

Grammatical silences in the way from syntax to morphology¹

A model for the timing of ellipsis

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Abstract: This chapter focuses on the mechanics of ellipsis at the syntax –morphology interface. It is shown that two of the adduced arguments against syntactic identity, namely, the distribution of traces within E-sites and certain types of inflectional mismatches, are illusory once phrasal ellipsis is explicitly defined as an operation of narrow syntax. On this theory, ellipsis bleeds vocabulary insertion at PF by deleting the variables that triggers late insertion of phonological material at PF. Phrasal copies and E-sites are both subject to ellipsis in this sense. The particular way in which these two silent objects interact explains why phrasal traces are irrelevant when it comes to calculating identity within a given E-site. This analysis not only answers well-known objections against syntactic identity but is also superior to competing semantic analyses in nontrivial ways. As for heads, it is proposed that they are subject to ellipsis at PF under identity and morphological locality. Among other important asymmetries between head and phrasal copies, this derives the lexical identity requirement in certain V-stranding VP-ellipsis languages (Goldberg 2005), even assuming syntactic head movement through adjunction. Finally, certain inflectional mismatches are derived by the syntactic nature of phrasal ellipsis and the timing of morphological operations. The broad picture is a model for the timing of ellipsis that covers not only surface anaphora, but other types of grammatical silences, as well.

Key words: ellipsis, identity, vocabulary insertion, copy theory of movement, argument ellipsis, *pro*-drop

1. Timing and identity in ellipsis

Current research in the theory of ellipsis confirms earlier hypotheses in the transformational tradition that certain types of silent anaphoric phrases contain abstract syntactic structure, which in the ideal case essentially corresponds to the same abstract structure as their non-elliptical counterparts (see Merchant 2019 for a lucid overview). These empty anaphors are called *surface*

¹ I would like to express my deepest gratitude to the two editors of this volume, Güliz Güneş and Anikó Lipták for inviting me to contribute to this project. They provided me with lot of great feedback both in favor of the content and the rhetoric of this chapter and, in addition, they were extremely patient with my delays (and mood). Two anonymous reviewers helped me to improve my chapter by also providing good criticism and rhetoric advices. I have presented previous versions of this material in 2019 at the University of Chicago and at the University of Pennsylvania. My gratitude then extends to the audience of the events that took place in those universities, in particular, to Luke Adamson, Karlos Arregi, Matt Barros, David Embick, Vera Gribova, Jason Merchant, Rolf Noyer, Lefteris Paparounas, Laura Stigliano and Masaya Yoshida. I am also thankful to Rodrigo Ranero for a careful reading of a previous version and lot of suggestions and corrections. Last but not least, Jairo Nunes suggested me more than ten years ago a labeling approach to identity similar to the one I suggest here. I discussed his suggestion in detail in my 2008's dissertation, but I never adopted it entirely. This is a good occasion then to express my most profound gratitude to Jairo over again. Needless to say, I am the sole legitimate owner of all what is wrong in this chapter.

anaphora in Hankamer and Sag's (1976) terminology (or just *ellipsis* in Sag and Hankamer's 1984 terminology). The sentences in (1) are examples of surface anaphora in English:

- (1)
- | | |
|--|---------------|
| a. Laura likes ellipsis and Jason does too. | (VP-ellipsis) |
| b. Laura bought a magazine and Karlos a book. | (Gapping) |
| c. Laura kissed someone. Guess who. | (Sluicing) |
| d. Carthage's destruction and Rome's | (NP-ellipsis) |
| e. Jason read <i>Syntactic Structures</i> but not Laura. | (Stripping) |

Some terminological remarks from the beginning will be useful for subsequent discussion. Following current standard conventions, I call the missing material *E-site* (*E* for ellipsis), which will appear between angled brackets (E-site: < ... >). The antecedent will be abbreviated as *A*. For a sluicing example like (1a), a rough analysis would be then as follows:

- (2) [_A Laura kissed someone]. Guess who <Laura kissed *t*>.

When relevant, I call the underlined constituents in the antecedent and the elliptical sentence, *correlate* and *remnant*, respectively.

A trait of surface anaphora is that they need for a linguistic antecedent, on the basis of which the meaning of E-sites is (partially) recovered. Of course, this requires a good theory of antecedence relations in grammar and discourse that provides us with the correct method to determine what can count and what cannot count as a linguistic antecedent for a given E-site. To the best of my knowledge, there is no such a theory. In principle, an antecedent is recognized by speakers' intuitions regarding the meaning of the E-site. With reference to the example in (2), the meaning of the E-site is resolved on the basis of the meaning of *A*. Being a question, the elliptical sentence denotes a set of propositions, that is,

- (3) $\llbracket \text{who } \langle \text{Laura kissed } t \rangle \rrbracket^{g,w} = \lambda p. \exists x [\text{Human}(x) \ \& \ p = \lambda w [\text{Laura kissed } x \text{ in } w]]$

which expresses the set of alternative answers to the question at hand (assuming, of course, a Hambling/Karttunen approach to the semantics of questions). Crucially, *p* is in an identity relation with the proposition expressed by *A*:

- (4) $\llbracket \text{Laura kissed someone} \rrbracket^{g,w} = \lambda w. \exists x [\text{Human}(x) \ \& \ \text{Laura kissed } x \text{ in } w]$

Thus, the theory of surface anaphora must provide an explicit account of how the meaning of E-sites is recovered on the basis of the information made available by a salient linguistic antecedent.

Broadly speaking, there are two lines of research. For some, the relevant information is syntactic in nature. A strong claim is that ellipsis requires identity of syntactic structures. A prominent account along these lines is Fiengo and May (1994), according to which E-sites are conceived of as covert reconstructions; *i.e.*, “set of token structures under a syntactic identity condition” (Fiengo and May 1994: 191). For a case of VP-ellipsis like (1a), we say that that there are two

members of the reconstruction of the VP *like ellipsis*, one of which is covert or elided. Fiengo and May uses their reconstruction theory mainly for VP-ellipsis in English, a type of ellipsis that seems to behave according to the expectations of reconstruction theory. However, Chung *et al* (1995) soon recognized that the theory doesn't generalize straightforwardly to sluicing (Ross 1969). In order to conciliate sluicing with some variants of the theory of reconstruction (i.e., LF copy), one needs to manipulate syntactic material at LF. One type of manipulation is called *IP-recycling*; basically, LF-copy. Another crucial LF operation is what they called *sprouting*, i.e., an operation that adds variables within sluice sentences whose remnant doesn't have an overt correlate:

- (5) a. She's reading. I can't imagine what.
 b. He shouted again, but I don't know to whom/who to.
 c. They're going to serve the guests, but it's unclear what. [Chung *et al* 1995: 242]
 d. Joan ate dinner but I don't know with whom. [Chung *et al* 1995: 246]

Simply recycling the antecedent IP in the E-site will not end up in a licit LF. Consider the antecedent IP in (3d). Once recycled into the E-site, we obtain the rough LF in (4):

- (6) *IP-recycling*: Joan ate dinner but I don't know [_{CP} with whom [_{IP} **Joan ate dinner**]]

This is an illicit LF, in which the *wh*-constituent doesn't bind any variable. LF, then, performs the appropriate manipulation, sprouting the required PP variable:

- (7) *Sprouting*: Joan ate dinner but I don't know [_{CP} [with whom]_{*i*} [_{IP} Joan ate dinner **PP_{*i*}**]]

These brief remarks show why reconstruction in Fiengo and May's sense cannot give us the right necessary condition for creating licit E-sites. Things become more pressing once contrast sluicing enters the picture. In effect, Merchant (2001) argued that, even if one was willing to accept the type of LF manipulations that Chung *et al* propose, there are still some set of facts that makes their theory untenable. One that is particularly irreconcilable with the theory of reconstruction (or relatives) is contrast sluicing of the type I illustrate in (6), from Merchant (2001):

- (8) Laura has five cats but I don't know how many dogs.

Here, the E-site is not a reconstruction in Fiengo and May's sense, since the antecedent IP and the elided IP are not occurrences of the same phrase marker over a given terminal vocabulary. IP-recycling would not produce any licit LF, either; copying [_{IP} *Laura has five cats*] in the E-site would produce both a syntactic and a semantic crash.

The preceding discussion could be resumed in the following way: copy mismatches in ellipsis defeat syntactic identity as the right identity condition for ellipsis. The move is well-known in the literature: Identity in ellipsis must be semantically resolved.

But there is more. According to Merchant, reconstruction theories must also offer a reasonable account of the many *feature mismatches* attested between As and E-sites:²

- (9) Decorating for the holidays is easy if you know how!
 - a. \neq^* ... how [decorating for the holidays]
 - b. = ... how [to decorate for the holidays]
- (10) a. I'll fix the car if you tell me how.
 - b. \neq^* ... how [I'll fix the car]
 - c. = ... how [to fix the car]
- (11) a. "I can't play quarterback: I don't even know how."
[Bart, *The Simpsons*, 'Homer coaches football' episode]
 - b. Close the window! Do I have to tell you how?
 - c. Eat (something), if you can figure out what!
- (12) I remember meeting him, but I don't remember when. [= I met him]

Taking the copy and inflectional mismatches into consideration, Merchant's reasoning goes as follows. This type of mismatches indicates that reconstruction theories are misleading. Identity in ellipsis doesn't make any reference either to token structures or to the terminal nodes over which these token structures are built. Identity in ellipsis, instead, makes reference to *semantic objects*. Concretely, sluicing requires identity in the propositional content of the antecedent and the E-site. In a nutshell, ellipsis is licit if the E-site and the antecedent entails each other under the operation of Focus-Closure. The theory dispenses then with any reference to both syntactic isomorphism and the formal content of terminal nodes. Such an approach ensures licit ellipses at least for some cases of feature mismatches and for sprouting sluices. Consider briefly (12), an adjunct sprouting example containing a feature mismatch in finiteness. Existential closure of the *wh*-variable in the E-site and of an implicit tense variable in the antecedent ensures mutual entailment between the expressions under relation. So, with reference to an evaluation time and an assignment function *g*, we obtain the denotations in (13), after some simplifications and assuming *g*(2) = Laura and *g*(3) = Jason:

- (13) $\llbracket_{\text{E-site}} I_2 \text{ met him}_3 t \rrbracket^{t,g} = \exists t': t' < t \ \& \ \text{Laura meet Jason in } t'$
 $\llbracket_{\text{Antecedent}} \text{PRO}_2 \text{ meeting him}_3 t \rrbracket^{t,g} = \exists t': t' < t \ \& \ \text{Laura meet Jason in } t'$

It is easy to see now that A entails the E-site and the E-site entails A. Ellipsis is thus ensured with no reference to the syntactic properties of A and the E-site. Beyond its initial success, it was soon noticed that the mutual entailment approach is too weak. For instance, Chung (2006) showed that the absence of some particular instances of sluicing in preposition stranding environments cannot be accounted for under mutual entailment. Here is Chung's paradigm:

- (14) a. They're jealous, but it's unclear of who.
- b. Joe was murdered, but we don't know by who.
- c. Last night he was very afraid, but he couldn't tell us of what.
- d. Mary was flirting, but they wouldn't say with who.
- e. We're donating our car, but it's unclear to which organization.

² A third argument involves Vehicle Change phenomena (Fiengo and May 1994). Space reasons prevent detailed discussion of this argument, but see footnote 3 for some comments and Saab (2008) for detailed discussion.

- f. U.N. is transforming itself, but into what is unclear. (*New York Times* 2/28/04)
 - g. She phoned home, but they weren't sure from which city.
- (15)
- a. *They're jealous, but it's unclear who(m).
 - b. *Joe was murdered, but we don't know who(m).
 - c. *Last night he was very afraid, but he couldn't tell us what.
 - d. *Mary was flirting, but they wouldn't say who(m).
 - e. *We're donating our car, but it's unclear which organization.
 - f. *U.N. is transforming itself, but what is unclear.
 - g. *She phoned home, but they weren't sure which city.

As is clear, mutual entailment would not make the difference between (14) and (15), given that such a condition is satisfied in both cases. However, only the examples in (14) are licit ellipses.

Merchant himself pointed out another crucial problem for mutual entailment, namely absence of voice mismatches in high ellipses:³

- (16)
- a. *Joe was murdered, but we don't know who.
(cf. Joe was murdered, but we don't know who murdered Joe.)
 - b. *Someone murdered Joe, but we don't know who by.
(cf. Someone murdered Joe, but we don't know who Joe was murdered by.)
- [Merchant 2013a: 81]

A partial balance of the results obtained in the previous literature points out to the conclusion that, effectively, (i) syntactic isomorphism is too strong, and (ii) mutual entailment is too weak (see Merchant 2008). For some, including, among others, Chung (2006, 2013), Anderbois (2011, 2014) and, less explicitly, Barros and Kotek (2019), a Solomonic solution would be to construct a hybrid theory of identity, according to which both syntactic and semantic/pragmatic properties of antecedents and E-sites matter for identity in ellipsis. While I share this general strategy, I also think that the adduced arguments against syntactic identity briefly discussed so far vanish once ellipsis, as an operation of grammar, is properly defined. The claim I'd like to defend is that ellipsis is just an instruction for blocking Vocabulary Insertion (VI) at PF. It applies to different

³ Intolerable voice mismatches of this type were first noticed by Merchant (2001), but there Merchant suggested a possible semantic difference triggered by the passive/active alternation. However, low ellipses, like English VP-ellipsis, do tolerate voice mismatches in both directions (active antecedent/passive E-site or vice versa). Here are two of the many examples discussed by Merchant (see Merchant 2013a: 78-79)

- (i)
- a. The janitor must remove the trash whenever it is apparent that it should be <removed>.
 - b. The system can be used by anyone who wants to <use it>.

