

Implicit complements and the identity condition on ellipsis*

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ABSTRACT

This paper uses the semantics and syntax of implicit complements as a window on the long-standing question regarding the nature of the identity condition on ellipsis. Based on evidence from scope matching in sluicing/sprouting, I argue that implicit complements are visible to the identity condition; I also provide diagnostics suggesting that implicit complements are not projected in the narrow syntax. Taken together, these two observations are incompatible with an identity condition stated in purely narrow-syntactic terms. Alternative approaches requiring identity of LF representations or identity of more abstract semantic denotations can make sense of the implicit complement facts, but are counterexemplified by well-known data on syntactic voice mismatches (Merchant, 2013). A paradox then emerges: the identity condition must access both non-syntactic and arguably purely syntactic information. I argue that the paradox is resolved if the identity condition includes a lexico-syntactic requirement on the numeration of the sluice (Chung, 2006), which is capable of accounting for the full range of facts discussed.

1 Introduction

A crucial challenge for theories of the syntax-semantics interface arises when meaning is recovered in the absence of corresponding linguistic form. When an element is interpreted without being present in the surface string, a serious analytical dilemma arises: is the missing element structurally generated but phonologically silent, or is the presence of meaning without form the result of a purely semantic process of interpretation?

Phenomena of this kind abound in the world's languages. The examples below present an incomplete but instructive taxonomy.

- (1) *Ellipsis*
 - a. Mary ate an apple, and John did, too. *VP ellipsis*
 - b. Mary ate something, but I don't know what. *sluicing*
 - c. Mary ate an apple, and John an orange. *gapping*

- (2) *pro-drop*

Efaje ena milo.
ate.PST.PFV.3SG an apple
'S/he ate an apple.' (Greek)

- (3) *Implicit complement*

John always eats before going for work.

In elliptical constructions of the kind illustrated in (1), syntactic structure goes missing, under intensively researched but nonetheless imperfectly understood conditions (for overview see Merchant 2018a). In *pro-drop* as in (2), pronominal arguments can remain unexpressed, as is the case here with the subject of the Greek verb meaning 'ate'. A similar situation obtains for the missing complement of *eat* in (3), except here the missing argument is interpreted as an indefinite.

A large body of research provides grounds for analytically distinguishing each class of constructions illustrated in (1)-(3). Even though we find meaning without corresponding form in all three cases, important empirical differences between each construction suggests that this form/meaning mismatch has a different source in each case.

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Ellipsis, a topic intensively scrutinized since Ross (1969), is best distinguished by the obligatoriness of antecedents. That is, while (3) is a perfectly acceptable sentence out of context, and *pro*-drop languages freely admit sentences like (2) as long as discourse context provides an appropriate referent for the pronoun, the second conjunct in each example of (1) requires the presence of the first conjunct to be licensed. Additionally, not any antecedent will do; instead, some form of identity between the antecedent and the ellipsis site is necessary; more on this below.

For *pro*-drop, a standard analysis postulates that the non-pronounced argument is syntactically present, but lacks phonological content; traditionally, the null pronominal been taken to be subject to syntactic licensing conditions, which may vary cross-linguistically (see Barbosa 2011 for recent overview).

Relative to ellipsis and *pro*-drop, implicit complements have received little attention, as betrayed by the relative paucity of theoretical proposals on how implicit complements should be derived and of extensive discussions of their properties cross-linguistically. This relative lack of theoretical discussion is surprising given the gravity of the questions that implicit complements raise for theories of argument structure. To put it informally, is the ostensibly intransitive occurrence of ‘eat’ in a sentence like (15) a token of the same verb found in *John ate the cake*?

This paper focusses on implicit complements as well as ellipsis, attempting to bring together a set of observations and questions relating to the properties of both. Specifically, I use a well-known fact about the scope-related properties of implicit complements to draw conclusions bearing both on the identity condition on ellipsis, and on the representation of implicit complements.

In brief, the argument takes the following form. Implicit complements obligatorily take narrow scope with respect to other operators in the sentence. When an implicit complement is present in the antecedent of an ellipsis site, the object in the ellipsis site must also have narrow scope. That implicit complements ‘count’ for the purposes of scope matching in this way suggests that they are visible to the identity condition. However, evidence from secondary predication and pronominal resumption suggests that implicit complements are not syntactically projected. As such, for the identity condition to make reference to the scope of implicit complements, it must be stated over representations that are not purely narrow-syntactic. To reconcile this conclusion with well-known data suggesting that the identity condition does make reference to syntactic structure, I follow Chung (2006) in defending a lexico-syntactic identity condition on sluicing which, I argue, captures the totality of facts discussed here.

The paper is structured as follows. Section 2 provides the necessary background on the identity condition on ellipsis, and proceeds to discuss the basic properties of implicit complements and briefly present existing analyses. Following Gillon (2012), I argue that ellipsis provides evidence against homophony-based approaches to the representation of implicit complements. The section concludes by outlining a different approach to implicit complements, that proposed by Gillon. Section 3 presents the data on scope matching with implicit complements, while Section 4 provides diagnostics suggesting that implicit complements are not projected in the narrow syntax. Section 5 begins from the observation that the facts up to that point are incompatible with a purely syntactic identity condition, and proceeds to discuss three alternatives, arguing that a lexico-syntactic identity requirement is superior to conditions imposing identity of LF structures or identity of denotations. Section 6 concludes.

