the elided clause in (8), and hence the ellipsis in question is licensed.

    In the next section we argue against syntactic Neg-raising. Our argument goes as follows. Polarity-reversed ellipsis requires either syntactic Neg-raising or the semantic-pragmatic inference: crucially the former assumes a negation is reconstructed to an embedded clause, while the latter does not. We will show that the reconstruction of the negation makes wrong predictions, thus claiming that the semantic-pragmatic strategy is preferred over the syntactic strategy. Our claim is summarized in the table below. The data set examined below suggests that the paradigm is explained only by the combination of the semantic-pragmatic strategy for the strong reading and the semantic characterization of elliptical identity.

(10)

	Syntactic Identity	Semantic Identity
Syntactic Neg-raising	*	*
Sem/Pra Inference	*	✓

4 Two Arguments Against Syntactic Neg-raising

4.1 *Min'na-ga-min'na*

Aihara (2007) observes that *min'na-ga-min'na*, a special kind of universal quantifier, is incompatible with a clause-mate negation, as illustrated in (11).

(11) **Min'na-ga-min'na   ko-**nak**-atta.*
     everyone-NOM-everyone   come-NEG-PAST

     Intended: 'Everyone didn't come.'

What is important for us here is that with (12a) as its antecedent, (12b) can be interpreted as 'the teacher thinks not everyone praised Ayane.' This reading is not predicted by the syntactic Neg-raising analysis because if we were to reconstruct the matrix negation in (12a) to the embedded clause, it would go against the ban observed in (11). Since the reconstruction is prohibited by an independent reason, the syntactic analysis cannot meet the identity condition on ellipsis in (12), thus predicting ellipsis is impossible, contrary to the fact.

(12)   a.   *Boku-wa* [***min'na-ga-min'na***   *Ayane-o*   *hometa to*]
           I-TOP   everyone-NOM-everyone   Ayane-ACC   praised   C
           *omottei-**nai** si,*
           think-NEG   and,

           'I don't think everyone praised Mary, and'

   b.   *Sensei-mo*   *soo omotteiru.*
           Teacher-ALSO   SOO   think.

           'The teacher thinks so, too.'
           I.e., 'The teacher thinks **not** everyone praised Mary.'

By contrast, the semantic-pragmatic inference, which does not have to utilize reconstruction, does not face the same difficulty. Under the semantic characterization of an elliptical identity, the antecedent and the elided site do not have to contain exactly the same lexical items, as long as the semantic identity condition is satisfied. Thus, the elided clause in (12b) may have another universal quantifier, say *daremo-ga* 'everyone-NOM', which does not have any restriction on its distribution. Being a universal quantifier, it is semantically identical with *min'na-ga-min'na* and the elided clause meets the semantic identity condition.

4.2 Bipolar items

Watanabe (2013) shows that a bipolar item *NP-o nanika* is incompatible

with a clause-mate negation. Notice that the phrase induces an existential quantification as shown in (13).

(13) **Sono-projekuto-ga seika-o   nanika   age-nak-atta.*
       the-project-NOM   achievement-ACC something raise-NEG-PAST

'The project didn't achieve {anything / something.}'

Interesting for us here is that with (14a) as its antecedent, (14b) can be interpreted as 'the leader thinks that the project didn't achieve anything.' The same reasoning for *min'na-ga-min'na* in the previous subsection applies here as well. To be more specific, due to the ban in (13), the syntactic Neg-raising analysis predicts that reconstruction of negation is impossible, and so is ellipsis, contrary to the fact.

(14) a. *Boku-wa* [*sono-projekuto-ga* **seika-o**   **nanika**
          I-TOP   [the-project-NOM   achievement-ACC something

          age-ta   to] *(-wa) omottei-**nai** si,*
          raise-PAST C]   (-TOP) think-NEG   and

          'I don't think the project achieved something.'

      b. *Riidaa-mo   soo omotteiru.*
          Leader-ALSO SOO think.

          'The leader thinks so, too.'

Again, the semantic-pragmatic inference analysis does not have to posit the bipolar item in the elided clause. Thus, the elided clause may contain another existential quantifier, say *nanika-no-seika* 'something-GEN-achievement', which does not have any restriction on its distribution.

5   Conclusion and Remaining Issue

We have laid out two empirical arguments against the syntactic Neg-raising analysis to account for the stronger meaning in (1), concluding that the semantic-pragmatic inference should be preferred to derive the meaning in question.

However, a further complexity comes in when we take other elliptical constructions into account. Namely, ellipsis of a complement clause without *soo* does not allow the polarity-reversed reading as shown in (15).

(15) a. *Boku-wa* [*Ayane-ga   ninshinsiteiru to*] *omottei-**nai** si,*
          I-TOP   Ayane-NOM pregnant   C think-NEG and

      'I don't think Ayane is pregnant, and'

   b. #*Isya-mo*   [~~*Ayane-ga   ninshinshitei-nai to*~~] *omotteiru.*
       doctor-ALSO   Ayane-NOM pregnant-NEG   C think.ASP

      Lit. 'The doctor thinks ~~Ayane is not pregnant~~, too.'

One possible account is to appeal to different procedures of ellipsis: PF-deletion (Merchant, 2001) for the *soo* construction and LF-copying for the null complement in (15). As its name suggests, LF-copying is an operation to copy a syntactic structure from the antecedent to the elided place. Being a copy, it requires a strong syntactic isomorphism, which predicts impossibility of the polarity-reversed ellipsis. PF-deletion, on the other hand, generally goes well with a looser semantic characterization of an identity, which tolerates some syntactic differences (as we have seen in this article). Thus, different procedures of ellipsis may predict different behaviors of ellipses, but we have to leave a further investigation of this possibility for future work.

Acknowledgments

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