This asymmetry between high and low ellipses regarding voice alternations cannot be easily accounted for in purely semantic terms. For this reason, Merchant proposes a syntactic identity condition that makes reference to the formal content of terminal nodes. The reason why voice mismatches are impossible in high ellipses is that Voice features are inside the E-site and must match the same features in A. E-sites in English VP-ellipsis, instead, exclude Voice heads from its domain; *i.e.*, the higher domain of a VP-ellipsis site is the lower VP, assuming a split VP domain, with Voice dominating V. As we will see in section 5, this type of size-based solution generalizes to many inflectional mismatches of different types of ellipses across language (gender and number asymmetries in NP-ellipsis, absence vs. presence of Tense mismatches in VP-ellipsis and TP-ellipsis, among many related phenomena). Saab (2008) is an in-depth study of size effects in Spanish.

types of phrases or heads under a formal identity condition and under several, independently needed, locality conditions. Put differently, I conceived of the theory of ellipsis as the theory of grammatical “deletion”. Such a theory must provide an explicit procedure by means of which the syntactic objects affected by ellipsis are not subject to VI at PF. As I will show, copies left by movement operations and surface anaphora are among the kind of objects that are affected by ellipsis/deletion. This amounts to saying that both types of phenomena form a natural class of silent expressions, an idea already suggested by Chomsky (1993, 1995). I will call this the *C-Thesis* (*C* = Chomsky):

C-Thesis: Ellipsis and copies form a natural class of silent expressions.

As I will try to argue in detail in this chapter, the *C-Thesis*, plus one simple assumption about the timing of ellipsis, resolves all cases of phrasal copy mismatches, including sprouting and contrast sluicing. What is more, I argue that this approach does this job in a better way than some extant semantic approaches to the same problem. Put differently, copy mismatches in ellipsis are not only compatible with syntactic identity; they are also an argument in its favor.

As for inflectional mismatches in ellipsis, many of such adduced mismatches can be derived as mismatch illusions, once that the timing of ellipsis and the size of elliptical material are taken into consideration. In this respect, I will defend a version of lexical-syntactic identity, whose main property is that identity is checked in the narrow syntax. In a model in which the lexicon is distributed between syntax and the interfaces, this amounts to the thesis that only abstract lexical information active in the syntax is relevant for the identity calculus. An additional working hypothesis is that, in strict sense, syntactic identity boils down to *label identity*, *i.e.*, not all features present in the syntax are computed for identity, but only those that project as labels. This approach to identity, plus some standard assumptions about size effects in ellipsis, would derive many instances of putative lexical-syntactic mismatches as mismatch illusions. I call this thesis *Syntax First*:

Syntax First Thesis: Identity is resolved on the basis of information provided by narrow syntax. Depending on the size of a given E-site (VP, TP, NP, NumP, etc.), identity under ellipsis makes primary reference to the syntactic and lexical information that is active in narrow syntax, *i.e.*, before spell-out.

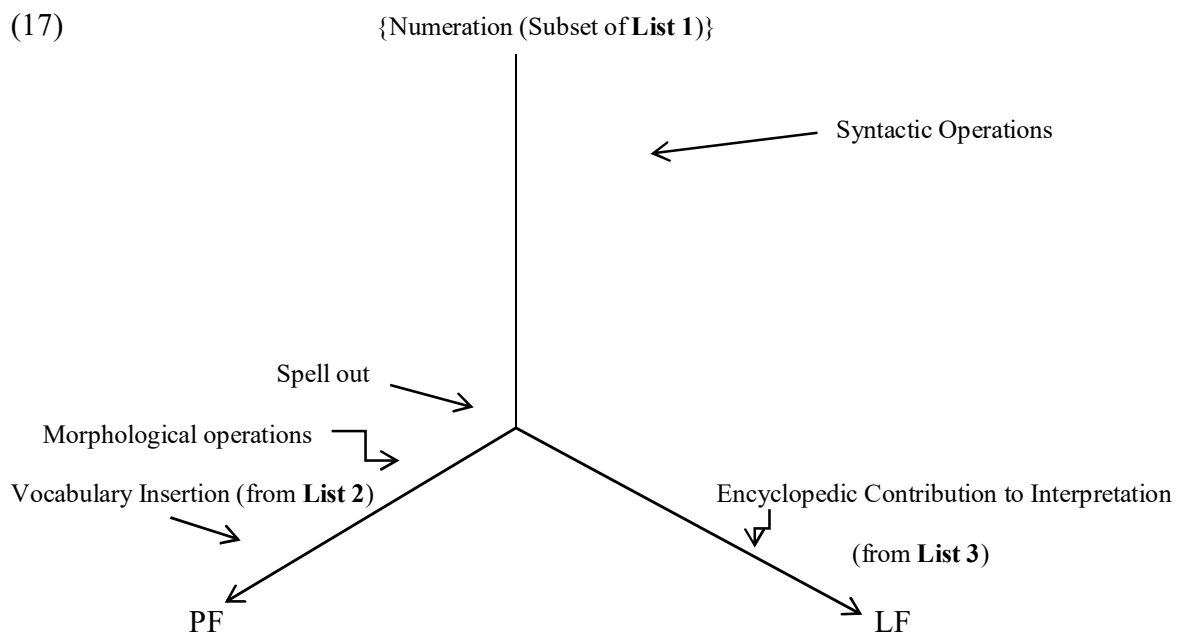
The thesis by itself has nothing new; it is at the heart of the theories of syntactic identity in the transformational tradition (classical examples are Chomsky 1965 and Ross 1969). If there is some novelty in this respect is just a methodological stance that is not always enough stressed in the relevant literature. Such a methodological stance tells us that before any theoretical decision regarding the proper formulation of identity in ellipsis (syntactic, semantic or pragmatic or a combination of any) is taken we must factor out possible mismatch illusions coming from size effects and opacity effects due to the syntax-morphology interface. Evidently, this requires providing detailed syntactic and morphological analyses for each case of a certain putative inflectional mismatch. Without such analyses, there is no way of offering any serious notion of identity in ellipsis and grammar. Regarding this aspect of the theory of ellipsis, I will not offer any definitive theory of identity. As far as I can tell, there is only one hypothesis that can be robustly confirmed by empirical evidence and is this: identity in ellipsis makes crucial reference

to abstract morphemes and Roots; information supplied after syntax is completely irrelevant for identity in ellipsis. In Distributed Morphology terms, identity is about List 1 objects. If this hypothesis turns out to be correct, then inflectional mismatch illusions can be used as an argument in favor of a particular model for the timing of ellipsis, according to which phrasal ellipsis is an operation of narrow syntax.

In what follows, then, I develop the details of such a theory of ellipsis timing (section 3) and show how it accounts for the syntactic identity puzzles involving traces/copies (section 4) and features mismatches (section 5). But before entering into the details of the theory, let me introduce some important assumptions about the syntax-morphology connection.

2. Architectural assumptions

I will assume the Distributed Morphology framework (cf. Halle and Marantz 1993 and, in particular, Embick 2000, 2007, Embick and Noyer 2001, Arregi and Nevins 2012 and Harley 2014, among many others). The general architecture is the following (from Harley 2014: 228):



A crucial property of this conception of grammar is “separationism”, *i.e.*, the fact that meaning-form connections are determined by the syntax in an all-the-way-fashion (Halle and Marantz 1994). Syntax manipulates abstract objects (from List 1) that are supplied with a given phonological exponent after syntax and through a set of vocabulary insertion rules (List 2). The primitives that syntax manipulates are Roots and abstract morphemes. Abstract morphemes are features drawn from a Universal Inventory and encode things like [past], [plural] and so on. Roots are represented in the syntax by an index that is replaced at PF by a phonetic matrix (cf. Chomsky 1995, Embick 2000, Saab 2008, Acquaviva 2008, and Harley 2014, among others).

The post-syntactic component is not defined only by vocabulary insertion rules; otherwise, we would expect a perfect meaning-form connection. As is well-known, the connection is far from perfect; the objects built in the narrow syntax can be altered by a set of post-syntactic operations

that move morphemes, delete features, add features and so on. Importantly, features that are purely morphological are not present in the syntax and syntactic-semantic features cannot be inserted after syntax. This working hypothesis is called Feature Disjointness:

Feature Disjointness:

- (18) Features that are phonological, or purely morphological, or arbitrary properties of vocabulary items, are not present in the syntax; syntacticosemantic features are not inserted in morphology.

[Embick 2000: 188]

Finally, as for the LF side, syntax provides an abstract object built out from Roots and abstract morphemes which is interpreted on the basis of the information available in List 3. Let me summarize the information contained in each of the lists in (17):

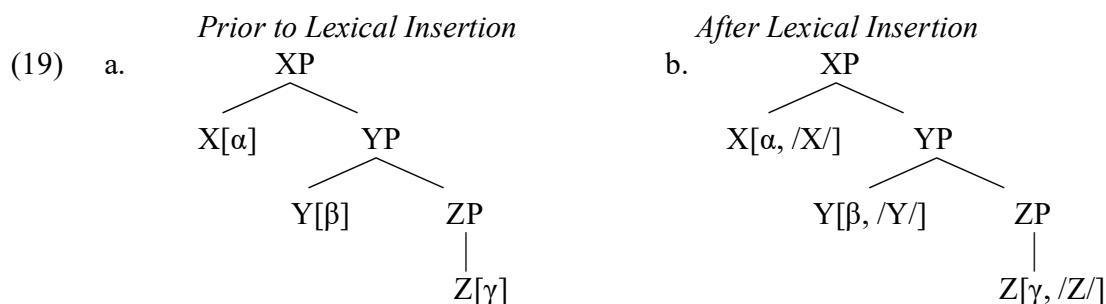
List 1: *Feature bundles:* Syntactic primitives, both interpretable and uninterpretable, functional and contentful.

List 2: *Vocabulary Items:* Instructions for pronouncing terminal nodes in context.

List 3: *Encyclopedia:* Instructions for interpreting terminal nodes in context.

[Harley 2014: 228]

Here, I focus only on the interaction between List 1 and List 2, which is at the core of theory of ellipsis I defend. The basic question is how abstract morphemes are enriched with phonological information. The relevant procedure of vocabulary insertion (VI) must be able to associate a given abstract morpheme taken from List 1 to a vocabulary item taken from List 2. On a standard account, VI adds phonological exponents in a tree like (19a) by consulting the vocabulary items in (20). Whenever the syntactic-semantic features present in a given terminal node match those present to the left of a given vocabulary item, the phonological exponent to the right of the vocabulary is added to the abstract morpheme. The final result is illustrated in (19b):

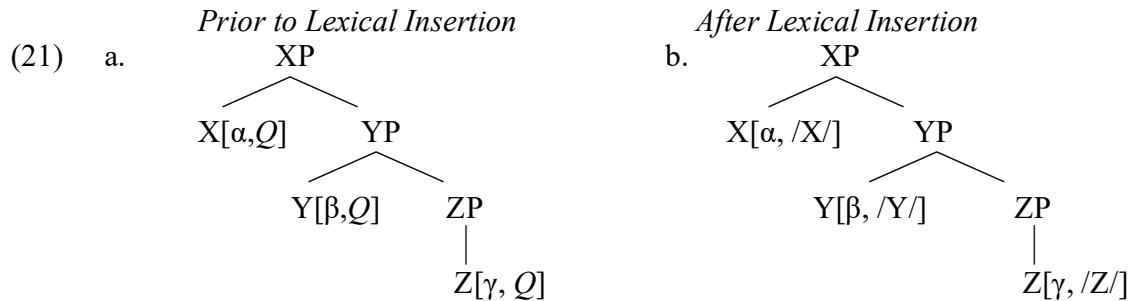


Vocabulary items:

- (20) a. $[\alpha] \leftrightarrow /X/$
 b. $[\beta] \leftrightarrow /Y/$
 c. $[\gamma] \leftrightarrow /Z/$

Following Embick (2015), I call this view on VI *additive*, stressing the idea that terminal nodes are enriched with phonological information *via* VI. A less standard alternative is assuming that VI is *replacive*. On this approach, abstract morphemes, in addition to the syntactic-semantic

bundles they possess, are also specified with a variable, Q , which is replaced for a phonological exponent through VI. VI thus amounts then to “substitution of a free variable” (Embick 2015: 90). We can illustrate the replacive view as in (21):