2 Background

2.1 Ellipsis identity basics

It is clear that ellipsis requires an antecedent of some sort:

- (4) # Mary didn’t.

Importantly, however not any kind of antecedent will do. Cases abound where the context, linguistic or situational, makes it possible to understand what the missing material is intended to mean, yet the ellipsis itself is ungrammatical.

- (5) The plants need water. #I was hoping you would.
(6) a. Susan hugged Bill, but Mary didn’t.

- b. * Bill was hugged by Susan, but Mary didn't.

In (5), the first sentence makes it clear that the second sentence is intended to mean *I was hoping you would water them*, but ellipsis is not licensed here; informally, it seems that there is a required level of parallelism between antecedent clause and ellipsis site, and this level is not reached in (5). (6) shows that this parallelism must be structural at least to some extent: in English VP ellipsis, voice mismatches are not allowed (see Merchant 2013 and discussion in Section 5.3). As such, we can be satisfied that the identity of antecedent clause and ellipsis site must be stated at some level more fine-grained than, say, that of pure thematic relations.

The precise characterization of the identity condition has been a topic of intensive research, and remains a topic of lasting controversy. Three main questions arise here:

- (7) a. Is the identity condition computed over syntactic or semantic representations?
 b. How closely must the ellipsis site match the antecedent?
 c. Do antecedents have to be linguistic?

I can make no claim of bibliographic completeness here, and refer the reader to Merchant (2018a) for a survey of approaches to these questions. This paper will focus on (7a); in Section (5), I will argue that the necessity of accommodating both semantic and syntactic information motivates a lexico-syntactic identity condition.

2.2 The properties of implicit complements

Some English verbs, like *devour* or *admire*, are obligatorily transitive:

- (8) a. John devoured the cake.
 b. John devoured a whole pizza.
 c. * John devoured.
 (9) a. Mary admires the senator.
 b. Mary admires a politician.
 c. * Mary admires.

However, some verbs that can occur in transitive frames can also be construed with implicit complements. The typical and most widely discussed case is that of implicit *indefinite* complements.

- (10) a. John read *Pride and Prejudice*.
 b. John read a book.
 c. John read.
 (11) John { ate / drank / flirted / wrestled ... }.

For each verb in the above examples, the implicit complement receives an indefinite interpretation: the examples can be paraphrased as *John read something / ate something* and so on.

In this paper, I will focus on implicit indefinite complements. For the sake of completeness, however, it is worth iterating the observation of Merchant (2018b, 237) that implicit complements with definite, reflexive and reciprocal interpretations occur as well. The reader is referred to Gillon (2012) for a more comprehensive survey.

- (12) *Implicit definite arguments*
 a. Susan { noticed / understood / saw }. (Fillmore, 1986)
 b. (*In the context of a conspiracy*): He knows.
 (13) *Implicit reflexive complements*
 John { shaved / bathed / scratched }. (Merchant, 2018b, 237)
 (14) *Implicit reciprocal arguments*
 John and Mary { kissed / hugged / divorced }. (Merchant, 2018b, 237)

The discussion so far has introduced a first core property of implicit complements: they are lexically dependent, in the sense that only particular verbs license them. There is a second property crucial to the present discussion: implicit indefinite complements obligatorily take narrow scope with respect to other scope-taking operators in the sentence. To see this, consider the following minimal pair.

- (15) Everyone was reading something. ✓ $\forall x \exists y [R(x,y)]$ ✓ $\exists y [\forall x [R(x,y)]]$
 (16) Everyone was reading. ✓ $\forall x \exists y [R(x,y)]$ ✗ $\exists y [\forall x [R(x,y)]]$
 (Fodor & Fodor, 1980, 760)

The overt indefinite complement in (15) can take wide or narrow scope with respect to the universally quantifying subject. However, even though (16) seems to be a paraphrase of (15), the wide-scope reading of the implicit existential is absent: (16) is not true in a model whereby there is a single x such that every entity in the model was reading x . The same narrow scope restriction obtains relative to negation and modals below.

- (17) Bill did not read. ✓ $\neg \exists x [R(\text{Bill},x)]$ ✗ $\exists x [\neg R(\text{Bill},x)]$
 (Gillon, 2012, 316)
 (18) Bill must read. ✓ $\Box \exists x [R(\text{Bill},x)]$ ✗ $\exists x [\Box R(\text{Bill},x)]$
 (Gillon, 2012, 316)

The analytical challenge posed by implicit complements seems clear: should the ‘transitive’ and ‘intransitive’ occurrences of the relevant verbs be treated as instances of the same token or not? To put it even more simply, are we dealing with one root *read*, or with two?

To this question, two kinds of answers can be given. A first possibility is to assume that there is, in fact, no ambiguity, such that there is just a single verb *to read*. This is perhaps the intuitive route, given that the ‘transitive’ and ‘intransitive’ instances of the verb have identical phonology and lexical semantics. But implementing this solution is *prima facie* difficult: it is an empirical fact that verbs like *read* behave like functions of type $\langle e, t \rangle$ some of the time, and like functions of type $\langle e, \langle e, t \rangle \rangle$ the rest of the time. Unless an additional level of abstraction is added – such as an assumption that ‘intransitive’ *read* is in fact transitive, with its internal argument either syntactically saturated or existentially closed – it is not immediately clear precisely what a no-ambiguity solution would consist in.

