

A remnant-correlate identity condition on ellipsis

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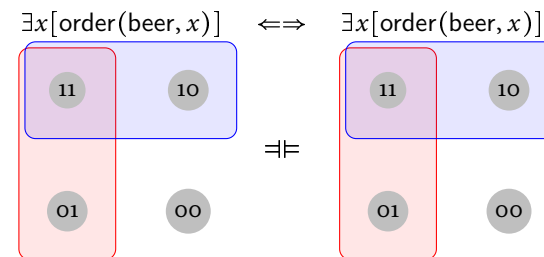
1 Background and goals

Identity conditions on ellipsis are usually formulated in semantic terms, i.e., mutual entailment between the ellipsis site and the antecedent, under certain conditions. Everybody agrees that the identity conditions have to be at least partially semantic; for example, Merchant (2001) defines identity over truth-conditional entailments.

- (1) Merchant (2001): an expression E can be elided if E is *e-GIVEN*.
 - a. E is *e-GIVEN* if E has a salient antecedent A , such that both E and A entail the F-closure of the other.
 - b. The F-closure of α , notated $F\text{-clo}(\alpha)$, is the result of raising α to type $\langle t \rangle$ and inserting \exists -bound variables in the positions of traces, F-marked constituents, and unfilled arguments.
- (2) [_A Someone ordered a beer], but I can't remember who_i [_E t_i ordered a beer].
 - a. $A = F\text{-clo}(A) = \exists x. [\text{order}(\text{beer}, x)]$
 - b. $E = F\text{-clo}(E) = \exists x. [\text{order}(\text{beer}, x)]$
 - c. $A \rightarrow F\text{-clo}(E)$ and $E \rightarrow F\text{-clo}(A)$

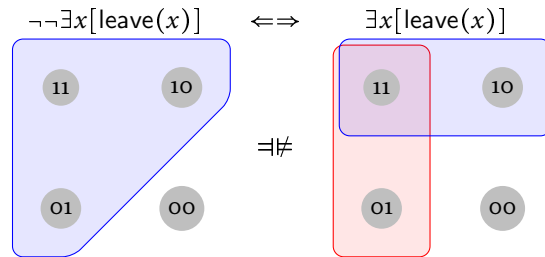
AnderBois (2011, to appear) proposes instead a definition of identity based on inquisitive semantics.

- (3) AnderBois (2011, to appear): Given a structure [_{CP_E} wh_i [_{TP_E} ... t_i ...]], TP_E can be elided there is a salient CP_A, such that CP_A and CP_E inquisitively entail each other.
 - a. For any two formulas ϕ and ψ , ϕ inquisitively entails ψ (notated $\phi \models \psi$) if every alternative $\alpha \in \llbracket \phi \rrbracket$ is a subset of some alternative $\beta \in \llbracket \psi \rrbracket$.
- (4) [_A Someone ordered a beer], but I can't remember who_i [_E t_i ordered a beer].



AnderBoisian identity helps us account for the ungrammaticality of sluices whose correlate is embedded under a double negation. *It's not the case that nobody left* and *someone left* are truth-conditionally equivalent (because the two negations cancel out), but not inquisitively so (because double negation creates a monolithic possibility space, so mutual inquisitive entailment fails).

- (5) It is not the case that nobody left...
 a. * ...but I don't know who [___].
 b. ? ...but I don't know who left.



Is Semantic Identity sufficient to account for the distribution of possible and impossible ellipses? Chung (2006, 2013) and Merchant (2013) have answered this question in the negative, arguing that Semantic Identity needs to be supplemented with a purely morphosyntactic identity condition on the argument-introducing heads of the ellipsis site and the antecedent.

- (6) *Argument structure condition*: if the remnant of sluicing is the argument of a predicate in the ellipsis site, that predicate must have an argument structure identical to that of the corresponding predicate in the antecedent clause.
 [Chung 2013:30]

This condition is meant to account for the ungrammaticality of voice and argument structure alternations like the following. We provide unsluiced grammatical examples as controls to show that we are dealing with an ellipsis effect here.

- (7) *Voice mismatches: active-passive*
 Someone assassinated JFK...
 a. * ...but it is still a mystery who by [___].
 b. ...but it is still a mystery who he was assassinated by.