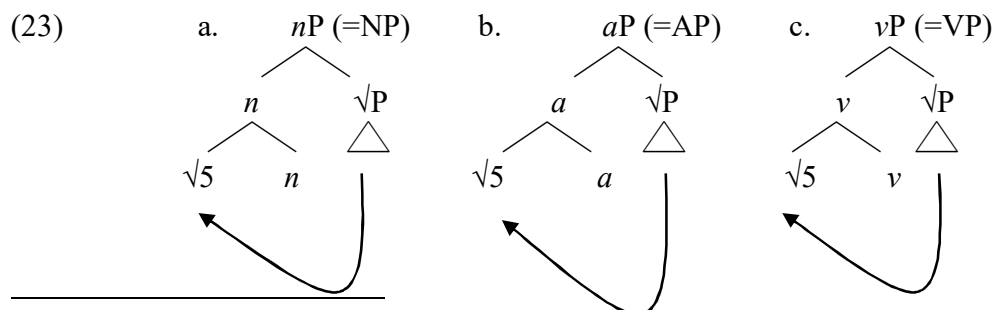


An important question is what type of objects are X, Y and Z both under the additive or the replacive views. Halle (1990), who adopts a replacive approach, assumes that only certain abstract morphemes possess Q , namely, those which empirically call for a late insertion solution. Embick, who also favors the replacive procedure, generalizes late insertion to all abstract morphemes but not to Roots, which are conceived of as phonetic matrixes. Here, as mentioned above, I assume that, regardless of the view of VI one favors, late insertion applies for all abstract morphemes and Roots (Embick and Noyer 2001, among many others).⁴

Before entering into the details of the theory of ellipsis I defend, let me provide a simplified derivation for the verbal form that occurs in the following sentence:

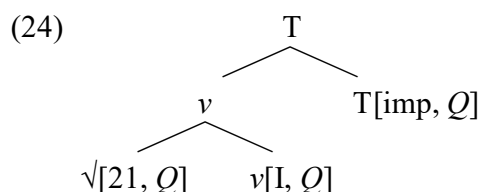
- (22) *pro* am-á-ba-mos.
 lov-TH[_{II}]-IMP-1PL
 ‘We used to love.’

There are at least four morphological pieces in this complex verbal form, which correspond to the bare Root *am-*, the thematic vowel of the first conjugation *-a-*, the imperfect past *-ba-*, and the agreement morpheme for the plural first person *-mos*. I assume that Roots have non-inherent category features; categorization of Roots occurs in the syntax *via* the combination with functional heads: the little *xs* (Embick and Marantz 2008):

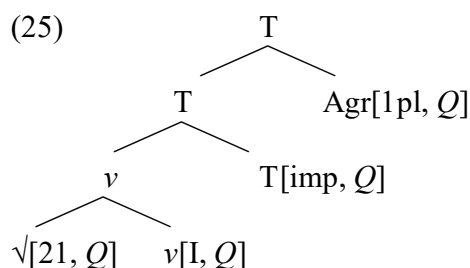


⁴ I take this as an assumption. There is the question, of course, whether ellipsis can be constructed as an empirical argument in favor of universal late insertion. In any case, if the point is made we have to be careful of not begging the question. The risk of circularity seems to be evident, but see Sailor (2020) for a recent argument in favor of universal late insertion coming from ellipsis issues. In Saab (2008), the point is also discussed with some detail, although there too I took universal late insertion as an assumption.

An additional assumption is that theme vowels are realized on the category-defining head v .⁵ Finally, following Chomsky (2000, 2001), I adopt the hypothesis that there are no functional projections for agreement. Under this assumption, and regardless one's commitments with the existence of an abstract *Agree* operation, concrete agreement morphemes are not given by syntactic means alone. Put differently, the morphological piece of agreement present in (22) is not provided by any designated functional head in the syntax (*i.e.*, there is no abstract morpheme of agreement taken from List 1) and, consequently, it must be added by some other mechanism. Embick and Noyer (2001) propose that such an additional mechanism is post-syntactic. In other words, agreement information is realized on nodes that are added post-syntactically. These nodes are called *dissociated morphemes*. Thus, after syntactic head movement (more on this below), PF receives the complex head in (24). For the sake of illustration, I assume the replacive view of VI:



At PF, a dissociated agreement morpheme is added to the complex head in (24) on the basis of the person and number information of the subject or, depending on assumptions about *Agree*, on the basis of information present on T itself:



The process of VI then proceeds to add phonological information to the terminal nodes in (25). This requires consulting List 2. Here is an oversimplified set of VIs for the relevant nodes:

Partial set of Vocabulary Items:

- (26)
- a. $T[imp] \leftrightarrow$ -ba-
 - b. $Agr[+1, +pl] \leftrightarrow$ -mos
 - c. $v[I] \leftrightarrow$ -a-
 - d. $\sqrt{21} \leftrightarrow$ am-

Recall that the replacive view implies substitution of the free variable Q with a phonological exponent, whenever the syntactic-semantic content in the VI matches the syntactic-semantic

⁵ Although I will remain to this particular point: according to Feature Disjointness, theme vowels should be inserted after syntax.

