Pragmatic Effects on Interpretations of Null Arguments: Evidence from Disjunctive Antecedent Cases **

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1. Introduction

In languages like Japanese, arguments can be phonetically null, and much attention has been paid to cases like (1) where the null argument in the second sentence, represented as ø, are ambiguous as shown in (i)-(iii), each of which is called strict, sloppy and sloppy-like reading, respectively.[1]

(1)　　a.　Ken$_2$-wa zibun$_2$-no kuruma-o　arat-ta.
　　　　　　　-TOP self-GEN　　car-ACC　　　wash-PAST

　　　'Ken washed his car/some of his cars.'

　　b.　Erika$_3$-mo　ø　arat-ta.
　　　　　　-also　　wash-PAST

(i) 'Erika washed <Ken's car/some of Ken's cars>, too.'

strict reading

(ii) 'Erika washed <her car/some of her cars>, too.'

sloppy reading

(iii) 'Erika washed <(a) car(s)>, too.' sloppy-like reading

In the generative literature, prevailing approaches to null arguments are syntactic, and there have been two types of execution proposed: LF-copy (Oku (1998), Kim (1999), and Saito (2007) among others) and PF-deletion (Takahashi (2008), Takita (2011), and Sakamoto (2016) among others). The LF-copy approach assumes that the object of the second sentence is semantically empty and its content is copied from the antecedent sentence at LF. The strict reading (i) is obtained by copying [$zibun_2$-$no\ kuruma$] 'self's car' in the first sentence to the null object position. If the object in the first sentences is copied to the second sentence without an index and $zibun$ 'self' is given index 3 from the subject $Erika$, we get the sloppy reading. The third reading derives by just copying the NP $kuruma$ 'car'. In the PF-deletion approach, the sloppy reading is obtained when [$zibun_3$-$no\ kuruma$] is just unpronounced under some kind of identity requirement. It is not clear how to obtain the strict and sloppy-like readings in the PF-deletion approach but they are easily obtained by the anaphoric use of null arguments just like English $some$ and one.

Hoji (1998) and Tomioka (2004) take an interpretive approach, arguing that null arguments are indefinites and their ambiguity comes from semantic and pragmatic factors. Following them, I also take an interpretive approach and assume that null arguments have an

internal structure as in (2), where f is a possibly Skolemized choice function ($f\mathrm{x}_n$ stands for a Skolemized choice function with n individual arguments; $f\mathrm{x}_0$ corresponds to an ordinary choice function) and the null NP ø denotes a contextually salient set of individuals. Simply put, a choice function f (= $f\mathrm{x}_0$) takes a set of individuals and returns an arbitrary member of that set; a Skolemized choice function $f\mathrm{x}_1$ takes an individual and a set of individuals as its arguments, and returns an arbitrary member which has a contextually salient relation to that individual from that set (see Winter (2001: 117) for the definitions of choice and Skolem functions; as for Skolemized choice functions, see Kratzer (1998) and Chierchia (2001).

(2)　$[\ f\mathrm{x}_{n\,(0\le n)}\ [_{\mathrm{NP}}\ \text{ø}\ ]]$, where ø is of type $<e, t>$, $f\mathrm{x}_0$ of $<<e, t>, e>$,

$$f\mathrm{x}_1 \text{ of } <<e, <e, t>>, e>,$$
$$f\mathrm{x}_2 \text{ of } <e, <e, <e, t>>>, e>,$$
$$\vdots$$

With Skolemized choice functions, the three readings in (1) can be represented as in (3), where the capital CAR denotes the set of cars including both atomic and plural individuals of cars.[2]

(3)　a.　strict reading:

　　　　　$[_{\mathrm{IP}}$ Erika$_3$ f_2[ø]　washed]　~~>　WASH(f_{ken}(CAR))(erika)

　　b.　sloppy reading:

　　　　　$[_{\mathrm{IP}}$ Erika$_3$ f_3[ø]　washed]　~~>　WASH(f_{erika}(CAR))(erika)

2）In this paper, I disregard the issue with the existential closure of function variables.

   c. sloppy-like reading:

$$[_{IP} \text{ Erika}_3 \; f[\text{ø}] \; \text{washed}] \quad \sim\sim> \quad \text{WASH}(f(\text{CAR}))(\text{erika})$$

In the present analysis, which set serves as an argument can be contextually affected, so that it is predicted that the use of a null argument and an overt repetition of a nominal expression can be different in acceptability. The purpose of this paper is to show that it is in fact the case, based on the data concerning disjunctive antecedents. As we will see below, in some disjunctive antecedent cases, the availability of intended interpretations of null arguments vary from speaker to speaker, and I will argue that such judgmental fluctuations should be attributed to how salient sets of individuals are established.