- (8) *Voice mismatches: passive-active*
 JFK was assassinated...
 a. * ...but it is still a mystery who [___].
 b. ...but it is still a mystery who assassinated him.

- (9) *Argument structure mismatches: psych verbs*
 Something worries Jack...
 a. * ...but he won't say what about [___].
 b. ...but he won't say what he is worried about.

- (10) *Argument structure mismatches: spray-load alternations*
 Jack embroidered something on the flag...
 a. * ...but I can't remember what with [___].
 b. ...but I can't remember what he embroidered the flag with.

- (11) *Argument structure mismatches: spray-load alternations (II)*
 Jack embroidered something with peace signs...
 a. * ...but I can't remember what on [___].
 b. ...but I can't remember what he embroidered peace signs on.

- (12) *Argument structure mismatches: dative alternation*
 Jack sent someone a letter...
 a. * ...but he won't say who to [___].
 b. ...but he won't say who he sent a letter to.

- (13) *Argument structure mismatches: unaccusative/transitive alternations*
 The window { broke / is still broken }...
 a. * ...but we haven't found out who [___].
 b. ...but we haven't found out who broke it.

Our proposal here is that the Chung/Merchant identity condition should be replaced with a categorial identity condition between the remnant and its correlate (14). In the same way as the Chung/Merchant condition, the Remnant Condition is not meant to replace Semantic Identity, only to supplement it.

(14) *The Remnant Condition*

The remnant of ellipsis must have a syntactically expressed correlate in the antecedent; the remnant and the correlate must be of the same category.

For the time being, we are going to stick to a morphosyntactic formulation of the Remnant Condition, even though a semantic formulation is also possible. Aside from this issue, it is obvious that the Remnant Condition needs to be supplemented with a good definition of *correlate*. We assume the following.

(15) *Definition of correlate*

A correlate is an alternative-evoking expression —i.e., an indefinite, an F-marked phrase, or a disjunction.

Today we are going to keep things simple by considering only antecedents with a single potential correlate. More complex examples with multiple potential correlates will eventually force us to adopt a more sophisticated definition.

2 Shortcomings of the Chung/Merchant condition

The Chung/Merchant condition, however, is too strong: it predicts that any sluice with a functional structure different from that of the antecedent will be ungrammatical, but we know that there are a number of cases where this is not true. Consider first *pseudosluicing*, where a sluiced cleft takes a non-cleft antecedent.

(16) Sally has a new boyfriend.

- a. Guess who [___]!
- b. # Guess who she has!
- c. Guess who it is!

Second, Barros et al. (2014) argue that left-branch sluices in English stem from a predicational copular clause. In support of this claim, they point out that both left-branch sluices and predicational copulas are restricted to adjectives with an intersective reading.

(17) They hired a diligent worker...

- a. ...but I don't know how diligent [___].
- b. ...but I don't know how diligent that worker is.

(18) They hired a hard worker...

- a. * ...but I don't know how hard [___].
- b. * ...but I don't know how hard that worker is.

(19) He's visiting an old friend...

- a. ...but I don't know how old [___].
[✓ intersective / * non-intersective]
- b. ...but I don't know how old that friend is.
[✓ intersective / * non-intersective]

Finally, many Austronesian languages make extraction of non-subjects contingent on a prior promotion-to-subject operation. This promotion is reflected in the morphology of the verb —cf. the alternation between *agent topic* (AT) marking and *theme topic* (TT) marking.

(20) *Malagasy* (Potsdam 2007)

- a. * inona no mividy i Soa?
what PRT buy.AT Soa
“What is Soa buying?”
- b. inona no vidin' i Soa?
what PRT buy.TT Soa
“What is being bought by Soa?”

As Potsdam (2007) points out, the fact that these languages allow sluicing with a non-subject correlate (21) implies that voice and/or argument structure mismatches must be tolerated.