(27)

```

      T
     / \
    T   Agr[1pl, -mos]
   / \
  v   T[imp, -ba-]
 /  \
√[21, am-]  v[I, -a-]

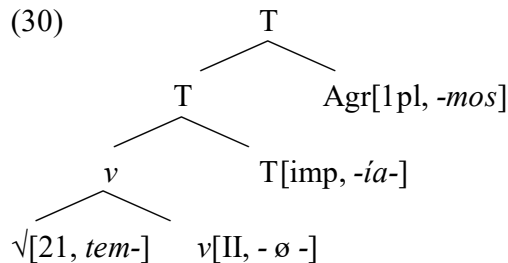
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Subset Principle:

- A clear case of competition connected to our previous example comes from allomorphy at the tense node. In our example, the imperfect node is realized in the context of theme vowel *-a*, which is the default exponent. Yet, second and third conjugations trigger a different realization for the same node, namely *-ía*. A more complete representation of the imperfect must cover this property. Ordering the vocabulary items in competition from the most specified vocabulary item to the default one is the standard way of proceeding:

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conjugation item wins the competition and the phonological exponent *-la* is inserted into the relevant abstract morpheme:



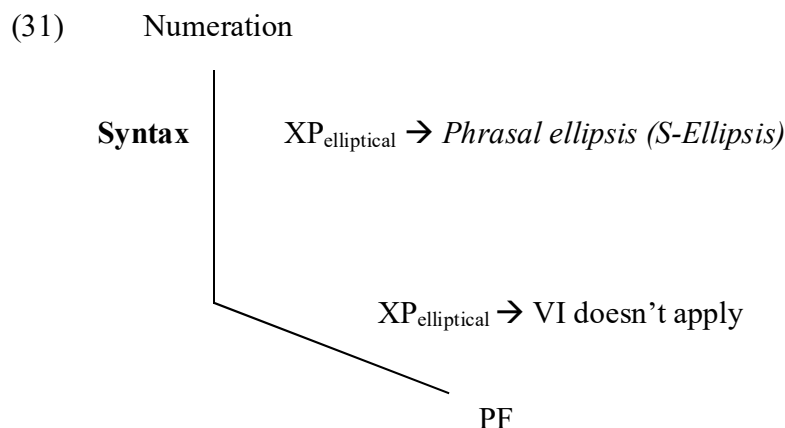
Both contextual allomorphy and syncretism will be relevant when deciding between alternative approaches to the nature of ellipsis. Let's now introduce the basics of the theory of ellipsis I propose.

3. Ellipsis as *Q*-deletion

3.1. Formal definitions

I propose that ellipsis is a grammatical operation that deletes the instructions for VI at PF. In principle, any object built up in the syntax can be subject to ellipsis in this sense. As we will see, many of such syntactic objects meet the conditions for ellipsis at different stages of a given derivation. A particular division I propose is that phrases and heads can be elided but under different locality conditions. In addition, whereas phrases are elided in the syntax, heads are elided at PF. I will justify this division later. For the time being, I focus only on phrasal ellipsis and show how the theory accounts for the puzzles introduced in the introduction.

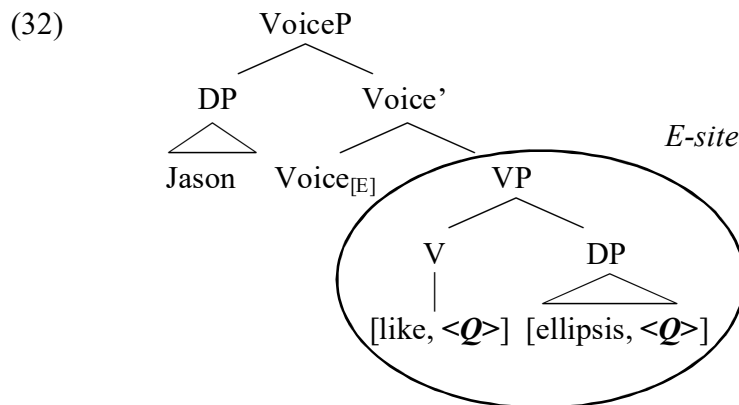
Here is a first approximation. Phrasal ellipsis applies entirely in the syntax. Any syntactic object that is syntactically marked as elliptical (in a sense still to be defined) in the syntax is excluded from the VI procedure.



The theory of ellipsis must make explicit what prevents VI to apply to any elliptical object. A proper definition of ellipsis, then, depends on the theory of VI one favors. Recall that there are at least two views on VI. On the additive approach, phonological information is added to abstract morphemes following the principles that govern VI (the Subset Principle, for example). On the subtractive view, such principles remain the same but VI consists of substitution of the free variable

Q. In Saab (2008), I assumed an additive procedure of VI and, as consequence, the mechanics of deletion was also additive: concretely, on my previous view, ellipsis consisted of adding a diacritic feature (called *I-feature*, *I* = Identity) to phrase markers in the syntax. Such features, then, instruct PF for blocking VI. I called this adding mechanism *I-Assignment*.

But suppose now that we adopt the replacive view on VI, according to which every syntactic terminal contains a free variable that is replaced for a phonological exponent at PF. On this conception, ellipsis can be seen now as *Q-deletion in the syntax*. The final result of *Q*-deletion for the complement of a given [E]-feature is illustrated in (32), where angled brackets indicate successful applications of *Q*-deletion:



There are two conceptual arguments that militate in favor of the *Q*-deletion view of ellipsis over the *I-Assignment* approach I have proposed in my previous work (a full detailed discussion is in Saab 2008). First, the *Q*-deletion approach dispenses with the need for any particular definition of VI Blocking. Deleting a *Q*-feature automatically blocks the substitution operation implied by the replacive approach to VI. Second, the replacive view complies, without any further ado, with Inclusiveness (*i.e.*, the ban of introducing features in narrow syntax that are not present in the initial numeration, Chomsky 1993). In what follows, then, I will adopt the *Q*-deletion strategy and make the relevant comparisons between the two systems when relevant.

Of course, some formal precisions are needed before discussing relevant case studies. Formal definitions would amount to taking a particular stance to certain relevant aspect of the general theory of ellipsis. I will assume first that sub-marker ellipsis requires the postulation of a formal feature in the syntax, which instructs syntax for *Q*-deletion. This is the [E]-feature in Merchant (2001) and subsequent work. As a next step, I assume that the [E]-feature triggers the following instruction:

- (33) **Q-Deletion inside E-sites**: Delete *all* *Q*-features contained in the complement of a given E-feature.

Now, how the deletion mechanism works is precisely what is at stake. The instruction in (33) is just a principle of interface convergence. Put differently, the complement of the [E]-feature must have all their *Q*-features deleted in order to be a legible object at the PF-interface. Suppose now

that Q -deletion proceeds only under certain dominance and c -command conditions. This could be stated more specifically and formally in the following way:⁶

$$(34) \forall x_{[Q]}^{min} [X^{max} \triangleleft^+ x_{[Q]}^{min} \ \& \ E \ c\text{-commands } X^{max} \rightarrow x_{[<Q>]}^{min}]$$

[E = the head with the [E]-feature and \triangleleft^+ = proper dominance, i.e., non-reflexive; see Carnie 2010: 35]

As is clear, this statement already implies that, although Q -features are properties of particular terminal nodes, well-formed ellipses consist of silencing entire phrase markers. Thus, Q -deletion deletes all the Q -features dominated by any maximal projection c -commanded by the [E]-feature head. Nonconstituent ellipses are thus ruled out by definition. Importantly, this is not an empirical claim and, as a consequence, the condition in (33) could be modified if forced by empirical considerations (see Weir 2014 and Stigliano 2020, among others, for some discussion of these possible empirical considerations).

I will also assume that *Q-deletion by ellipsis proceeds under phrasal identity*. This supposes an even more constrained view than (34). A formal restatement of it under this new constraint could be as shown in (35):

$$(35) \quad \underline{\text{Q-Deletion under Identity:}} \\ \forall x_{[Q]}^{min} [X^{max} \triangleleft^+ x_{[Q]}^{min} \ \& \ E \ c\text{-commands } X^{max} \ \& \ \underline{Id(X^{max}, A_s^{max})} \rightarrow x_{[<Q>]}^{min}] \\ (A_c = \text{matching sub-antecedent for } X^{max})$$

Again, this definition is not empirically driven. Conceptually, the difference between the conditionals in (34) and (35) are enough clear. Whereas the definition in (34) only requires the presence of Merchant's [E]-feature as a precondition for Q -deletion, the conditional in (35) adds an identity condition in its consequent clause. This is, of course, a crucial difference, at least as far as the mechanism of deletion is concerned. Under the definition in (34), recoverability is to some extent independent of deletion. In a sense, I think that more explicitly or implicitly, this view is consistent with Sag's (1976) theory of PF-deletion and LF identity or with a possible version of Merchant's (2001) theory of PF-deletion and mutual entailment.⁷ In principle, the theory contained in (34) is compatible with any of these semantic approaches to identity, and, evidently, with a more syntactic theory of identity in ellipsis, as well. This is so because the theory only requires the syntactic presence of an [E]-feature in order to ensure Q -deletion. Under the definition in (35), *some* additional identity relation is required for Q -deletion to apply. Note that it seems that such an identity relation must be also syntactic in nature, since Q -deletion under ellipsis is, by definition, also syntactic. This is a timing requirement imposed by the model of the grammar assumed here. More precisely, on this theory, identity makes reference to List 1 objects, that is, abstract morphemes and Roots. As I defined identity in Saab (2008), identity was strict in the sense that for every abstract morpheme and Root there is a

⁶ I use the superscripts x^{min} and X^{max} for terminal node and maximal projection respectively.

⁷ This is not Merchant's theory, in any case, since for him, the [E]-feature instructs deletion at PF and mutual entailment at LF.

matching *sub-antecedent* contained within the syntactic antecedent of the E-site.⁸ For the time being, I will remain neutral as far as the many definitions of syntactic identity (strict identity, inclusion/subset and so on) are concerned. In section 5, I will come on this ingredient of the theory, although I will not take any definitive stance on the issue. I content myself with stressing that syntactic identity means reference to List 1 objects. As far as I can tell, regarding syntactic identity, this is the sole thesis that can be sustained empirically in a somewhat definitive manner.

To sum up, in (36) I list some of the key ingredients of the theory of ellipsis discussed so far.

- (36) a. Phrasal ellipsis applies in the syntax; *i.e.*, before VI and other relevant morphological operations.
 b. Assuming the replacive view of lexical insertion, ellipsis is just *Q*-deletion.
 c. *Q*-deletion by ellipsis proceeds under identity in the syntax.

In the next subsection, I further elaborate on other aspects of the theory of the *Q*-deletion.