The opposite kind of approach to the puzzle posed by implicit complements is *prima facie* more straightforward. We could simply assume two homophonous lexical entries for *read*, as follows:

- (19) *Lexical entries*
 a. $[\text{read}_1] = \lambda x. [\lambda y. [y \text{ read } x]]$
 b. $[\text{read}_2] = \lambda x. [x \text{ read }]$

However, unless the ambiguity is reined in somehow, this approach misfires (Fodor & Fodor, 1980; Gillon, 2012). Specifically, nothing guarantees that *John read something* and *John read* entail each other; that is, it is possible to construct models where *John read something* is true but *John read* is false, and vice versa. In fact, this problem will even persist with overt definite objects, as shown in the model below.

- (20) *A scenario*
 $D_e = \{ \text{John, Mary, Kate, Pride-and-Prejudice, War-and-Peace} \}$
 $[\text{read}_1] = \{ \langle \text{John, Pride-and-Prejudice} \rangle, \langle \text{Mary, War-and-Peace} \rangle \}$
 $[\text{read}_2] = \{ \text{Kate} \}$
 $[\text{John read}_1 \text{ Pride-and-Prejudice}] = 1$
 $[\text{John read}_2] = 0$

Because the denotations of *read*₁ and *read*₂ are completely independent of each other, nothing forces the first co-ordinates of each pair in the denotation of *read*₁ to also occur as elements of *read*₂; as such, the necessary entailment is not present. Clearly, then, a homophony-based approach to verbs that introduce implicit complements must be supplemented with some device to systematically relate the denotations of the two homophonous verbs.

It is this path that some existing work on implicit complements has gone down, postulating homophony alongside a meaning postulate or lexical rule to relate the two lexical entries. As a concrete example, consider the meaning postulate offered by Fodor & Fodor (1980); for a similar approach see Dowty (1981).

(21) *Fodor and Fodor's meaning postulate*

$x \text{ READ}_i \text{ iff } \exists y x \text{ READ}_t y$

(where READ_i is the expression corresponding to the intransitive verb, and READ_t the expression corresponding to the transitive verb)

(after Gillon 2012, 318)

This meaning postulate would ensure, for (20), that $\llbracket \text{John read}_2 \rrbracket = 1$ because $\llbracket \text{John read}_1 \text{ Pride-and-Prejudice} \rrbracket = 1$.

However, as noted by Gillon (2012), crucial evidence against homophony-based approaches such that advocated by Fodor and Fodor comes from the identity condition on ellipsis. Let us now turn to this evidence.

2.3 Evidence against homophony: ellipsis

Regardless of the controversy surrounding syntactic versus semantic identity, the literature on ellipsis uniformly suggests that *phonological* identity is never at stake. Phonological identity is not a necessary condition for ellipsis licensing, witness the case of VP ellipsis with 'suppletive' verbs.

(22) John went to the store, but Mary didn't ~~{go/*went}~~ to the store.

Phonological identity is also not a sufficient condition for ellipsis. To see this, consider the verb *smoke*, which is ambiguous: it can denote either the action of inhaling smoke from an item (as in *smoke cigarettes*), or the action of infusing smoke into an item (as in *smoke some salmon*). Crucially, these meanings cannot be mismatched under ellipsis. If *smoke*₁ is used in the antecedent clause, the same meaning must be recovered in the ellipsis site, and similarly for *smoke*₂, even though the two verbs are homophonous (Gillon, 2012, 321).

(23) Alvin smoked something, but no-one knows what Alvin ~~smoked~~.

✓ Alvin inhaled the smoke of some substance, but I don't know what substance Alvin inhaled the smoke of

✓ Alvin infused smoke into something, but I don't know what Alvin infused smoke into

✗ Alvin inhaled the smoke of some substance, but I don't know what Alvin infused smoke into

✗ Alvin infused smoke into something, but I don't know what substance Alvin inhaled the smoke of

Against this background, we can use the identity condition on ellipsis as a diagnostic for root identity. For verbs like *go*, phonologically mismatched ellipsis is licensed, suggesting a single root with different surface forms; for verbs like *smoke*, phonological mismatch is impossible, suggesting that we are dealing with two roots with the same surface form¹. We can now ask whether implicit complement-introducing verbs like *read* pattern with *go* or with *smoke*. To this end, consider the following sluicing example.

(24) Bill read, but Carol didn't know what_i Bill-read_{t_i}.

¹Under a decompositionalist theory of morphology implemented in the syntax, it is in fact not clear that we would need two distinct roots for *smoke*; rather, the difference between the two verbs would be expected to fall out from the structures in which they are embedded, under a more sophisticated theory of argument structure. There is no space to delve into this interesting issue here.

(24) shows a transitivity mismatch: we find ‘intransitive’ *read* in the antecedent clause and ‘transitive’ *read* in the ellipsis site, as evidenced by the object *wh*-word that has survived the ellipsis by moving out of the deleted portion of the sentence. (24) is a perfectly grammatical English sentence. This is unexpected under homophony-based approaches to the syntax-semantics of implicit complements. Recall that such approaches effectively assimilate *read* to *smoke*; however, if the different valency possibilities of *read* were due to the presence of two distinct but homophonous verbs, then (24) should be ungrammatical just as (23) is on the mismatched readings marked with \mathbf{X} .