(21) *Malagasy* (Potsdam 2007)

Nandoko zavatra i Bao, fa hadinoko hoe inona [no nolokoin' i Bao].
paint.AT something Bao but forget C what PRT paint.TT Bao
“Bao painted something, but I don't know what (was painted by Bao)”

This argument is admittedly weaker than the rest, in that it relies on the assumption that the AT/TT alternation is one of voice or argument structure. Rackowski (2002) argues that similar alternations in Tagalog largely reflect agreement between T^o and either the subject or whatever argument has scrambled across the subject. Argument structure alternations in unsluiced questions are still independently possible in Austronesian, but we still haven't tested to what extent they can feed sluicing.

We propose, then, that the Chung/Merchant condition should be abandoned.

3 Motivating the Remnant Condition

The data that Chung and Merchant adduce in favor of the Argument Structure Condition follow from the Remnant Condition as a function of the category mismatch between the remnant and the correlate.

- (22) a. * [_{DP} Someone] assassinated JFK, but it is still a mystery [_{PP} who by] [___].
 b. * [_{DP} Something] worries Jack, but he won't say [_{PP} what about] [___].
 c. * Jack embroidered [_{DP} something] with peace signs, but I can't remember [_{PP} what on] [___].
 d. * Jack sent [_{DP} someone] a letter, but he won't say [_{PP} who to] [___].

Additionally, the RC predicts that sluicing will fail if there is no syntactically explicit correlate in the antecedent. This is the case with unaccusative/transitive mismatches like the following, given that *the window broke* is an unaccusative predicate without an external argument.

- (23) The window { broke / is still broken }...
 a. * ...but we haven't found out who [___].
 b. ...but we haven't found out who broke it.

The advantage of the Remnant Condition is that it correctly allows pseudosluices, left-branch sluices, and Austronesian voice-alternating sluices so far as the remnant and its correlate are of the same category.

- (24) a. ✓ Sally has [_{DP} a new boyfriend]. Guess [_{DP} who] [he is]!
 b. ✓ They hired a [_{AP} diligent] worker, but I don't know [_{AP} how diligent] [that worker is].
 c. ✓ [_{DP} Nandoko] zavatra i Bao, fa hadinoko hoe [_{DP} inona] [no paint.AT something Bao but forget C what PRT nolokoin' i Bao].
 paint.TT Bao
 "Bao painted something, but I don't know what (was painted by Bao)"

Notably, the RC implies that (25a) is in principle ambiguous between the voice-non-alternating (25b) and the voice-alternating (25c). The same implication holds for the argument structure alternation in (26). We don't currently know how to directly test this prediction in English; however, if we can eventually confirm Potsdam's (2007) conjecture that (21) and comparable examples instantiate a functional structure mismatch, we would have indirect evidence in favor of the reality of such structural ambiguities.

- (25) JFK was assassinated by someone...
 a. ...but I don't know who [___].
 b. ...but I don't know who [he was assassinated by].
 c. ...but I don't know who [assassinated him].
 (26) Jack is worried about something...
 a. ...but I don't know what [___].
 b. ...but I don't know what [he is worried about].
 c. ...but I don't know what [worries him].

4 Diversion through sprouting

4.1 Licensing sprouting

Sprouting is the subtype of sluicing where the correlate is an implicit argument or modifier.

- (27) a. Sally fixed the door, but I don't know { how / when / what with } [____].
 b. Jack baked a cake, but I don't know who for [____].
 c. Bill is going on vacation, but I don't know { where / how long for } [____].

Implicit arguments Sprouting requires us to assume that implicit arguments and modifiers are actual syntactic objects in the antecedent, so as to satisfy the Remnant Condition. This is a relatively uncontroversial claim for implicit arguments —for example, Landau (2010) shows that they can control PRO, which we wouldn't expect if they were “projected in the lexicon” but otherwise absent in syntax.

- (28) a. The game was played [PRO wearing no shoes].
 b. Paul shouted [PRO to open the door at once].
 c. It was amusing [PRO to watch the parade].

Event/situation arguments AnderBois (2011) pointed out the significance of sluices whose antecedent is a clausal disjunction (*p-or-q* sluices in his terminology). To this class, we can add *p-and-q* sluices, which are acceptable under certain conditions (this particular example is adapted Webber 1978).

- (29) a. Either the kitchen is on fire or Sally is baking again. I can't tell which [____].
 b. In Germany, foreign films are sometimes dubbed and sometimes subtitled, but the TV guide never tells you which [____].