3.2. Identity and labeling

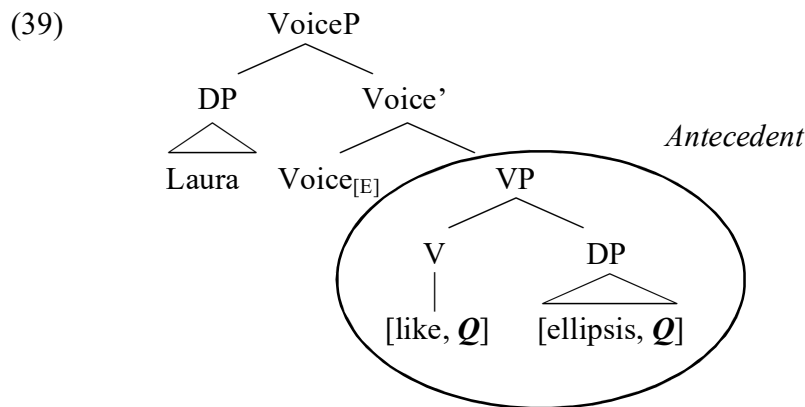
Let's see how the more constrained version of the theory of *Q*-deletion works in simple cases of VP-ellipsis in English:

- (37) Laura likes ellipsis and Jason does <like ellipsis> too. (cf. 1a)

Recall the relevant definition, which imposes deletion under identity:

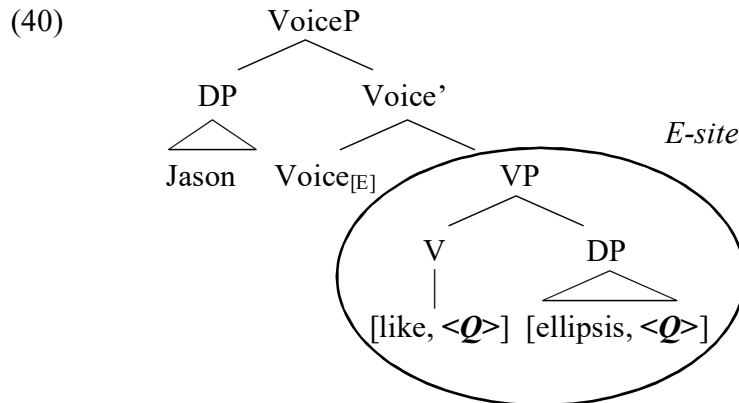
- (38) ***Q*-Deletion under Identity (cf. 35):**
 $\forall x_{[Q]}^{min} [X^{max} \triangleleft^+ x_{[Q]}^{min} \& E \text{ c-commands } X^{max} \& Id(X^{max}, A_S^{max}) \rightarrow x_{[Q]}^{min}]$

Unlike the unconstrained theory in (34), this theory requires the presence of a syntactic antecedent as a precondition for *Q*-deletion. Let's then stipulate the following antecedent for the E-site in (37):



⁸ This notion of *sub-antecedent* is similar to the notion of *matching correlate* in Rudin (2019). I prefer the former term, because of the possible ambiguity of the term *correlate*, which is also used in the way indicated in the introduction.

What the circle indicates here is the maximal syntactic domain in which every relevant phrase in the E-site must find a matching sub-antecedent. As we already know, the final result amounts to having an E-site as the following one:

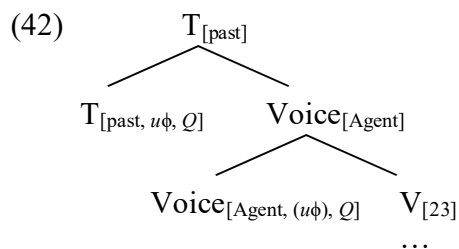


And we already know that there is no strict isomorphic relation between As and E-sites. The identity relation is between each maximal phrase and each matching sub-antecedent in the antecedent (A_S in the definition in (38)). Formally, there are various ways in which the identity relation can be stated (see Saab 2008, Rudin 2019 and Stigliano 2020). A more or less straightforward algorithm would first make a temporary copy of the Antecedent, leave it in the working space (WS) of the E-site and then proceed from the top node of the E-site and scan each subsequent phrasal node in the E-site in order to check identity with an identical phrasal node (*i.e.*, a *sub-antecedent*) in the Antecedent. On this view, *identity reduces to label identity*. Unlike Saab (2008), Rudin (2019) and Stigliano (2020), identity does not refer to heads or terminal nodes, but to maximal labels (*i.e.*, X^{max} objects).

In order to implement and illustrate the idea, let's assume that External Merge proceeds in the standard way, that is, assembling two independent syntactic objects and assigning a label to the resultant phrase (see Chomsky 1995):

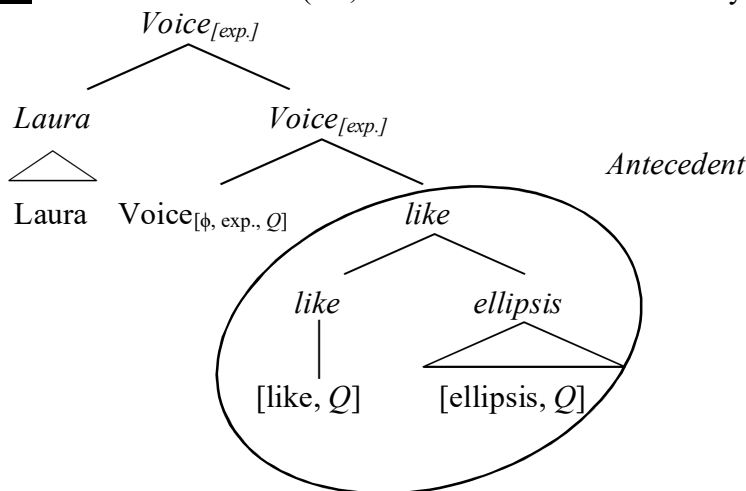
(41) External Merge: $M(\alpha, \beta) \rightarrow \{\alpha \{\alpha, \beta\}\}$

I will also assume that the label of a given object formed by External Merge is a proper subset of the features of the projecting head. Concretely, only category and inherent features can be the label of such a complex phrase. Crucially, Q -features, uninterpretable ϕ -features (value or unvalued) and other formal properties of some heads do not project as labels. As we will see, this is just a way to explicitly capture Chomsky's (1965) nondistinctiveness effects under ellipsis. A tree labeled as indicated would look then as follows:



Now, according to the definition in (38) identity reduces to identity of labels in the antecedent domain and the E-site. Let's proceed assuming that label identity must be strict, the default working hypothesis, as far as I can tell. Taking as a reference the VP-ellipsis example in (37), and shameless omitting many syntactic details, the first step of the suggested algorithm consists of finding an Antecedent. As noted in the introduction, this is the hardest part for any theory of ellipsis for many reasons, some of them having to do with the different nature of such antecedents depending of the type of ellipses involved in each case, with the opacity of the very notion of *Antecedent*, and so on. I do not have anything to contribute here. I just stipulate that for the case at hand the algorithm, if successful, finds the Antecedent circled below (labeling in italics, simplified):

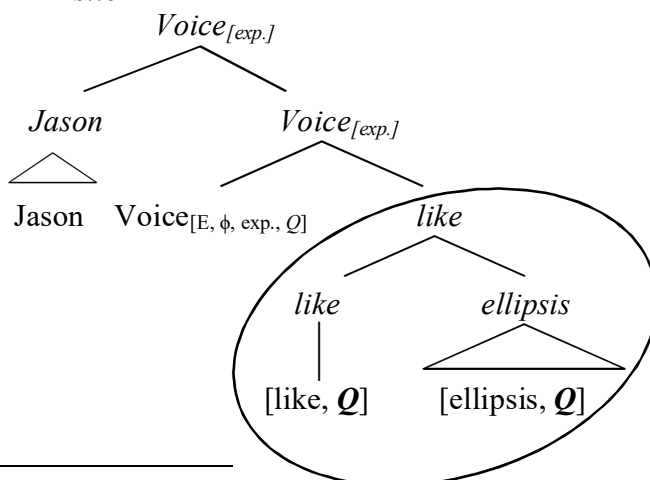
- (43) **Step 1:** Find an Antecedent (*i.e.*, a maximal domain for identity checking)



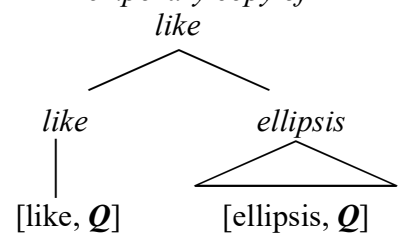
By stipulation, the second step is making a temporary copy of the antecedent phrase and leaving it in the working space corresponding to the E-site:⁹

- (44) **Step 2:** Make a temporary copy of A in E-site's WS

a. *E-site*



b. *Temporary copy of A*

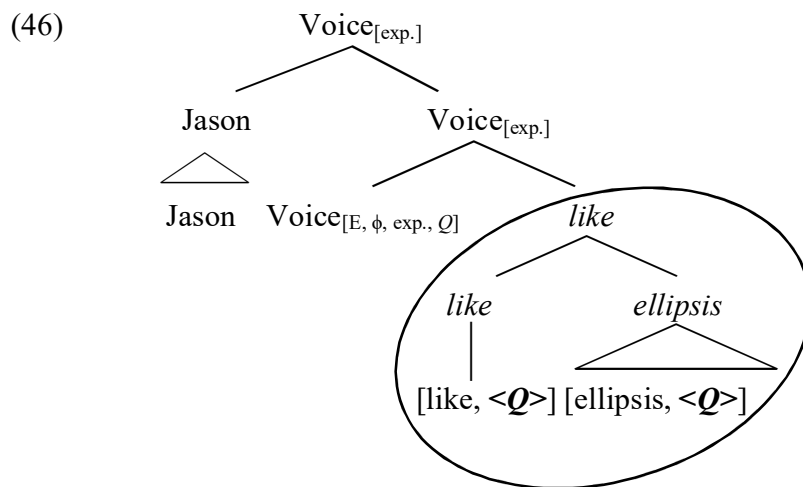


⁹ This is an auxiliary assumption. It is introduced to ensure some parsimony in the way in which the identity algorithm proceeds and to stress that whatever notion of *Antecedent* we favor it must always be in some sense reconstructed through information provided in discourse (see Fiengo and May 1994 for illuminating discussion on this topic).

Once this step is reached, the system proceeds to calculate identity for each sub-label in the E-site starting from the top. In each step of the top-down algorithm, the system must ensure that for each X^{max} node in the E-site there is label-identical node in the corresponding part of the tree. In the terms of our example, once the temporary copy is introduced in the WS of the E-site: the following label identity dependencies must be satisfied:

(45) *Identity reference set*: $\{<like_E, like_A>, <ellipsis_E, ellipsis_A>\}$

Given that this is the case in this particular example, the Q -features dominated by the relevant labels are deleted.



If identity is not satisfied, then, of course, identity fails and Q -deletion is aborted for the relevant terminal with the consequence that the entire VP cannot converge as required by (33):

- (47) a. *Laura likes ellipsis and Jason does $<likes\ pro\text{-}drop>$ too.
b. *Identity reference set*: $\{<like_E, like_A>, <prodrop_E, ellipsis_A>\}$

Having outlined the basic aspects of the theory of ellipsis I favor, let's now turn the attention to the two adduced arguments against syntactic identity: phrasal copy mismatches (section 4) and inflectional mismatches (section 5).

4. Timing issues #1: On the interaction between copy deletion and ellipsis

In this section, I discuss in detail phrasal copy mismatches under the umbrella of the theory sketched in the previous section. As already advanced in the introduction, the *C-Thesis*, repeated below, plus the theory of syntactic ellipsis just introduced, will not only be shown as compatible with this type of mismatches but also a robust piece of evidence in its favor:

C-Thesis: Ellipsis and copies form a natural class of silent expressions.

4.1. On the distribution of phrasal copies within E-sites

Recall that both sprouting and contrast sluicing constitute a crucial challenge for syntactic isomorphism:

- (48) a. She's reading. I can't imagine what.
 b. He shouted again, but I don't know to whom/who to.
 c. They're going to serve the guests, but it's unclear what.
 d. Joan ate dinner but I don't know with whom.
- [Chung *et al* 1995: 242]
 [Chung *et al* 1995: 246]
- (49) John has five cats but I don't know how many dogs.
 [Merchant 2001: 36]

In reality, both (48) and (49) are part of a broader generalization, namely that traces of phrasal copies doesn't count when it comes to calculating identity for a given E-site. In addition to examples like these, where traces of A-bar movement are irrelevant, it is worth mentioning here that traces of A-movement are irrelevant, as well:

- (50) a. John was [punished <John>] and Anne was too <punished <Anne>>.
 b. John seems [<John> to be sick] and Anne does too <[seem <Anne> to be sick]>.

An obvious difference when we compare (48)/(49) with (50) is that while in (48)/(49) the trace in the antecedent doesn't have a parallel trace within the antecedent, the traces in the E-sites in (50) do have a parallel trace within the corresponding antecedents. Examples like (50), then, seem to respect syntactic isomorphism, under well-known assumptions regarding the behavior of bound variables in ellipsis. Concretely, variables bound from parallel positions in the A and the E-site would give rise to licit ellipses (see, among others, Griffiths and Lipták 2014, Thoms 2015 and Gribanova 2018). Thoms (2015) makes the additional claim that "a variable cannot provide an antecedent for ellipsis of a non-variable" (Thoms 2015: 16). Yet, such a claim is disconfirmed by empirical evidence. Consider the following sluicing cases in Spanish:

- (51) a. A María, la voy a ver aunque no
 DOM M. her go.1SG to see.INF although not
 sé cuándo < la voy a ver (a María)>.
 know.1SG when her go.1SG to see.INF DOM M.
 '(As for) Mary, I will see her, but I don't know when.'
- b. El departamento sabe a qué profesor contratar,
 the department knows DOM what professor hire.INF
 pero no sabe cuándo < contratarlo>.
 but not knows when hire.INF-him
 'The department knows which professor to hire, but doesn't know when.'

In (51a), A has a variable left by the topic extraction of the direct object, whereas in (51b) A contains a *wh*-variable. However, the relevant E-sites don't contain parallel bound variables. Consider a simplified underlying structure for (51b), where it can be seen that ellipsis is licit even when the *wh*-trace in A doesn't have a corresponding bound variable in the E-site, but a free pronoun:

- (52) ... sabe [a qué profesor [contratar < a qué profesor>]],
 knows DOM what professor hire.INF DOM what professor
 pero no sabe [cuándo <[contratarlo < cuándo>]>].
 but not knows when hire.INF-him when