2.4 A different approach: VP interpretation rules

As Gillon (2012) notes, the conclusion emanating from (24) is clear: the identity condition on ellipsis speaks against homophony-based accounts of implicit complements. In place of such accounts, Gillon proposes a subcategorization-heavy approach whereby special diacritics on verbs like *read* trigger a dedicated interpretation rule that effectively detransitivizes the VP that these verbs project. As discussion of Gillon’s system will recur in the sections that follow, it is worth elaborating on it here.

Some notational preliminaries are in order. Gillon writes $X|Y:\langle Z \rangle$, to be read as ‘lexical item X is of category Y and takes a complement of category Z ’. Lexical entries in his system then look as follows.

(25) *Sample lexical entries*

- a. *handsome*|A:⟨⟩
- b. *of*|P:⟨NP⟩
- c. *devour*|V:⟨NP⟩

The lexicon is then a set of such entries. Constituents are composed from lexical primitives as follows.

(26) CONSTITUENTS

Let LX be the lexicon for simple English. Let C be the set of complement categories AP, NP, PP and S.

- a. $LX \subseteq CS$;
- b. If $e|X:\langle C_1, \dots, C_n \rangle, f_1|C_1, \dots, f_n|C_n \in CS$ and $C_1, \dots, C_n \in C$, then $ef_1 \dots f_n|X:\langle \rangle \in CS$;
- c. If $e|NP, f|VP \in CS$ then $ef|S \in CS$;
- d. Nothing else is in CS .

(Gillon, 2012, 325)

(26a) defines CS , the set of complex constituents made up from English lexical primitives. (26b) guarantees that combining a primitive e with a constituent f_i will yield a complex constituent ef_i which will itself be an element of CS and which will bear the category of e . (26c) combines NP and VP constituents to form a constituent of category S.

Gillon’s approach to implicit complements has two crucial ingredients. Firstly, obligatorily transitive verbs like *peruse* and implicit complement-licensing verbs like *read* have different subcategorization frames. The difference lies in the fact that the latter class of verbs bear a special diacritic *ind*:

- (27) a. Bill read (*War and Peace*).
- b. Bill perused *(*War and Peace*).

- (28) a. *read*|V:⟨{NP, ind}⟩
- b. *peruse*|V:⟨{NP}⟩

The second crucial ingredient is a rule guiding the interpretation of VPs headed by a verb whose frame contains *ind*.

(29) SEMANTIC RULE FOR V:⟨{NP, ind}⟩

Let $\langle U, i \rangle$, or M , be a structure for LX , a lexicon of simple English, where U is a set of individuals and i an assignment function.

- a. If $e|V:\langle\{\text{NP}, \text{ind}\}\rangle, f|NP \in \text{CS}$, then $[ef|V:\langle\rangle]^M = \{x : \langle x, y \rangle \in [e|V:\langle\{\text{NP}, \text{ind}\}\rangle]^M \text{ and } y \in [f|NP]^M\}$; and,
- b. if $e|V:\langle\{\text{NP}, \text{ind}\}\rangle \in \text{CS}$ and is not immediately followed by a constituent $g|NP$, for any g , then $[e|V:\langle\rangle]^M = \{x : \langle x, y \rangle \in [e|V:\langle\{\text{NP}, \text{ind}\}\rangle]^M, \text{ for some } y \in U\}$.

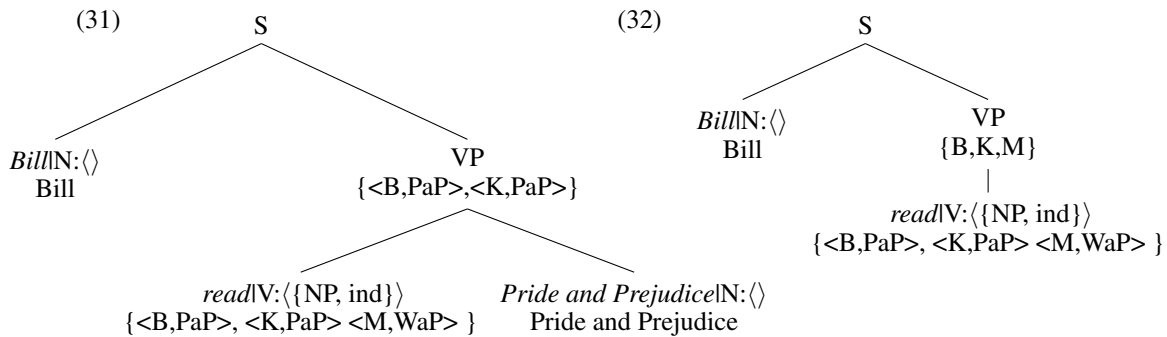
(Gillon, 2012, 325)

(29a) composes verbs like *read* with their complement NP, when such an NP is present in the structure. Equally crucial to the system, however, is (29b). When a verb like *read* is not followed by an NP, (29b) detransitivizes the VP by taking the set of first co-ordinates from the set of pairs that is the denotation of the V node, and making that set be the denotation of the VP node. To see how this system will work, consider the following model and structures:

(30) *A scenario*

$D_e = \{ \text{Bill}, \text{Mary}, \text{Kate}, \text{Pride-and-Prejudice}, \text{War-and-Peace} \}$

$[[\text{read}]] = \{ \langle \text{Bill}, \text{Pride-and-Prejudice} \rangle, \langle \text{Kate}, \text{Pride-and-Prejudice} \rangle, \langle \text{Mary}, \text{War-and-Peace} \rangle \}$



For (31), (29a) will return as the denotation of the VP node the set of those pairs in denotation of *read* that have *Pride and Prejudice* as their second co-ordinate. As a result, the VP will be a set of pairs of individuals, or a function of type $\langle e \langle e, t \rangle \rangle$. Then, this set will combine with *Bill* to yield the right transitive meaning for the sentence. Conversely, in (32), the lack of an NP sister for *read* will trigger (29b); as a result, the VP node will now have as its denotation the set of individuals that occur as left co-ordinates in the denotation of *read*, that is, the set of readers. As such, the VP will now be of type $\langle e, t \rangle$, the type of intransitive verbs.