What is relevant for us is that the remnant in both examples is a DP, *which*. The RC entails that the correlate should also be a DP, even though there is none to be seen. We propose that the correlates are the event/situation arguments of the antecedent TPs, on the grounds that other people (e.g., Percus 2000) have argued on independent grounds that such arguments are (i) explicitly represented in syntax; and (ii) morphosyntactically akin to pronouns.

Implicit modifiers These aren't so straightforward, because their number is in principle unbounded.

- (30) Jack is sleeping, but I don't know $\left\{ \begin{array}{l} \text{why} \\ \text{where} \\ \text{for how long} \\ \text{with who} \\ \text{in which car} \\ \text{near which giraffe} \\ \dots \end{array} \right\}$

We propose that the correlates are (Neo-)Davidsonian covert arguments (effectively, syntactisized contextual variables) of the appropriate kind. Regrettably, we have currently no direct evidence in favor of this assumption, but we will provisionally take it as correct on the basis of the benefits we get from not jettisoning the RC.

4.2 Sprouting and P-stranding

Importantly sprouted remnants differ from regular remnants in disallowing P-stranding inside the sluicing site, even though P-stranding under non-sprouted sluicing is otherwise unproblematic in English (Chung 2006).

- (31) a. Jack is jealous of someone, but I don't know who (of) [____].
 b. Jack is jealous, but I don't know who *(of) [____].
 (32) a. Sally fixed the door with something, but I don't know what (with) [____].
 b. Sally fixed the door, but I don't know what *(with) [____].

Chung (2006) proposes to fold this effect under the following condition.

- (33) *No New Words*
 Every lexical item in the numeration of the sluice that ends up (only) in the elided IP must be identical to an item in the numeration of the antecedent.

Given that (33) is effectively a corollary of (6), we can't resort to it. We propose instead that (31) and (32) can be explained through a combination of the RC and certain properties of implicit arguments/modifiers. Consider first why the RC allows P-stranding under regular sluicing: we propose that P-stranding remnants do not take a PP as their correlate (as that would violate the Remnant Condition), but rather the DP complement to P.

- (34) Jack is jealous [_{PP} of [_{DP} someone]], but I don't know [_{DP} who] [____].

Given this much, Chung's generalization follows if we assume that implicit arguments are atomic constituents (Landau 2010 also claims, on independent grounds, that their syntax is impoverished). The fact that extraction out of implicit arguments is impossible suggests that this assumption is correct.

- (35) a. The boys were talked *(to).
 b. How many boys did Sally talk *(to)?
 c. From which country did Jack eat *(something)?
 d. By which author did Jack read *(something)?

This is the same restriction that one finds in Null Complement Anaphora, which also involves a silent atomic constituent (Hankamer and Sag 1976). The (b) example is a control to show that *refuse* does indeed allow a silent complement, so long as we don't try to extract from it.

- (36) a. Jack knows which talk Sally refused to attend, and Oscar knows which tutorial Wendy refused *(to attend).
 b. Jack agreed to attend Sally's lecture, but Wendy refused [___].

Compare to VP and NP ellipsis, where extraction out of the ellipsis site is unproblematic.

- (37) a. I know which relatives Sally wants to invite, but I don't know which ones she must [___].
 b. I know which language Sally has read ten articles about, but I don't know about which construction she has only read two [___].

If implicit PP arguments are atomic, the ban on P-stranding under sprouting reflects the absence of a syntactically independent DP (as a complement of an equally syntactically independent P) that the remnant can take as its correlate.

- (38) Jack is jealous [_{PP} of someone], but I don't know know [_{DP} who] [___].
 * _____

5 Extension #1: symmetric predicates

Symmetric predicates are those whose two arguments have necessarily identical participation in any event described by the predicate—for example, *Jack was making out with Sally* entails both that Jack was making out and that Sally was making out. A non-exhaustive list of such predicates follows.