2. Judgmental fluctuation among speakers

As first pointed out by Sakamoto (2016), a null argument anteceded by a disjunctive phrase gives rise to ambiguity, as shown in (4i) and (4ii).

(4)   John-wa   [Ally-ka Brenda]-o   hihansi-ta.

         -top   -or   -acc   criticize-past

   Bill-mo   ø   hihansi-ta.

     -also   criticize-past

  (i) 'John criticized Ally or Brenda. Bill criticized <the individual John criticized/the same individual>, too.'

  (ii) 'John criticized Ally or Brenda. Bill criticized <Ally or Brenda>, too.'

The definite/E-type reading is available in the second sentence, as given in the translation in (4i). The null argument also can be interpreted disjunctively, as in (4ii). In the current choice function approach, the truth conditions of this reading are represented as (5).[3]

(5)   CRITICIZE(f({ally, brenda}))(bill)

Now I will show that there are cases where null arguments are worse than their overt counterparts in acceptability, arguing that such degrading is caused by the difficulty of establishing appropriate sets due to pragmatic factors, which in turn supports the present semantic/pragmatic approach. Let us begin with an example which I dub the 'murder example.'

Murder example

(6)   2003 nen-ni sono onna-wa [Andy-ka Billy]-o satugaisi-ta.
            year-in   that woman-TOP   -or   -ACC   murder-PAST
       Yoku nen-ni-wa onna-no   otto-ga
       next year-in-TOP   woman-GEN husband-NOM
       {[Andy-ka Billy]-o / $^{\text{ok/*?}}f$[ø]}   satugaisi-ta.
             -or   -ACC   murder -PAST
       'In 2003, that woman murdered Andy or Billy. In the following year, her husband murdered {Andy or Billy/<Andy or Billy>}.'

3）An interesting issue is whether the set denoted by the disjunctive expression contains a plural individual like ally⊕brenda, and I am assuming that it is excluded by the Griceian maxims (unless necessary).

The repetition of the disjunctive phrase does not sound very natural, but acceptable enough. The disjunctive interpretation of the null argument is as acceptable as its overt counterpart for some Japanese speakers, but for quite a few speakers I consulted, the disjunctive interpretation is very hard to obtain. Furthermore, if the antecedent has three or more than three members as in (7), the intended reading becomes available for some speakers, but still unavailable for others. [4] Types of speakers with respect to judgment are summarized in (8).

(7)   Murder example with three or more than three members

　　　2003 nen-ni sono onna-ga [Andy-ka Billy-ka Charlie]-o satugaisi-ta.

　　　　year-in that woman-NOM   -or   -or   -ACC muder-PAST

　　　Yokunen-ni-wa onna-no   otto-ga $^{ok/*?}f$[ø]   satugaisi-ta.

　　　next.year-in-TOP woman-GEN husband-NOM   murder-PAST

　　　 'In 2003, that woman mudered Andy, Billy or Charlie. In the following year, her husband murdered <Andy, Billy, or Charlie>.'

(8)   Speakers A: ^{ok}(6), ^{ok}(7)

　　　Speakers B: $^{*?}$(6), $^{*?}$(7)

　　　Speakers C: $^{*?}$(6), ^{ok}(7)

Very descriptively, the null NPs 'ø' in these examples are not interpreted as referring to 'the other/the others' for Speakers B while they are interpreted as referring to 'the others' but not to 'the other' for Speakers C. The question is how such judgmental variations are

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4) One of my informants told me that for him the intended disjunctive reading in (6) is available, but it got much easier to obtain in (7).

accounted for.