Three important notes must be made here. Firstly, Gillon's system correctly derives obligatory narrow scope for the implicit existential. (29b) introduces the implicit existential at the level of the VP, that is, well before higher elements such as quantificational subjects, negation or modals are introduced. Note that the implicit existential exists only in the denotation of the VP, not in the structure, so there is no syntactic mechanism, such as QR, that could displace the existential above the subject. This system also derives the lexical restrictedness of implicit complement-introducing verbs: only those verbs that have *ind* in their frame will be able to license implicit complements. Secondly, there is no homophony at play here: there is a single verb *read*, with a single subcategorization frame.²

In summary, we have seen that evidence from the identity condition on ellipsis poses a challenge to homophony-based approaches to implicit complements, but that systems using VP-level interpretation rules seem to fare quite well. Let us now examine more closely cases of ellipsis with an implicit complement in the antecedent.

²A potential problem for Gillon's system must be noted. Merchant (2007) observes that implicit complements occur only in the complement position of verbs; implicit complements of transitive prepositions are not found. This restriction seems mysterious under Gillon's approach, insofar as nothing prevents us from formulating the counterpart of (29b) for prepositions.

3 Implicit complements are visible to the identity condition

This section uses evidence from scope to argue that implicit complements are visible to the computation of the identity condition on ellipsis. The reasoning is as follows. We know that implicit indefinite complements take narrow scope relevant to other operators in the sentence. We can examine this property against the identity condition on ellipsis: what scope possibilities are available for ellipses whose antecedent contains an implicit complement?

Let us begin by establishing a baseline using *overt* indefinite complements. In the non-elliptical sentence below, the overt indefinite can take wide or narrow scope with respect to the subject existential.³

- (33) Everyone must eat something. ✓ $\forall > \exists$ ✓ $\exists > \forall$

Now consider the sluicing counterpart of (33).

- (34) Everyone must eat something, but I don't know what.

Let us consider the scope possibilities available for the sluice in (34) against two disambiguating scenarios.

Firstly, suppose five of us are in an escape room, where we must find a series of clues that ask us to perform certain tasks in order to escape. We find a clue informing us that, for the team to advance to the next stage, each player must identify and eat one of five edible objects hidden in different places in the room. Here, it is felicitous for me to utter (34); the context facilitates the surface scope reading of $\forall > \exists$.

Suppose now that the clue instead informs us that there is just one edible object hidden in the room, and that every player in the team must take at least one bite of it. In this scenario, the inverse scope reading of (34) is facilitated.

We thus see that, for sluicing with an overt indefinite complement in the antecedent clause, as in (34), the indefinite complement can take both narrow and wide scope. Crucially, the scope of the indefinite must be the same in the antecedent and ellipsis clause: that is, if the indefinite has narrow scope in the antecedent, it must also have narrow scope in the sluice, and similarly for wide scope. (34) thus cannot mean 'For all x , there exists a y s.t. x must eat y , but I don't know what the single y is s.t. all x must eat y '; the other mismatched scope reading (which is harder to even articulate) is also unavailable.

Let us now determine whether *implicit* indefinite complements behave similarly to overt ones with respect to scope under sluicing. Firstly, recall that implicit indefinite complements must take narrow scope:

- (35) Everyone must eat. ✓ $\forall > \exists$ ✗ $\exists > \forall$

The crucial question, then, concerns the interpretation of the following elliptical sentence, where the antecedent contains an implicit complement and the ellipsis site an overt one (spelled out as *what* under *wh*-movement). Chung *et al.* (1995) use the term *sprouting* to refer to sluices of this kind.

- (36) Everyone must eat, but I don't know what.

In contrast to (34), (36) only permits the $\forall > \exists$ interpretation for both antecedent and sluice. (36) is not true in the scenario with just one edible object which all players must jointly eat. The inverse scope interpretation, where the implicit existential scopes over the universal, is unavailable; crucially, it is unavailable for both the antecedent and the sluice in (36).⁴

³The scope of the modal is not crucial for present purposes, and I do not discuss it in what follows.

⁴Florian Schwarz points out that a possible confound arises with respect to the inverse scope interpretation of (36): if five people each take a bite of one thing, are they eating the same thing? Unfortunately, the confound arises with other implicit complement-introducing verbs as well: for instance, *Everyone must read a book* gives rise to the same confound in the form of the type/token distinction with respect to *a book*. However, it is important to observe that a clear contrast exists between (34) and (36): for the latter sentence, the inverse scope interpretation is completely unavailable, whereas for (34) it is precisely the availability of this reading that makes us wonder what counts as an eating action.

4 Implicit complements are not syntactically projected

We have just seen that implicit indefinite complements in the antecedent clause block wide-scope readings of object existentials in the ellipsis site. In this respect, they diverge from overt indefinite complements, which can receive both wide and narrow scope readings.