So, an explanation for (50) in terms of parallel bound variables doesn't generalize to each case involving different distribution of traces in As and E-sites. Taking into consideration the entire paradigm emerging from (48)-(51), and adding regular cases of sluicing (*Laura kissed someone. Guess who*), we can give a more complete picture of the distribution of phrasal traces in As and E-sites. A trace of an ellipsis remnant that has escaped the E-site can have different types of correlates in A and a trace within A can indeed license a non-variable (a non-trace) in the corresponding position within the E-site:

(53)

	Antecedent	E-site
<i>Sprouting (48)</i>t...
<i>Contrast Sluicing (49)</i>	...foc...	...t...
<i>VP-ellipsis (50)</i>	...t...	...t...
<i>Sluicing (51)</i>	...t...	pro
<i>Regular sluicing (1c)</i>	...indef...	...t...

This picture makes clear that syntactic isomorphism/parallelism cannot be on the right track. But in addition it also informs us about the distribution of traces in As and E-sites. As is clear, one of the most important challenges for the theory of ellipsis is offering a good explanation of why, then, traces of maximal phrases within E-sites are irrelevant when it comes to calculating identity. The copy theory of movement as originally proposed by Chomsky (1993) and (1995) offers an interesting solution. Chomsky himself pointed out that ellipsis and copy deletion would be part of same natural class of phenomena:

C-Thesis: Ellipsis and copies form a natural class of silent expressions.

He suggests that if E-sites are interpreted as copies of their antecedents (*i.e.*, an E-site is marked with a particular diacritic) by the computational system, then

It will follow [...] that the copy deletes [he refers to the E-site, AS], by *whatever mechanism* deletes traces in the phonological component. (Chomsky 1995: 253, my emphasis)

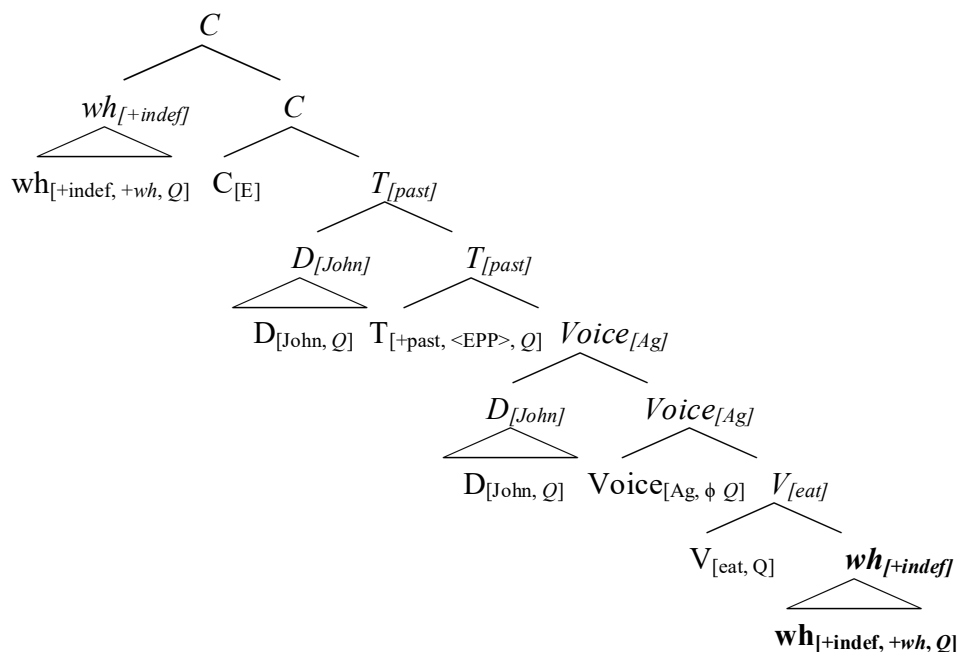
In other words, surface anaphora and copies left by movement are subtypes of the same phenomenon.¹⁰ In Saab (2008) I proposed that the “whatever mechanism” referred in the above

¹⁰ In Chomsky (1993) the relation goes in the opposite way: copy deletion reduce to ellipsis. See Nunes (2004) for a discussion of both alternatives.

quote was *I*-Assignment. Now, I would like to explore an alternative in terms of *Q*-deletion, but noting that, at least for this particular empirical domain, my choice is only made by the conceptual considerations raised in the previous section. As far as I can tell, both alternatives are extensionally equivalent as far as the distribution of copies in As and E-sites is concerned. Let's see then how this approach derives the paradigms in (48)-(51), starting with the sprouting cases.

Following Merchant (2001), I assume that sluicing deletes a TP whenever such a TP is selected by a C head that is specified with an [E]-feature. Movement of the *wh*-remnant leaves a copy within the E-site. For a sluice sentence like (54a), the abstract representation prior to copy deletion and TP-deletion, would be essentially as shown in (54b), assuming the labeling approach suggested in the previous section (labels in *italics*):

- (54) a. John ate but I don't know what.
b.



I assume that, if certain conditions are met, *Q*-deletion for copies applies before *Q*-deletion of E-sites. As for the conditions that syntactic copy deletion must satisfy, there are basically two: (i) identity and (ii) c-command. Identity among chain links depends on one's view about the very nature of copies (among other options, as the result of a particular copy operation, Chomsky 1993, Nunes 2004, Muñoz-Pérez 2017; as syntactically-defined occurrences of a single syntactic object, Chomsky 2000, 2001), so I simply assume here that chains are subject to some identity requirement (perhaps, inclusion as defined in Muñoz-Pérez 2017). With Chomsky (2000), I adopt the most traditional view of *c*-command in terms of sisterhood and reflexive containment:¹¹

- (55) [...] α c-commands β if α is a sister of K that contains β . (Chomsky 2000: 116)

¹¹ Alternatively, we could dispense with the identity clause, since it could be deduced from the copy mechanism itself.

With this in mind, we can state the conditions for this variety of *Q*-deletion as follows:

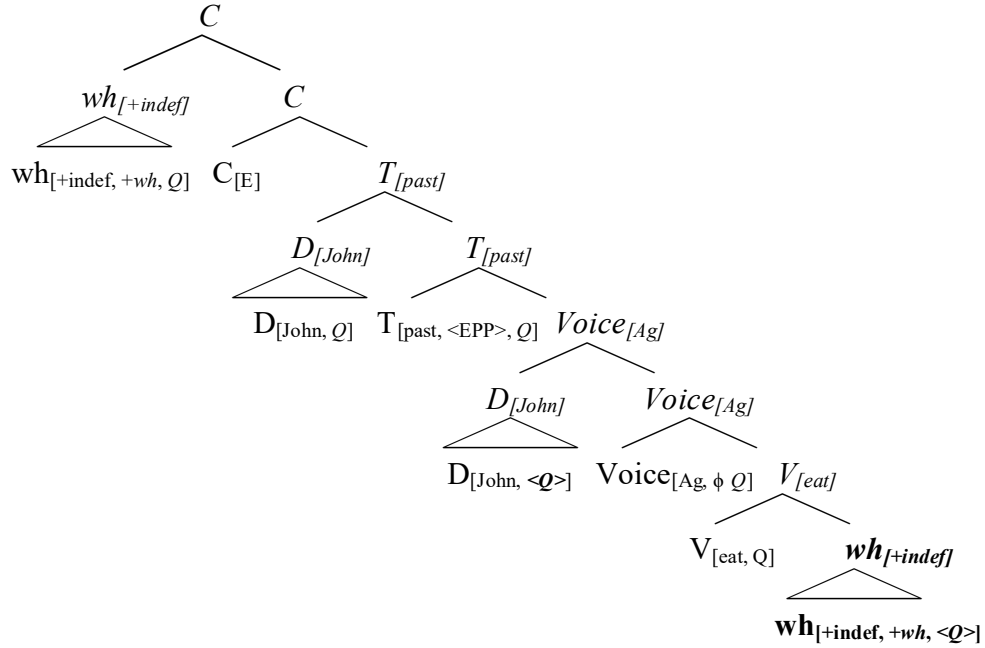
- (56) Given a two-membered chain CH with links $\{X^{max}, X^{max}\}$,
 $\forall x_{[Q]}^{min} [X^{max} \triangleleft^+ x_{[Q]}^{min} \& X^{max} \text{ c-commands } X^{max} \& X^{max} \subseteq X^{max} \rightarrow x_{[<Q>}^{min}]$

With reference to our sprouting case in (54a) and its associated tree in (54b), the *Q*-features of the lower copy of the *wh*-remnant and the copy left by subject movement are deleted, since both identity and *c*-command are met.

- (57) *Copy deletion under c-command and identity (Deleted Q-features boldfaced)*

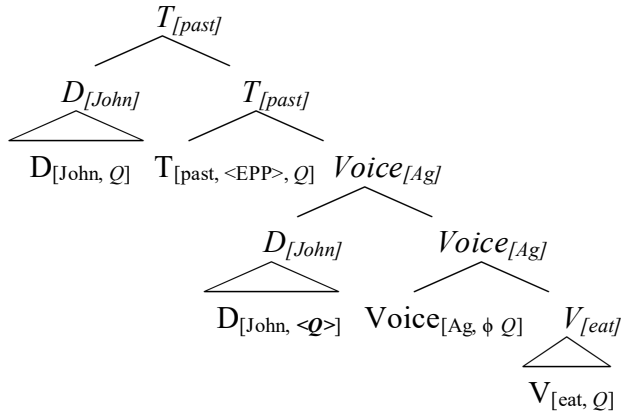
a. John ate but I don't know what.

b.



Now, once an antecedent TP for the E-site is found, it is copied as a temporary file in the E-site's WS. The A copied can be represented as follows:

- (58) *Temporary A's Copy:*

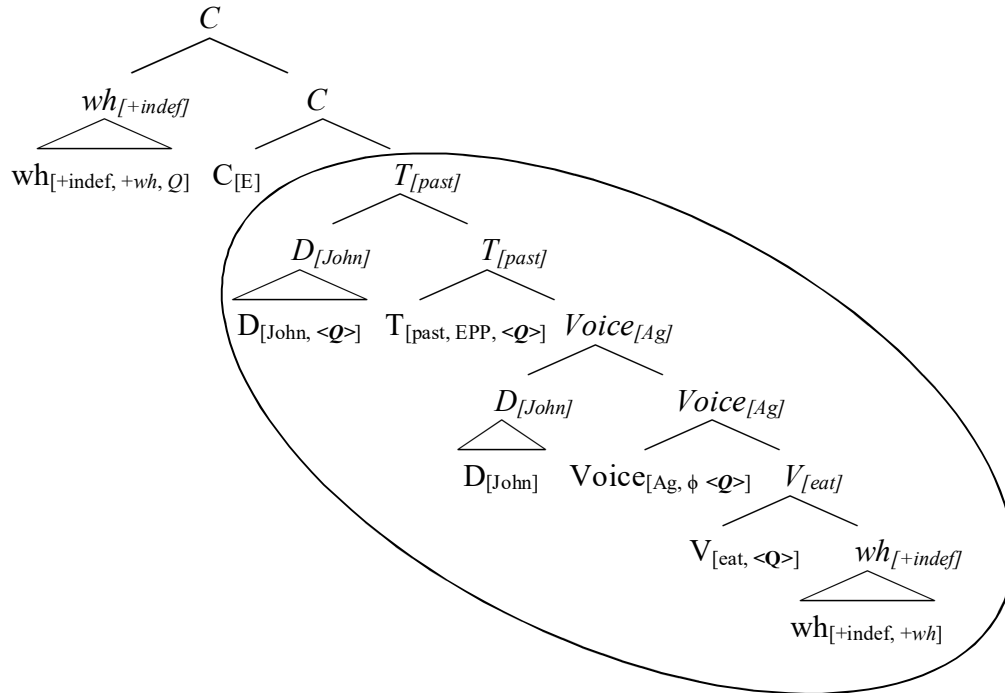


Starting from the top it is easy to see now that each node X^{max} , such that $X^{max} \triangleleft^+ x_{[Q]}^{min}$, has an identical sub-antecedent contained in A.

(59) *Q-deletion under ellipsis (Q-features deleted by ellipsis, boldfaced)*

a. John ate but I don't know what.

b.



This view implies that phrasal copies are never in the need for a corresponding phrase in the antecedent. The prediction is that whenever a phrase move to a *c*-commanding position, *Q*-deletion automatically applies to its lower copy rendering any further instance of *Q*-deletion superfluous. On this theory, the unique requirement is that each *Q*-feature within the E-site is deleted by some instance of *Q*-deletion. If there is no movement of a given XP out of the E-site, identity between this XP and a corresponding sub-antecedent within A is needed in order to ensure *Q*-deletion of the *Q*-feature inside the terminal node XP dominates. Beyond sprouting, this generalizes to regular sluicing with indefinite correlates (1c), contrast sluicing (49), and the VP-ellipsis cases in (50). As for examples like (51), where a trace serves as a correlate of a pronoun or R-expression, the system proposed here also offers a natural account: *wh*-movement in the antecedent sentence deletes the *Q*-feature of the lower copy of the displaced constituent but leaves its set of syntactic-semantic features and Root information unaltered in the label of such a node; therefore, the pronoun in the E-site can take such a lower copy as its sub-antecedent. Since that, *modulo* Vehicle Change (Fiengo and May 1994), identity is satisfied, *Q*-deletion applies deleting every *Q*-feature contained in the pronoun.¹² In turn, the trace of the *wh*-

¹² A reviewer wonders how the present account would deal with Vehicle Change phenomena. As noted in footnote 2, Vehicle Change was used by Merchant (2001) as one of the crucial arguments against syntactic identity. In my opinion, Merchant's argument really applies to some version of syntactic identity, in particular, to the theory of Fiengo and May (1994), according to which Vehicle Change is the name of an operation, not the name of a phenomenon. Fiengo and May propose a restricted theory of Vehicle Change to account for the fact that, for instance, in some cases, R-expressions can antecede pronominals (see (i) below).

adjunct doesn't need for a sub-antecedent in A, because a prior instance of *Q*-deletion has deleted its *Q*-feature. In (60), I provide a simplified representation for (51a), in which each relevant instance of *Q*-deletion in the E-site appears between angled brackets.

- (60) sabe [a qué profesor [contratar <a **qué** **profesor**>],
 knows DOM what professor hire.INF DOM what professor
 pero no sabe [cuándo <[contratar-<lo> <cuándo>]>].
 but not knows when hire.INF-him when

Thus, all the cases included in the table in (53) are correctly ruled in under this syntactic approach to ellipsis. Importantly, the system, even when more flexible than other syntactic approaches to ellipsis, also rules out Chung's paradigm in (14) and (15), which was a serious challenge for semantic identity, at least as formulated by Merchant (2001). Let's only briefly illustrate this point with the contrast between (14a) and (15a). As shown below, the ungrammatical case is ruled out as violation of *Q*-deletion under identity, since the PP label does not have an identical sub-antecedent in the TP antecedent. Movement of the entire PP is then required in order to obtain a legitimate E-site that complies with the instruction in (33):

- (61) a. They're jealous, but it's unclear of who <they are jealous <of who>>
 b. *They're jealous, but it's unclear who(m) <they are jealous **of** <who>>

As we will see in a moment, argument structure mismatches of the type illustrated in (16) are also straightforwardly derived under the present theory. In summary, I have demonstrated that

-
- (i) They hired **Laura_i**, but she _i said that they did not < hire **her_i**>.