My hunch is this. What is special with the murder example is that, unlike examples like (4), the event described in the first sentence affects the construal of the second sentence. Reasonably, we can regard the sets {andy, billy} and {andy, billy, charlie} as salient in the contexts of (6) and (7), respectively, and they are good candidates as arguments of choice functions in the second sentence of each example. But here our world knowledge interferes the set formation. If some of these men was/were murdered by that woman in 2003, it is impossible for her husband to have murdered the same man/men in 2004. Suppose that this pragmatic factor requires us to exclude the man/men killed by that woman from the candidate set. Then established is {andy} or {billy} in (6), and {andy}, {billy}, {charlie}, {andy, billy}, {andy, charlie} or {billy, charlie} in (7). All of these are complement sets derived by subtracting the set of men murdered by that woman from the sets provided in the contexts. For Speakers B, this kind of complement sets are never salient, as stated in (9), and therefore they are not qualified as arguments of choice functions.

(9)   Complement sets (derived by pragmatic computation) are not salient. [5]

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5) This is reminiscent of Barbara Partee's marble examples, as in (i), which shows that the pronoun *it* cannot refer to the non-salient entity, derived by subtraction.

(i) a.   One of the ten marbles is not in the bag. It is probably under the sofa.

    b.   Nine of the ten marbles are in the bag. ??It is probably under the sofa.

So generally, covert complement sets are not salient, and therefore not referred to, except for cases concerning downward-entailing quantifiers, called complement anaphora (see Sanford, Moxey and Patterson (1994) and Nouwen (2003) among others). See also footnote 6.

The point is that the premise "no one is killed twice" compels complement sets to be formed, but due to (9) pragmatically derived complements do not feed choice functions.

For Speakers C, complement sets are salient enough to serve as arguments of choice functions when they contain more than one member, but what is wrong with them is a complement set containing just one member such as {andy} or {billy}. This is described as in (10).

(10) $*f(\{\alpha\})$, where f is a choice function variable and α is referential such as a name.

This says that the argument of a choice function cannot be a singleton set with a referential expression such as a name. There are two reasons to justify this constraint. First logically $f(\{\alpha\}) = \alpha$, but what is to be done for this equivalence is first make a singleton set of a name, and then pick it up by a choice function, which is a very redundant process to be excluded from the grammar. Second this constraint comes from a general condition on informativeness. Choice functions give us indefinite individuals, that is, expression $f(P)$ itself is an indefinite, and therefore $f(\{andy\})$ also expresses something indefinite (e.g. "any (indefinite) member chosen from this singleton set by f"). Indefinites are lower than names in the referentiality hierarchy; the referent of the name *Andy*, for instance, is supposed to be known both to the speaker and to the hearer, but $f(\{andy\})$ is at most specific to the speaker but not to the hearer since it is indefinite. It seems to me reasonable to hypothesize that grammar does not allow any semantic operation to lower nominals' referentiality unless necessary, and if so, the constraint

*ƒ({α}) can be deduced from the general ban on referentiality lowering. Going back to (6), the salient set in this context is {andy, billy}, but our knowledge forces us to change this set to {andy} or {billy}, neither of which can serve as an argument of the choice function because of *ƒ({α}), resulting in the uninterpretability of the null argument.

The story above crucially depends on the idea that the premise "no one can be killed twice" affects the formation of a set of individuals. This makes us expect the disjunctive interpretation of a null argument to be possible (even for Speakers B and C) in a situation where the effect of the premise is obviated. This is actually borne out. In (11), the two sentences in the murder example are embedded in the complement of attitude verbs with different attitude holders.

(11) Murder example in belief context

Dan-wa [2003 nen-ni   sono onna-ga   [Andy-ka Billy]-o

   -TOP   year-in   that woman-NOM   -or   -ACC

satugaisi-ta] to   omot-tei-ru.   Erika-wa

murder-PAST   COMP think-PROG-PRES   -TOP

[2004 nen-ni onna-no   otto-ga   ƒ[ø] satugaisi-ta] to

    year-in woman-GEN   husband-NOM   murder-PAST COMP

omot-tei-ru.

think-PROG-PRES

'Dan thinks that that woman murdered Andy or Billy in 2003. Erika thinks that her husband murdered <Andy or Billy> in 2004.