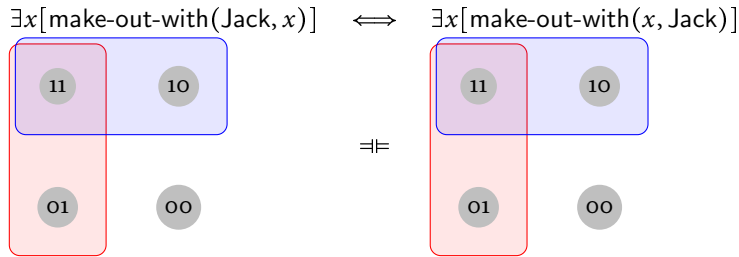
- (39) a. Jack was making out with Sally.
 b. Jack was having a conversation with Sally.
 c. Jack is related to Sally.
 d. Jack resembles Sally.
 e. ...

A symmetric predicate can be sluiced if it has the same order of arguments as the antecedent, but not if the order of arguments is the reverse. The Chung/Merchant condition cannot cover this asymmetry, because it only involves a different order of arguments, rather than an argument structure alternation.

- (40) Someone was making out with Jack...
 a. ...but I don't know who [*was making out with Jack*].
 b. * ...but I don't know who with [*Jack was making out*].
 c. ...but I don't know who Jack was making out with.

Semantic Identity can account for this asymmetry if it can manage to break the mutual entailment between the sluicing site and the antecedent. This is difficult to do under an AnderBoisian inquisitive account, because *Someone was making out with Jack* and *who was Jack making out with?* are inquisitively equivalent, i.e., both raise an issue about the identity of the individual that was Jack's partner in the making-out event.

(41) *Inquisitive equivalence*



Merchantian *e*-GIVENNESS doesn't help us either, again because of the symmetry of the predicate. It is effectively the same problem we have with voice alternations: in any world were someone is making out with Jack, it is also true that Jack is making out with someone (and vice versa), so mutual entailment is satisfied. Note that this holds regardless of whether we say that the preposition is not part of the meaning of the verb (i.e., *make out* is a verb that takes an individual and a PP) or that it is (i.e., *make out with* is a complex verb that takes two individuals).

- (42) a. $A = F\text{-clo}(A) = \exists x_{\langle e \rangle} . [\text{make-out}(\text{with-Jack}, x)]$
 b. $E = F\text{-clo}(E) = \exists P_{\langle \langle et \rangle \langle et \rangle \rangle} [\text{make-out}(P, \text{Jack})]$
 c. $A \rightarrow F\text{-clo}(E)$ and $E \rightarrow F\text{-clo}(A)$

- (43) a. $A = F\text{-clo}(A) = \exists x_{\langle e \rangle} . [\text{make-out-with}(\text{Jack}, x)]$
 b. $E = F\text{-clo}(E) = \exists x_{\langle e \rangle} . [\text{make-out-with}(x, \text{Jack})]$
 c. $A \rightarrow F\text{-clo}(E)$ and $E \rightarrow F\text{-clo}(A)$

In contrast, the RC captures the ungrammaticality of (40b) as a function of the category mismatch between the antecedent (DP) and the remnant (PP).

- (44) [_{DP} Someone] was making out with Jack, but I don't know [_{PP} who with].
- * _____

6 Extension #2: reverse pseudosluicing

We know that pseudosluicing is possible: clefts and copular clauses can be sluiced under identity with non-cleft, non-copular antecedents. Surprisingly, the reverse pattern is ungrammatical.

- (45) The guy that Sally was talking to was someone from Accounting...
 a. ...but I don't know who (exactly) [____].
 b. * ...but I don't know who to (exactly) [____].
 c. ...but I don't know who (exactly) she was talking to.

Semantic Identity conditions cannot account for the ungrammaticality of reverse pseudosluicing. The key factor is that both Merchant's and AnderBois's conditions are symmetric —mutual entailment at the truth-conditional or inquisitive level. Given that Merchant's and AnderBois's conditions license regular pseudosluicing, they should also license reverse pseudosluicing. The Chung/Merchant condition suffers from the same problem: it predicts reverse pseudosluices to have the same status as regular pseudosluices, as both involve comparable argument structure mismatches.