On its own, the observation that implicit complements ‘count’ for the purposes of the identity condition is not particularly informative; to understand how this observation relates to the nature of the identity condition more broadly, we need an understanding of the syntactic status of implicit complements.

It could be the case that implicit complements are introduced in the narrow syntax. If so, we would expect to be able to diagnose their presence empirically, by means of the same diagnostics that suggest that implicit agents in English passives are silent but syntactically active (e.g. Legate 2010). These diagnostics in fact suggest that implicit complements are not present in the syntax. Whereas implicit agents of passives are syntactically active in the sense of licensing agent-oriented secondary depictive predication (37), implicit complements cannot be modified by object-oriented depictives (38).⁵

- (37) a. At the commune, John eats breakfast nude.
b. At the commune, breakfast is usually eaten nude. (Collins, 2005, 101)
- (38) a. At the commune, John ate a carrot raw.
b. At the commune, John ate something raw.
c. * At the commune, John ate raw.

Furthermore, while overt indefinite complements can be resumed by pronouns later in the discourse, implicit ones cannot be so resumed.

- (39) a. Mary said she ate something, but I forget what it was.
b. Mary said she always just eats something if it’s about to go bad.
- (40) a. # Mary said she ate, but I forget what it was.
b. # Mary said she always just eats if it’s about to go bad.

At this point, we have reached two conclusions: implicit complements are visible to the identity condition, and they are not projected in the narrow syntax. Taken together, these conclusions argue against an identity condition stated over purely narrow-syntactic structures. An identity condition requiring, for example, the elided and antecedent TPs of (36) to be fully structurally and lexically identical would incorrectly rule this sentence out.

The observation that the scope relations of DPs must match between antecedent and ellipsis site is far from novel; indeed, Scope Parallelism is a well-known constraint on ellipsis (Williams 1977; Romero 1998; Johnson 2001; Chung *et al.* 1995; Fox 1995, 1998, 2000 *inter alia*). But the novelty of the data presented here lies in the fact that, as argued above, the element whose scope is being matched is *not projected in the narrow syntax*. It is this fact that speaks against a purely narrow-syntactic identity condition on ellipsis.

5 Three alternatives to a pure narrow-syntactic view

Three classes of theories could in principle make sense of the fact that the identity condition can make reference to syntactically unprojected arguments.

⁵There is a wrinkle here: though (38b) is perfectly grammatical, it can be parsed not just as a secondary predication structure, but also as a reduced relative. For this reason, one might object that (38c) is ungrammatical not due to the lack of an argument for the depictive to modify, but rather due to an independent restriction precluding existentially quantified DPs from undergoing secondary predication. Under this reasoning, (38b) is rescued by the independent availability of the reduced relative, a possibility that does not obtain for (38c). Though further thinking is clearly required here, (38a) shows that depictives can perfectly well modify indefinite DPs, and subject-oriented depictives can freely modify existential subjects, as in *Someone was driving drunk*. Thus, the putative ban on depictive predication existentially quantified DPs *in object position* seems suspiciously specific.

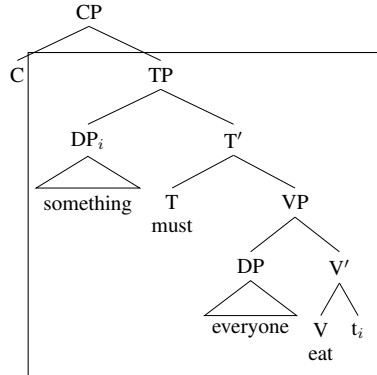
5.1 Possibility 1: LF-identity

A first possibility comes in the form of theories positing structural identity at the level of LF.

Consider how the inverse scope reading of an example like (34), repeated below, would be derived under such a theory. For the antecedent clause, *something* must undergo QR above the subject. In the resulting LF, shown in (41), *something* outscopes *everyone*. It is the boxed portion of this LF that the deleted TP in (34) must match. At the LF of the ellipsis-containing clause, then, the *wh*-phrase must reconstruct to its base position, then undergo QR to the edge of the TP.⁶

(34) Everyone must eat something, but I don't know what.

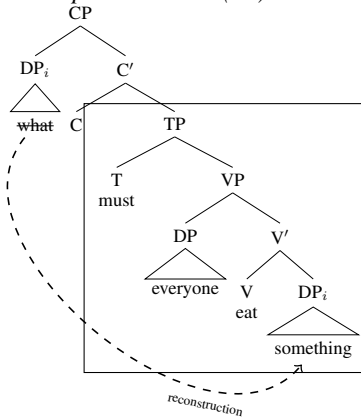
(41) LF of the antecedent clause in (34)



Against this background, consider what the lack of inverse scope for (36), repeated below, would entail. In order to ensure that, like the antecedent clause, the sluice has only a narrow-scope reading, the object *wh*-phrase in the ellipsis-containing clause must reconstruct to its base position at LF and *fail* to undergo QR. That is, when identity is evaluated, the LF of the ellipsis-containing clause must look as in (42).

(36) Everyone must eat, but I don't know what.