The murdering event in Dan's belief worlds does not affect that in Erika's belief worlds, and as expected, the intended disjunctive

interpretation of the null argument becomes possible.

How do Speakers A accept the disjunctive reading in the murder example? One possibility is that they are just insensitive to the premise. Or for them the two sentences in the murder example are interpreted as somehow independent events of each other. This is reasonable for disjunctive expressions have an epistemic modal flavor; [p-*ka* q] easily gets an interpretation like *tabun* [p-*ka* q] 'maybe [p or q] / I'm not sure [p or q],' where the disjunctive is in the scope of epistemic modal expressions. If so, it is not surprising that the disjunctive reading is obtained with the null argument in the murder example, just like (11).

To sum up, the judgmental fluctuation among speakers concerning the murder example can receive some level of explanation based on non-saliency of complement set given in (9) and the constraint on choice function *$f(\{\alpha\})$ in (10). As suggested above, the latter should be deduced from a more general principle in grammar, which means that the constraint is activated even for Speakers A and B. This does not contradict the observation. On the other hand, the status of (9) is not clear. It might be the case that discourse saliency varies from speaker to speaker, so that pragmatically derived complement sets might be accessible for Speakers C. This needs further investigation. [6]

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6) It might be interesting to see if there is a difference between Speakers B and C with respect to anaphoric links in marble sentences like (i).

(i) Zyuk-ko-no ohaziki-no uti nana-ko-ga baggu-ni aru.
   Ten-CL-GEN marble-GEN in seven-CL-NOM bag-in exist.PRES
   Dare-ka-ga *pro* nusun-da-no daroo.
   who-∃-NOM steal-PAST-COMP maybe
   'Seven out of the ten marbles are in my bag. Maybe someone has stolen them.' ↗

3. Judgmental fluctuation induced by lexical/pragmatic premises

Context-sensitivity of disjunctive interpretations of null arguments is also found in sentences with the verb *kekkons* 'marry', as in (12). The key premise is monogamy-bias; no person can have multiple spouses.

Marriage example

(12)　John-wa　[Ally-ka Brenda]-to　　kekkonsi-tei-ru.

　　　　　-TOP　　　　　-or　　　　　-with　marry-PROG-PRES

　　　Bill-mo　　{[Ally-ka Brenda]-to / $^{ok/??}f$[ø]}　kekkonsi-tei-ru.

　　　　　-also　　　　　-or　　　　　　-with　　　　　marry-PROG-PRES

　　　'John is married to Ally or Brenda. Bill is married to {Ally or

　　　Brenda/<Ally or Brenda>}, too.'

The narrative sequence with the repetition of the disjunctive phrase is acceptable but the intended disjunctive interpretation of the null argument is difficult to obtain for Speakers B and C, but judging from the impression I received from the informants, the disjunctive reading in the marriage example seems less difficult to obtain than the one in the murder example. The most natural interpretation of the second sentence is something like 'Bill is married/Bill is not single, too,' which comes from the intransitive use of the verb.

　　The disjunctive interpretation becomes possible for Speakers C if

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↘ The intended interpretation of *pro* in the second sentence is 'three missing marbles.' My approach predicts that Speakers C allow this reading while Speakers B do not. I have not checked their judgments about this example.

the antecedent contains three or more than three members, as in (13).

(13) Marriage example with three or more than three memmbers
John-wa   [Ally-ka Brenda-ka Cindy]-to   kekkonsi-tei-ru.
    -TOP   -or   -or   -with marry-PROG-PRES
Bill-mo   ʃ[ø]   kekkonsi-tei-ru.
    -also   marry-PROG-PRES
'John is married to Ally, Brenda or Cindy. Bill is married to <Ally, Brenda, or Cindy>, too.'

When the monogamy-bias is cancelled, null arguments can receive the intended reading. In (14), the past tense is used, and in (15), the marriage example is used in a belief context.