- (46) [_A The guy that Sally was talking to was someone from Accounting], but I don't know who (exactly) [_E Sally was talking to].
 a. $A = F\text{-clo}(A) = \exists x [\lambda y . \text{talk-to}(\text{Sally}, y)](x)$
 b. $E = F\text{-clo}(E) = \exists x [\text{talk-to}(\text{Sally}, x)]$
 c. $A \rightarrow F\text{-clo}(E)$ and $A \rightarrow F\text{-clo}(E)$

In order to see how the RC helps us here, first we need to determine what the correlate is. The following example shows that constituents contained inside the predicative argument of the copular antecedent are not licit correlates. Presumably, this is because predicative arguments are GIVEN, which interferes with the Information Structure requirements on sluicing.

- (47) * The guy that someone was talking to was Jack, but I don't know who [____].

This much shows us that the correlate must be the referential argument of the copula; given that this argument is a DP, the RC dictates that the remnant of sluicing must also be a DP.

- (48) The guy that Sally was talking to was [_{DP} someone from Accounting], but I don't know [_{PP} who to] [____].
- * _____

7 Extension #3: nominalizations

As far as we know, there is no mention in the literature of the fact that sluiced nominalizations cannot take its verbal counterpart as an antecedent. Note that here we have chosen nominalizations that can be embedded under an indefinite determiner, so as to avoid any definiteness island effects that could potentially arise with nominalizations like *destroy the city* → {# a / ✓ the } *destruction of the city*.

- (49) Grigori Perelman is credited with having correctly proved a famous conjecture...
- * ...but most people don't know of which conjecture [___].
 - ? ...but most people don't know which conjecture he's credited with a correct proof of.
- (50) The boss wanted us to carefully evaluate some of the candidates...
- * ...but he never said of which candidates [___].
 - ? ...but he never said which candidates he wanted a careful evaluation of (from us).

Semantic identity conditions fail to predict the badness of these sluices, as the nominalizations are both truth-conditionally and inquisitively identical to their verbal sources. Admittedly, the Chung/Merchant identity condition does predict this pattern, so long as we want to extend (6) to cover not only argument-introducing functional heads, but also category-changing ones. In contrast, these cases follow from the RC for the same reason as all the previous ones.

- (51) The boss wanted us to carefully evaluate [DP some of the candidates],
but he never said [PP of which candidates] [___].
- * _____

8 Extension #4: other ellipsis types

The effects of the RC extend to at least fragments (and perhaps also to pseudogapping and VP ellipsis). If we can eventually show that these effects hold in such a wide range of cases, that will tell us that the RC is a general condition on ellipsis on top of E-site identity.

8.1 Fragments

On the assumption that fragments have largely the same syntax as sluices (i.e., A-bar extraction of the remnant plus TP deletion, Merchant 2004), it is unsurprising that they show the same restrictions.

- (52) A: Someone assassinated JFK.
B: * Yeah, by Oswald [___]!
B': Yeah, he was assassinated by Oswald!
- (53) A: Something worries Jack.
B: * Yeah, about his wife [___]!
B': Yeah, he is worried about his wife!
- (54) A: Jack embroidered something on the flag.
B: * Yeah, with peace signs [___]!
B': Yeah, he embroidered it with peace signs!
- (55) A: Jack embroidered something with those peace signs.
B: * Yeah, on the flag [___]!
B': Yeah, he embroidered them on the flag!
- (56) A: Jack sent someone a letter.
B: * Yeah, to Sally [___]!
B': Yeah, he sent one to Sally!
- (57) A: The window { broke / is still broken }.
B: * Yeah, Jack [___]!
B': Yeah, Jack broke it!
- (58) A: Something is making out with Jack.
B: * Yeah, with Sally [___]!
B': Yeah, he's making out with Sally!

- (59) A: The guy that Sally is talking to is someone from Accounting.
B: * Yeah, to Jack [___]!
B' Yeah, he's talking to Jack!
- (60) A: The boss wanted us to carefully evaluate one of the candidates.
B: * Yeah, of Jack [___]!
B': Yeah, he wants a careful evaluation of Jack!

8.2 Pseudogapping and VP ellipsis

These are difficult, because these voice and argument structure alternations are subject to an independent Information Structure parallelism condition [Kertz \(2010\)](#) that we still haven't gotten around to properly control for.

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