(42) LF of the ellipsis clause in (36)⁷



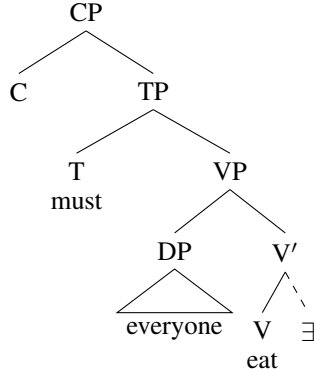
⁶The argument here would stand even if some of the details of this derivation differed. Notably, I have indicated QR as targeting the edge of the TP in (41); this was done on the assumption that it is a TP that's deleted in sluicing, and that the ellided constituent must match its counterpart in the antecedent exactly. An alternative possibility suggests itself: if QR in fact targets the C-domain in the antecedent clause, the identity condition must somehow be more lax. Nothing here hinges on this possibility, though it deserves further exploration; perhaps it would give us the benefit of doing away with the Duke-of-York derivation whereby *wh*-movement of the object reconstructs only for the object to A'-move again, this time via QR. Note that this derivation was necessary here because, under standard assumptions, *wh*-movement in English targets the edge of CP, but we needed QR to target the edge of TP.

⁷VoiceP and *v*P are not crucial to the argument; I omit these projections here for the sake of ease of presentation.

The lack of QR in the sluice, on this account, follows from the identity condition: the sluice must match the TP in the antecedent clause. We know empirically that the TP in the antecedent clause must be arranged in such a way that *everyone* outscopes the implicit indefinite complement. Crucially, however, this scopal relationship must be visible to the identity condition: we want the identity condition to ‘see’ the $\forall > \exists$ scope in the antecedent, and enforce the same relationship at the LF of the sluice.

The following question now arises: what is the relevant sense of ‘visibility’ of the implicit complement? On an LF-identity theory, visibility follows from the fact that the implicit complement comes to be projected at LF.

(43) Possible LF of the antecedent clause in (36)



Two points must be addressed here. Firstly, this view of the representation of implicit complements is in direct contrast to the approach advanced by Gillon (2012). Recall that, under Gillon’s approach, the implicit complement is not syntactically projected; instead, *eat* itself is (structurally) intransitive, and an interpretation rule derives the correct semantics for the VP it projects. (43) implies a different view: the implicit complement is visible to the identity condition because it is actually present in the LF structure, and it is structure that the identity condition considers.

Secondly, the details of how the implicit complement is projected must be worked out. The implicit complement cannot be a garden-variety DP; if it were, it should be able to undergo QR, but implicit complements never have wide scope. It is then an open question whether this projection-based approach can derive the obligatory narrow scope reading of implicit complements non-stipulatively. Moreover, on this approach, more elaboration would be required on how the implicit complement came to be projected at LF. Chung *et al.* (1995) introduce implicit complements at LF via an operation of sprouting; this approach would necessitate specifying further the conditions under which LF-insertion of this kind occurs.

5.2 Possibility 2: Identity of denotations

An alternative route would involve dispensing with projected implicit complements altogether. How could such a view be made compatible with the necessity of having the implicit complement be visible to the identity condition, as demanded by (36)? Clearly, if we want to leave implicit complements out of the structure, as Gillon (2012) effectively does, then it is something about the identity condition that must be modified.

All that examples like (36) show is that the implicit complement must be present in the same representation over which the identity condition is calculated, which must in turn be the representation that handles scope. Standard assumptions take this representation to be LF, but standard assumptions could be wrong. In particular, it is in principle possible that the identity condition is computed over semantic representations removed from or derived from LF. LF is, after all, a syntactic module, the interface with semantics; if the identity condition applies at the semantics proper, whatever that may be, we could take it that implicit complements are only represented at this higher level. One concrete possibility is that the identity condition evaluates the *denotation* of the elided constituent against that of its counterpart in the antecedent, without regard for the internal structure of these constituents.

Such an approach would allow us to preserve Gillon's (2012) 's system intact; we could treat the relevant occurrences of implicit complement-introducing verbs as structurally intransitive, and derive the implicit complement at the level of the denotation of some higher non-terminal node. Such an approach would also interface well with the semantic identity condition on sluicing proposed in *Merchant:2001*, which effectively requires the non-focussed parts of the elided and antecedent TP to be in a relation of mutual entailment: it is clear that the two TPs in (36) do entail each other.

5.3 Against purely semantic views

However, both the LF-identity approach and the identity-of-denotations approach are counterexemplified by independent evidence suggesting that the identity condition can access purely structural information. One striking piece of evidence of this kind comes from voice mismatches under ellipsis, as studied by Merchant (2013). Merchant notes that only low ellipses in English, such as VP ellipsis, tolerate mismatches in voice between the antecedent and ellipsis site, but higher ellipses, such as sluicing, do not.

- (44) a. The janitor must remove the trash whenever it is apparent that it should be removed.
 b. * Someone murdered Joe, but we don't know who by ~~Joe was murdered~~.
 (Merchant, 2013, 78-81)

Merchant argues that this asymmetry is expected if the identity condition can access syntactic information. Under Merchant's analysis, VP ellipsis tolerates voice mismatches because the head that encodes voice information, Voice, is outside the ellipsis site and thus not visible to the identity condition. In sluicing, by contrast, Voice is part of the constituent deleted by ellipsis, and voice mismatches are thus not tolerated.

Such examples, whereby the identity condition accesses apparently purely configurational information, constitute challenges to the identity-of-denotations view. Of course, the challenges arise only insofar as we are certain that the configurational mismatches do not give rise to corresponding semantic mismatches. As Merchant argues, however, the asymmetric distribution of Voice mismatches – namely, the fact that such mismatches are allowed in low ellipses but banned in high ones – seems difficult to account for unless syntactic information is taken into account.