(14) Marriage example with past tense
John-wa [Ally-ka Brenda]-to   kekkonsi-tei-ta.
    -TOP   -or   -with marry-PROG-PAST
Bill-mo   ʃ[ø]   kekkonsi-tei-ta.
    -also   marry-PROG-PAST
'John was married to Ally or Brenda. Bill was married to <Ally or Brenda>, too.'

(15) Marriage example in belief context
Dan-wa [John-ga   [Ally-ka Brenda]-to   kekkonsi-tei-ru]
    -TOP   -NOM   -or   -with marry-PROG-PRES
to   omot-tei-ru.   Erika-wa [Bill-ga   ʃ[ø] kekkonsi-tei-ru]
COMP think-PROG-PRES   -TOP   -NOM   marry-PROG-PRES

to   omot-tei-ru.

COMP   think-PROG-PRES

'Dan thinks that John is married to Ally or Brenda. Erika thinks that Bill is married to <Ally or Brenda>.

It is not always the case that the same kind of context setting gives rise to similar results of interpretations of null arguments anteceded by disjunctive phrases. Consider the following scenario. In FIFA world cup 2014, (i) the semi-finalists were Germany, the Netherlands, Argentina, and Brazil, (ii) the finalists were Germany and Argentina, and (iii) there were exactly two games in the semi-final stage due to the single-elimination system. Suppose that the speaker of (16) knows (i), (ii) and (iii) but doesn't know which country defeated which country in the semi-finals. This is exactly the same type of situation as the murder and marriage examples, but interestingly the intended disjunctive interpretation of the null object is almost possible, if not perfect. [7]

Single-elimination example

(16) Saisyo-ni doitu-ga   [oranda-ka   buraziru]-o   yabut-ta.

      first-in   Germany-NOM Netherland-or Brazil-ACC   defeat-PAST

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[7] If the verb *kat* 'win' is used in place of *yabur* 'defeat', the sentence becomes perfect. In this case, however, there is a possibility that a null argument is not introduced in structure since the former verb has intransitive use. The intended disjunctive interpretation might be obtained since the context is very restricted context.

Tugi-ni aruzentin-ga {[oranda-ka buraziru]-o / $^{ok/(?)}f$[ø]} yabut-ta.

next-in Argentina-NOM Netherland-or Brazil-ACC defeat-PAST

'Fist, the Netherland defeated Germany or Uruguay. Next, Spain defeated {Germany or Uruguay/<Germany or Uruguay>}.'[8]

Now we have to explain what causes such judgmental variations among the three context settings. Taking into consideration the key premises used in the three cases enables us to see the differences of acceptability.

(17) The murder example:

No person cannot be killed twice.

The marriage example:

No person cannot have multiple spouses.

The single-elimination example:

No person/team cannot be defeated twice in the single-elimination system.

The premise in the murder example is very strong since it comes from the lexical meaning of *satugais* 'murder'. On the other hand, the premise assumed in the single-elimination example is so contextually local and artificial that even the speaker who understands the single-

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8) The previous version of this example did not contain the temporal order expressions 'first' and 'next'. Stefan Kaufmann (personal communication) raised a question of whether such expressions degrade the disjunctive interpretation of the null argument. As described in the text, the intended interpretation is still available.

elimination system does not care about it when the main focus of the conversation is put on which country defeated which country. The monogamy-bias is in between. It is very cultural and definitely not part of the lexical meaning of *kekkons* 'marry' but this premise is easily set up without any supplemental information, and therefore it usually comes about when a null arguments is interpreted in the marriage example. The bottom line is that the robustness of premises affects interpretations of null arguments in disjunctive contexts.

4. A concluding remark

The lesson from the disjunctive antecedent cases is that making or searching a salient set of individuals is the matter of pragmatics, and this supports the present interpretive analysis of null arguments. Let me emphasize once again that the low acceptability of null arguments in the murder and marriage examples should not be attributed to pragmatic weirdness; the intended disjunctive interpretation itself has nothing wrong pragmatically since the overt disjunctive phrases are usable in the same contexts. Rather, it is the failure of appropriate set formation that makes those null arguments degraded. The particular analysis I suggested is immature and might be wrong, but it is clear that the difference between null arguments and their overt disjunctive counterparts cannot be captured by the PF-deletion/LF-copy approaches.

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