We are thus led to a paradox. On the one hand, evidence from sluicing with implicit complements suggests that the identity condition must be able to access information that is not present in the narrow syntax. On the other hand, the asymmetric distribution of voice mismatches seems to point to the opposite conclusion, namely, that the identity condition can make reference to purely syntactic information after all.

5.4 Possibility 3: A lexico-syntactic condition

I propose to resolve this paradox by adopting a version of the identity condition that is lexico-syntactic in nature, following Chung (2006).

Chung (2006) shows the counterpart of (36) is ungrammatical in the Austronesian language Chamorro:

- (45) ??I neni gumíginin, lao ti hu-tungu' hafa.
 the baby AGR.drink.PROG but not AGR-know what
 'The baby's drinking, but I don't know what.' (Chamorro; Chung 2006, 78)

Chung argues that the ungrammaticality of (45) follows from the lexico-syntactic requirement on sluicing seen in (46), which she takes to be necessary alongside the entailment condition of Merchant (2001):

- (46) 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 CP. (Chung, 2006, 83)

(45) violates (46) because, as argued in Chung (1998), DPs in the oblique case in Chamorro are introduced by a null preposition that is obligatorily stranded by *wh*-movement, such that (45) is underlyingly as in (47):

- (47) ??I neni gumíginin, lao ti hu-tungu' hafa_i [_{TP} i neni gumíginin [_{PP} P *t_i*]].
 the baby AGR.drink.PROG but not AGR-know what
 'The baby's drinking, but I don't know what the baby's drinking.' (Chamorro)

In (47), the numeration of the sluice includes an item not present in the numeration of the antecedent clause, namely, the null preposition introducing the argument marked with oblique case.

Interestingly, (46) is capable of making sense of why, unlike Chamorro (45), English (36) is grammatical. If verbs like *read* always correspond to a single root (Section 2.3), and implicit complements are not projected in the syntax (Section 4), then, as long as English direct objects are true arguments of the verb, (36) will satisfy (46). In other words, a general parametric difference – whether oblique arguments are prepositional or direct – seemingly governs the differential availability of sprouting in the two languages.

Furthermore, note that the data from Voice mismatches discussed in Merchant (2013) may also follow from (46); an important question here concerns the compatibility of (46) with different approaches to voice alternations (cf. Merchant 2013, 97). For example, (46) would rule out (44b) if passives include a dedicated Voice_{PASSIVE} head distinct from Voice in actives (Legate, 2014), or if Passives are built on top of actives with a dedicated Pass head (Bruening, 2013), but not if passives simply lack Voice altogether.

An important property of (46) is that the numeration of the elided TP and that of the antecedent clause need not match perfectly; instead, the former must be a subset of the other. It is this property that ensures that, when the elided TP contains an intransitive verb whose counterpart in the antecedent clause is transitive, the ellipsis will not be ruled out. This property interfaces well with the fact that implicit complements are not present in the numeration: because implicit complements are not projected, they do not engender a violation of (46) in sentences such as (36).

In other words, the lexico-syntactic requirement in (46) seems capable of accounting for the full set of observations which, when taken together, posed problems for purely syntactic and purely semantic approaches to the identity condition. (46) helps makes sense of why the identity condition on sluicing seems sensitive both to information not present in the syntax (implicit complements, as diagnosed through scope), and to information present in the syntax (the specification of Voice), all the while maintaining the insight that implicit complement-introducing verbs are not ambiguous between a transitive and an intransitive root (Section 2.3).

6 Conclusion and outlook

I have argued that the properties of sluicing with implicit complement antecedents, also known as sprouting, speaks against a purely syntactic identity condition on ellipsis. Whereas semantic approaches requiring identity of LF structures or denotations seem better suited to account for the same facts, they are independently counterexemplified by data suggesting that the identity condition can make reference to syntactic structure after all. I have proposed that the resulting paradox is resolved if the identity condition encompasses a lexico-syntactic constraint requiring that the numeration of the sluice be a subset of the numeration of the antecedent clause.

If the arguments advanced here are on the right track, they represent progress on the puzzles discussed. Nonetheless, the solution advocated here is far from complete, and many pressing questions arise. There is clearly a need to evaluate how other pieces of evidence on syntactic versus semantic identity can be incorporated into the picture presented here. Another important issue concerns the scope of the requirement in (46), whatever its precise formulation may be, relative to other possible components of the identity condition. In particular, Chung (2006) takes (46) to be required alongside a semantic entailment condition (Merchant, 2001). Similarly, the argument advanced here crucially capitalizes on Scope Parallelism. Whether the effects of (46), semantic entailment, and Scope Parallelism can be integrated into a single condition is an important question.

In fact, the argument advanced in section 3 onward only goes through on the assumption that Scope Parallelism follows from a more general identity condition, rather than being an independent requirement on ellipsis alongside the identity condition proper. This is because, if Scope Parallelism is an independent condition, then examples like (36) do not bear on the identity condition proper; this is a serious caveat to the work presented here. An identity condition that subsumes the effects of Scope Parallelism seems most satisfactory, and proposals to this end do exist (e.g. Ha 2007);

however, whether such proposals are compatible with the facts discussed here is, at present, an open question.

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