Given the properties of their reconstruction theory (see section 1), they were forced to postulate an operation like Vehicle Change. In this respect, the argument developed by Merchant is impeccable: a theory which dispenses with such a powerful operation should be preferred over one that is forced to assume it. Now, once the distinction between the operation and the phenomenon is made, it is clear, at least in my opinion, that the phenomenon is not very informative as a way of deciding in favor of either semantic or syntactic identity. In my system, a lexical DP in a given antecedent is a legitimate sub-antecedent for a ϕ -set in a D projection (*i.e.*, a pronoun), which is, in turn, inside an E-site (see Saab 2008 for details). In addition, while it is true that semantic identity, as formulated by Merchant, is particularly a good theory for cases like (i), there are other cases in which indexicals in E-sites does not behave as expected according to Merchant's mutual entailment. One interesting case comes from another Chung's paradigm (all examples from Chung 2000):

- (i) Jack: I_i don't want to be divorced from you_j.
 Jill: Well, I_j do __!
 (a) [E want to be divorced from you_i]
 (ii) Jill: For instance, I_j would be reluctant to criticize you_i in public
 Jane: I_i wouldn't be __.
 (a) [E reluctant to criticize you_j in public]
 (ii) Jack: You_m pushed me_j first!
 Mike: No, you_j did __!
 (a) [E push me_m first]

As is clear, these ellipses allow for an interpretation (those indicated in the examples in (a)) in which mutual entailment cannot be satisfied, since the variable assignments in the antecedent and the E-site return different individuals (although see Barros and Saab (2016) for a solution compatible with mutual entailment). Without a doubt, indexical mismatches and Vehicle Change phenomena in general still require a more conclusive solution.

the *Q*-deletion approach handles the distribution of traces within E-sites in entirely syntactic terms, *i.e.*, under a theory of identity that makes reference only to syntactic objects built up from abstracts morphemes and Roots taken from List 1. Perhaps, it becomes as a surprise that this system is not only compatible with the entire set of data discussed so far, but it is also superior to semantic approaches that take the lack of syntactic isomorphism seen in sprouting as a robust indication in favor of a semantic identity condition for ellipsis. However, it turns out that many cases of sprouting cannot be derived under mutual entailment (or relatives) without further ado. Consider the following examples of adjunct sprouting from Barros and Kotek (2019) (see also Anderbois 2014 and reference therein):

(62) Sally left, but I don't know {in which car, with whom...}

Merchant's mutual entailment cannot ensure the right result here, since the proposition in the antecedent (*i.e.*, that Sally left) doesn't entail the proposition expressed in the elliptical sentence (*i.e.*, that Sally left with someone or that Sally left in a certain car). It doesn't follow directly under Barros and Kotek's similar account, according to which ellipsis is licensed whenever there is a salient antecedent A with same the focus-theoretic propositional content as the E-site. In simple terms, this condition can be stated as follows:¹³

(63) $U[\llbracket CP_A \rrbracket^f] \leftrightarrow U[\llbracket CP_E \rrbracket^f]$ [Barros and Kotek 2019: 6]

As it happens to Merchant's account, the condition in (63) doesn't give good results in examples like (62) (see Chung *et al* 2010 for related examples), since the set of worlds in the antecedent (*i.e.*, λw . Sally left in w) contains worlds where Sally didn't leave with anyone:

(64) a. Sally left but I don't know who with.
b. $\{w: \text{Sally left in } w\} \neq U\{\lambda w. \text{Sally left with } x \text{ in } w \mid x \in D_e\}$

Barros and Kotek, then, appeals to a process of accommodation, along the lines proposed by Lewis (1979):

(65) **Accommodation (Lewis 1979: 340):**

If at time t something is said that requires presupposition P to be acceptable, and if P is not presupposed just before t , then, *ceteris paribus* and within certain limits, presupposition P comes into existence at t .

The sluice sentences in (62) trigger the presupposition that the relevant leaving-events include a companion or a car. Such a presupposition then removes from the antecedent denotation worlds inconsistent with it. As Barros and Kotek notice, this sort of accommodation is not a trait of their proposal, but is required for any semantic account. Yet, I add to this claim that the syntactic approach I'm defending here doesn't require any additional accommodation process but instead provides a uniform analysis for every type of sprouting and, beyond sprouting, for any E-site containing phrasal copies. Whether such a uniform approach should be preferred over an approach using mutual entailment (or relatives) + accommodation depends on whether relevant

¹³ Read it as: the set of worlds used to construct the alternatives in $\llbracket CP_E \rrbracket^f$ is equivalent to the set of world used to construct alternatives in $\llbracket CP_A \rrbracket^f$.

experiments can be constructed in order to detect the sort of accommodation that is predicted by Barros and Kotek in a subset of sprouting cases. As it stands, the appeal to accommodation remains as an internal fix for semantic approaches. But even if one is willing to accept the fix, there is still a set of facts that cannot be derived under the semantic + accommodation approach. These facts also involve sprouting.

Concretely, Pujalte (2012, 2013) shows that added datives in Spanish don't tolerate sprouting of the added argument. A verb like *cortar* 'to cut' only requires an internal argument. Yet, like any transitive structure, a benefactive argument can be added through the introduction of a dative DP (see also Masullo 1992 and Cuervo 2003). Of course, a benefactive participant introduced by preposition *para* 'for' is licit as well.

- (66) a. Juan cortó el pasto.
 J. cut the grass
 b. Juan le cortó el pasto a Pedro.
 J. CL.DAT.3SG cut the grass to P.
 c. Juan cortó el pasto para Pedro.
 J. cut the grass for P.
 'Juan cut the grass for Pedro.'

Interestingly, Pujalte notices that while adjunct sprouting is possible (see (67c)), sprouting of the dative argument is illicit (see 67a), even when its non-elliptical counterpart is grammatical (see (67b)):

- (67) a. ??Juan cortó el pasto, pero no sé a quién
 J. cut the grass but not know.1SG to whom
 <le cortó el pasto>.
 CL.DAT.3SG cut the grass
 b. Juan cortó el pasto, pero no sé a quién
 J. cut the grass but not know.1SG to whom
 le cortó el pasto.
 CL.DAT.3SG cut the grass
 'Juan cut the grass but I do not know to whom he cut the grass.'
 c. Juan cortó el pasto, pero no sé para quién
 J. cut the grass but not know.1SG for whom
 <cortó el pasto>.
 cut the grass
 'Juan cut the grass but I do not know for whom.'

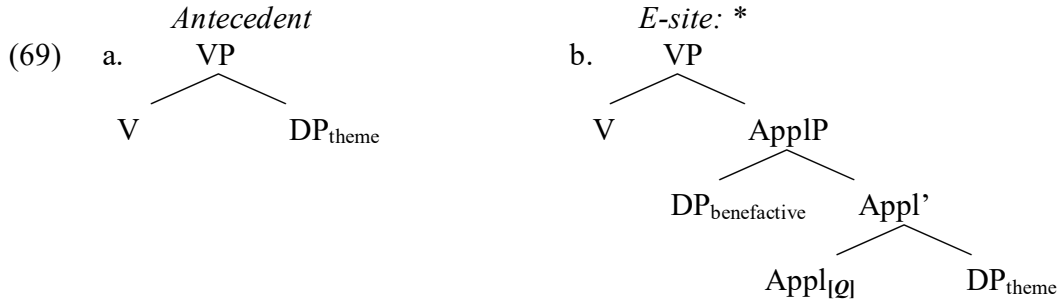
The sharp contrast between the adjunct sprouting in (67c) and the sluice in (67a) is problematic for Barros and Kotek's proposal. In both cases, the condition in (63) is not met, as shown in (68):

- (68) a. Juan cortó el pasto
 = {*w*: John cut the grass in *w*}
 ≠
 b. Juan cortó el pasto {a alguien, para alguien} =

$$\cup \{\lambda w. \text{John cut the grass for } x \text{ in } w \mid x \in D_e\}$$

Accommodation should then remove from consideration irrelevant worlds in the antecedent (for instance, worlds where John cut the grass for the benefit of no person). However, accommodation only licenses adjunct sprouting.

In contradistinction, the analysis I'm defending here deals with these examples without any additional stipulation. According to Cuervo, Pujalte and others, added datives in Spanish are introduced by low applicative heads (Pylkkänen 2008). It follows, then, that the E-site in the sluice in (67a) contains an Appl phrase, that doesn't have a sub-antecedent ApplP within the antecedent TP. The *Q*-feature of the theme DP in the E-site is deleted under identity with the theme DP inside the TP antecedent, and the *Q*-feature of the lower of copy of the benefactive DP is deleted under identity and *c*-command with its higher copy. Yet, the ApplP itself doesn't have a corresponding sub-antecedent in the antecedent TP and the derivation is cancelled immediately this failure obtains:



The adjunct sprouting sluice follows in the same way as any other case of sprouting. In summary, in order to obtain good results for our entire paradigm the semantic + accommodation approach must be supplemented with an identity condition making reference to formal identity. As mentioned in the introduction, while I don't deny that a complete theory of ellipsis could include semantic or pragmatic ingredients, for the cases analyzed so far, at least, a *Q*-deletion approach alone is able to do the entire job. Lacking evidence for the contrary, I contend then that the *Q*-deletion approach is superior to the semantic + accommodation (+ syntactic?) approach.

4.2. On the distribution of head copies within E-sites

Like the *I*-assignment system I developed in Saab (2008), the *Q*-deletion model for ellipsis makes a further prediction regarding the distribution of copies within E-sites. Recall that *Q*-deletion of lower copies in the syntax requires *c*-command.

$$(70) \quad \text{Given a two-membered chain CH with links } \{X'^{max}, X^{max}\}, \\ \forall x_{[Q]}^{min} [X^{max} \triangleleft^+ x_{[Q]}^{min} \ \& \ X'^{max} \text{ c-commands } X^{max} \ \& \ X'^{max} \subseteq X^{max} \rightarrow x_{[<Q>]}^{min}]$$

The *c*-command condition becomes crucial when considering possible movement dependencies that don't involve *c*-command in the defined sense (essentially, as sisterhood). Syntactic head adjunction is, of course, the first one that comes to mind (Travis 1984, Baker 1988, among many others). Consider the following abstract representation of head adjunction:

```

graph TD
    X1[X] --- X2[X]
    X1 --- YP[YP]
    X2 --- Y[Y]
    X2 --- X3[X]
    YP --- dots["...Y..."]
  
```

Let's start with the question about the interaction between head movement and ellipsis. The relevant empirical domain is constituted by languages that have V-stranding VP-ellipsis (e.g., Irish, Hebrew, Portuguese, Russian, Greek, Hungarian; see McCloskey 1991, 2004, 2012, Goldberg 2005, Cyrino and Matos 2002, 2005, Saab 2008, Lipták 2012, 2013, Lipták and Saab 2014, Gribanova 2013a,b, 2018, Merchant 2018, among others). In the abstract, a V-stranding VP-ellipsis scenario would have the following form:¹⁴

TP

T <VP>

V T_[E] ...V...

Portuguese:

- | | | | | | | | | |
|------|------|---|------|-------|---------|----------------|----------------|----------------|
| (73) | a. | Quando | a | Ana | pôs | os | óculos na | mesa, |
| | | when | the | A. | put | the | glasses on-the | table, |
| | a | Maria também | | pôs < | os | óculos na | mesa>. | |
| | the | Maria too | | put | the | glasses on-the | table. | |
| | | 'When Ana put the glasses on the table, Maria did too.' | | | | | | |
| | b. * | Quando | a | Ana | colocou | os | óculos na | mesa, |
| | | when | the | A. | placed | the | glasses on-the | table, |
| | a | Maria também | | pôs < | os | óculos na | mesa>. | |
| | the | M. too | | put | the | glasses on-the | table | |
| | | [Cyrino and Matos 2002: 6] | | | | | | |
| (74) | a. | O | Luís | foi | à | biblioteca | às | nove horas |
| | | the | Luís | went | to.the | library | at | nine o'clock a |

28

e o Pedro também foi <___>.
and the P. too went

‘Luís went to the library at nine o’clock and Peter did, too’.

(EP/BP)

b. *O Luís chegou à biblioteca às nove horas
the L. arrived at.the library at.the nine o’clock

e o Pedro também foi <___>.
and the Pedro too went

(___=[foi] à biblioteca às nove horas) (EP/BP)

[Cyrino and Matos 2005: 9]

Irish

- (75) a. A: A-r bhain tú sult as? B: Bhain.
INTERR[PAST] take you fun from-it took
A: ‘Did you enjoy it? B: ‘I did.’
- b. A: A-r enjoy-áil tú é? B: *Bhain.
INTERR[PAST] enjoy you it took
A: ‘Did you enjoy it?’ B: ‘I did.’
- c. *Níor cheannaig siad ariamh teach ach dhíol.
NEG.PAST bought they ever house but sold
‘They never bought a house but they sold (a house)’. [McCloskey 2004]

Hebrew:

Context: Dvora is pregnant and has many errands to do; Miryam, who has a car but is sometimes inconsiderate, is supposed to be helping her.

- (76) Q: (Ha'im) Miryam hevi'a et Dvora la-xanut?
Q Miryam bring[Past3Fsg] ACC Dvora to.the-store
'(Did) Miryam bring Dvora to the store?'
- Ai: Ken, hi hevi'a.
yes she bring[Past3Fsg]
‘Yes, she brought <Dvora to the store>.’
- Aii: * Ken, hi lakxa.
yes she take[Past3Fsg]
‘Yes, she took <Dvora to the store>.’
- Aiii. * Lo— hi ŠALXA!
no she send[Past3Fsg]
‘No—she SENT <Dvora to the store>!’

[Goldberg 2005: 160]

So, V-stranding ellipsis in these languages is licit only if there is strict identity between the V head in the antecedent and in the E-site. Importantly, Goldberg (2005) shows that there no is pragmatic constraint in the cases she analyses, since the non-elliptical counterparts of the ungrammatical cases in (7) are perfectly grammatical:

- (77) Q: (Ha'im) Miryam hevi'a et Dvora la-xanut?
Q Miryam bring[Past3Fsg] ACC Dvora to.the-store

‘(Did) Miryam bring Dvora to the store?’
 Ai: Ken, hi hevi’a ota.
 yes she bring[Past3Fsg] ACC.her
 ‘Yes, she brought her.’
 Aii: Ken, hi lakxa ota.
 yes she take[Past3Fsg] ACC.her
 ‘Yes, she took her.’
 Aiii: Lo— hi ŠALXA ota!
 no she send[Past3Fsg] ACC.her
 ‘No—she SENT her!’

[Goldberg 2005: 161]

Goldberg also notices that the paradigm in (76) possesses a challenge for the semantic theory proposed in Merchant (2001) (also assumed in her work). In her words:

Empirically, [...], focusing the Vs does *not* have the effect of making their non-identity licit. This can be seen in examples like [76Aiii], [...], in which non-identical Vs with identical argument structures are focused, and yet are still ungrammatical in V-Stranding VPE. (Goldberg 2005: 185)

In order to derive head strict identity effects, she proposes an additional constraint on V-stranding ellipsis, which is formulated as follows:

GIVEN-ness Constraint on the Heads of Elided Constituents:

- (78) The head of the constituent targeted for deletion must be semantically GIVEN (in the sense of Schwarzschild 1999). [Goldberg 2005: 182]

Goldberg concludes that even though this additional constraint doesn’t make mutual entailment worse than other theories she discusses (LF copy theories), is, indeed an *ad-hoc* requirement. Crucially, as I have shown, the behavior of head copies in these languages conforms to the expectations of the theory of this chapter (see Saab 2008 for extensive discussion). This having said, there are, however, another subset of V-stranding VP-ellipsis languages where verbal mismatches are allowed if the verbs contrast (among others, Russian, Hungary and Greek). One of the best studied cases is Russian, particularly, thanks to the research of Vera Gribanova in several studies. Gribanova (2018), for instance, presents a detailed comparison between Irish, a language that, as I have indicated above, doesn’t allow for verbal mismatches, and Russian. In this language, the said mismatch is particularly allowed in the discursively marked VSO order whenever the stranded verb bears lexical focus. In neutral SVO orders, V-stranding is licensed but verbal lexical identity must be respected, as shown by the contrast between (79) and (80):

- (79) a. Evgenija otpravila posylku v Mosku?
 E. send.PAST.SG.F package.ACC to M.
 ‘Did Evgenija send the package to Moscow.’
 b. Ne otpravila / Otpravila.
 no send.PAST.SG.F send.PAST.SG.F
 ‘She didn’t / she did.’

[Gribanova 2018:2]

- (80) a. Paša poterjal knigu v biblioteke,

- P. lose.PAST.SG.MS book.aCC in library.PREP
i žurnal v stolojov?
and magazine.aCC in cafeteria.PREP
‘Did Pasha find a book in the library, a magazine in the cafeteria?’
b. *Da, poseja.
yes lose.PAST.SG.MS

[Gribanova 2018:13]

As mentioned, VSO order in the antecedent and contrastive focus on the verbal remnant render a verbal identity mismatch licit:

- (81) a. Našel li Paša poterjal knigu v
find.PAST.SG.MS Q P. lose.PAST.SG.MS book.aCC in
biblioteke, i žurnal v stolojov?
library.PREP and magazine.aCC in cafeteria.PREP
b. No, ne našel, a portejal.
no NEG find.PAST.SG.MS but lose.PAST.SG.MS
‘No, he didn’t find (...), but he lost (...).’
c. Našel, no potom portejal
find.PAST.SG.MS but then lose.PAST.SG.MS
‘He did (...), but then he lost (...).’

[Gribanova 2018:13]

The answer Gribanova gives supposes the theory of head movement recently developed in Harizanov and Gribanova (2019), according to which several phenomena traditionally conceived of under the rubric *head movement* decompose in two clearly distinct phenomena, namely (i) syntactic movement *akin* to phrasal movement, and (ii) amalgamation, a term that covers both raising and lowering at PF. An in-depth critical review of this proposal cannot be given here. Let me just briefly mention the gist of Gribanova’s analysis for the relevant data. Following previous analyses of the verbal identity requirement (McCloskey 2004, Schoorlemmer and Temmerman 2012, among others, and Lipták 2012 for a criticism), she proposes that constructions obeying the verbal identity requirement involves amalgamation at PF. Thus, in the syntax the surface stranded verb stays within the E-site and, consequently, it must respect verbal identity as any other constituent inside an E-site. On the contrary, constructions in which verbal identity is not operative involve syntactic movement; crucially, this movement is not syntactic head adjunction (a disallowed option in Harizanov and Gribanova’s system), but a type of movement with all the relevant properties of syntactic phrasal movement, maybe of the head-to-Spec type (as proposed in Vicente 2007 and others).

As discussed in detail in Saab (2008), the PF account of head movement is perfectly compatible with the *I*-Assignment system and is also fully compatible with the present *Q*-deletion approach. Now, note that Gribanova’s account of the verbal identity mismatches in Russian (and related languages) meets the expectations of the *Q*-deletion/*I*-Assignment theory, as well. If syntactic head movement of focused heads targets specifier positions¹⁵, then the *c*-command condition for *Q*-deletion is satisfied and, therefore, verbal mismatches are correctly predicted as licit. It is a

¹⁵ Arguably, due to scope reasons.

welcome result for the *Q*-deletion approach that the particular behavior of head traces within E-sites doesn't depend on particular assumptions about the proper nature of head movement, a topic that, as is well-known, is at the center of many current debates (Matushansky 2006, Harizanov and Gribanova 2019 and Arregi and Pietraszko 2020, among others). In addition, there are still several poorly understood issues regarding the scope of X-stranding ellipsis within and across languages. For instance, it is a matter of debate what X-stranding ellipsis languages allow for deviations of the verbal identity condition, Portuguese being a prominent case (Cyrino and Matos 2002, 2006 and Santos 2009 provide contradictory evidence). The difficulty lies in possible confounding factors connected to certain surface overlapping between V-stranding ellipsis and the phenomenon of argument drop. Moreover, it is not entirely clear why a language like Hungarian, which has both particle-stranding and V-stranding ellipsis, permits verbal mismatches but not particle mismatches (Lipták 2012, 2013 and pers. comm.). The problem is particularly puzzling because, as argued by Lipták (2012), stranded particles in Hungarian behave as maximal phrases, *contra* the expectations in Schoorlemmer and Temmerman (2012), Gribanova (2018) and my own expectations here and in Saab (2008). A more radical stance is taken in a series of recent papers by Landau (2018, 2020), according to whom there are both conceptual and empirical reasons to deny the existence of V-stranding ellipsis entirely, at least for a subset of the relevant languages, crucially including Hebrew, a language that is usually presented as a paradigmatic example of V-stranding VP-ellipsis. Landau's conceptual arguments are far from being convincing. They relate to the following two. On the one hand, it can be demonstrated that an argument ellipsis analysis is compatible with many cases in which it was argued that it should be impossible. On the other hand, the very existence of strict identity effects of head traces makes the V-stranding analysis suspicious in view of the fact that, as discussed at some length in this chapter, phrasal traces do not count for ellipsis identity. This second argument stands only if we accept mutual entailment (or relatives) as the right identity condition for ellipsis. As I have already commented. Goldberg herself noted the odd behavior of head traces under ellipsis for a mutual entailment approach. But on the account defended here, there is nothing mysterious of such a strong requirement of traces; it follows from the fact that syntactic head movement does not meet the *c*-command condition for the links involved in a head chain. The first argument provided by Landau is even weaker. What Landau really shows conclusively is that previous analysis of object drop in Hebrew in terms of topic movement of an animate object cannot be sustained. Indeed, from a conceptual point of view, what seems suspicious is the rejection of a phenomenon that should, in fact, exist for independent reasons. In effect, as Landau himself acknowledges Hebrew is a language that independently has V-movement out of VPs and VP-ellipsis, so the expectation, at least conceptually speaking, is that *ceteris paribus* the language should also show V-stranding VP-ellipsis (see Lipták and Saab 2014). Now, there is an important empirical argument that Landau discusses in detail connected to the absence of missing antecedent effects in putative examples of V-stranding ellipsis. One well-known property of ellipsis, when compared to argument ellipsis, is that depending on its size ellipsis can contain low adjuncts and other types of arguments and modifiers. Thus, if Hebrew had V-stranding VP-ellipsis, the example in (82b) should be acceptable since negation would affect the entire VP containing the modifier *lefi ha-makton*, in a way such that the interpretation of the entire sentence is compatible the cake coming into being by the baking event. In consequence, a pronoun referring to the elided object DP should be perfectly possible. But it is not, as the example in (82a) illustrates. In this respect, contrast with an indubitable case of ellipsis

(stripping) in (82b), in which the pronoun *hi* succeeds in referring to the object DP inside the elliptical TP.

- (82) a. Yosi afa et ha-uga lefi ha-matkon.
 Yosi baked ACC the-cake according the-recipe
 Hi hayta me'ula. Gil lo afa _____. #hi hayta mag'ila.
 it was fabulous Gil not baked it was gross
 'Yosi baked the cake according to the recipe. It was fabulous. Gil didn't bake the cake. It was gross.'
- b. GIL, LO _____. hi hayta mag'ila.
 Gil not it was gross
 'Gil didn't. It was gross.'

[Landau 2018: 21]

This argument requires a solution for the proponents of the V-stranding ellipsis analysis. Without a doubt, more comparative research should shed light on these and related issues. At any rate, note that by itself these facts do not confirm or disconfirm my theory of the timing for ellipsis, according to which head traces are not deleted in the syntax. At most, they show that V-stranding phenomena are not the right type of phenomenon to look into. Even if Landau's argument against V-stranding ellipsis can be sorted up, the theory still requires independent evidence for the proposed division. In the next section, I will try to show that such independent evidence indeed exists.

Summing up the main point made in this section, the verbal identity condition in V-stranding ellipsis follows both under syntactic or PF analyses of head movement. Now, the syntactic approach still owes an explicit account of how head traces are deleted. In Saab (2008), I argued that head traces are deleted at PF under well-known locality conditions of that level (immediate locality and adjacency), forming thus a natural class of phenomenon with other varieties of head deletion. As I already noted, this gives us a particular model for the timing of ellipsis. We have already seen some the properties that syntactic ellipsis (S-ellipsis) has. I will turn now my attention to some core properties of morphological ellipsis (M-ellipsis). The final picture is an integral theory of the timing of deletion in grammar whose empirical coverage extends far beyond traditional surface anaphora.

4.3. Independent evidence for head ellipsis

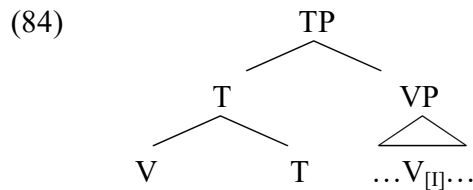
In Saab (2008), I define head ellipsis in terms of the *I*-Assignment system as follows:

Head Ellipsis (under I-Assignment):

- (83) Given a Morphosyntactic Word (MW) X^0 , assign an [I] feature to X^0 if and only if there is a node Y^0 identical to X^0 contained in an MW *adjacent* or *immediately local* to X^0 (where the notion of *containment* is reflexive).

The locality conditions stated in the definition are the same conditions that are observed in morphological displacement, according to the model of post-syntactic movement defended in Embick and Noyer (2001) and Embick (2007). These movement operations are Lowering and Local Dislocation. The former applies before linearization and under immediate locality, *i.e.*,

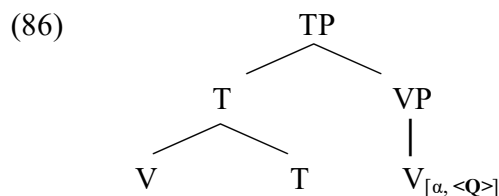
locality between a head and the head of its complement (*e.g.*, English affix hopping). Local Dislocation, instead, applies after Linearization and under adjacency (*e.g.*, comparative/superlative formation in English). Thus, the disjunction in the definition in (83) derives from the timing of morphological operations and doesn't need to be stipulated. A typical head adjunction configuration like (84) feeds immediate locality between T and the lower copy of V and, since both verbal heads are identical, *I*-Assignment to the lower copy successfully applies.



Part of the basic effects of the definition in (83) can be easily translated to a corresponding definition under the *Q*-deletion approach. Let's then propose the following definition:

- (85) Head Ellipsis (under *Q*-deletion):
 Given a morphosyntactic word MW, delete every *Q*-feature contained in MW if and only if:
 (i) There is an identical antecedent contained in a morphosyntactic word MW',
 (ii) MW is adjacent or immediately local to MW'

With reference to the tree in (84), *Q*-deletion deletes the *Q*-feature encoded on the lower verbal copy.

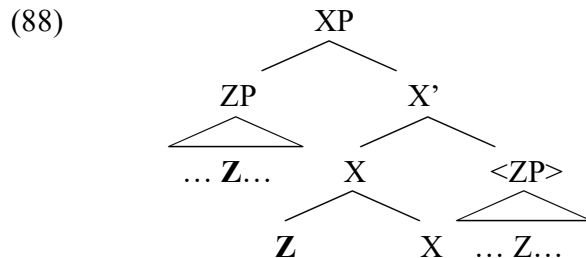


Both definitions capture some crucial properties of head ellipsis that distinguish it from phrasal ellipsis. Consider, in this respect, VP-topicalization in English, involving remnant movement of the *v*P:

- (87) John said that he would clean the house,
 and [_{<he>} clean the house] he did [_{<he>}clean the house].

Here the subject vacates its base position and ends up in Spec,TP, a position from which it *c*-commands its trace. Since that both identity and *c*-commands is met, *Q*-deletion deletes the *Q*-features of the subject DP. Remnant movement of the *v*P to a topic position triggers another instance of *Q*-deletion for the *v*P copy. As expected, only the copy in Spec,TP is subject to vocabulary insertion at PF.

In contradistinction, a remnant structure involving head extraction for the remnant phrase should lead to double pronunciation of the two higher heads, as shown in the abstract structure in (84):



The reason should be evident: extracting a head via head adjunction leads to a configuration in which the moved head doesn't *c*-command its trace. In turn, additional remnant movement of ZP will end up in a situation where each *Q*-feature is deleted in the lower ZP trace, but the two remaining head copies are not in the required immediate locality relation that licenses head deletion. This abstract situation is indeed instantiated in certain predicate fronting constructions in Romance I studied in Saab (2008, 2017):

(89) *Río de la Plata Spanish*

Vino Juan, **vino**.
 came J. came
 'John came!'

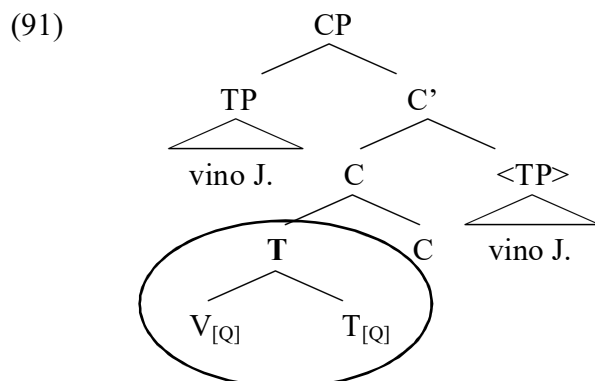
(90) *Italian*

a. **È andato** a Parigi, **è andato**.
 is gone to Paris is gone
 'He really did go to Paris.'

[Gulli 2003: 3]

b. **Mangia** la pizza, **mangia**.
 eats the pizza eats
 'He really is eating the pizza.'

The derivation of these sentences involves the same crucial steps that are abstractly represented in (88), namely, head adjunction plus remnant movement of some constituent containing the original head trace:



As mentioned, the two higher links of *vino* don't stand either in a *c*-command configuration or in an immediate locality one. Crucially, notice that they are not in an adjacent relation, either. If they were, head deletion would apply after linearization. As discussed at length in Saab (2008, 2017) verbal doubling of the Italian or Rioplatense type leads to strong ungrammaticality, a fact predicted by the present approach:¹⁶

- (92) a. * Vino, vino.
 came came
 b. * Mangia, mangia.
 eat eat

In addition to instantiate the anti-adjacent verbal doubling structure, European Portuguese also allows for adjacent verbal doublings of the following type (see Martins 2007, 2013):

- (93) *European Portuguese*
 A: O João não comprou o carro, pois não?
 the J. not bought the car, *pois* NEG
 ‘John didn’t buy the car, did he?’
 B: **Comprou, comprou.**
 bought, bought
 ‘Yes, he DID.’

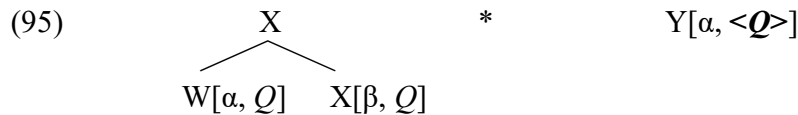
[Martins 2007: 81]

According to Martins, the answer in (93B) involves an instance of V-stranding ellipsis (or T-stranding), a typical treat of the language, plus several instances of head movement. The last step of head movement, however, is implemented through T excorporation from Σ to Foc. The output structure is illustrated in (94):

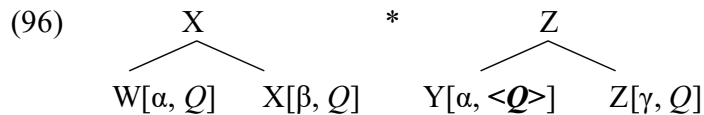
- (94) **Head Ellipsis: Σ (NO), T (OK), V (OK)**
-

¹⁶ As noticed by an anonymous reviewer, the present analysis correctly rules out the adjacent duplications in (92), but also rules in cases in which one of the two copies is deleted (e.g., *Mangia!* or *Vino!*).

Taking this analysis for granted, double head pronunciation derives as a side effect of excorporation, which outputs a configuration in which identity for the Σ head, the target of Q -deletion, is not met because Σ itself doesn't have a matching head in its antecedent, the Foc head. Interestingly, the I -Assignment approach gives the same final result for similar reasons, even when I -Assignment makes reference to MWs as the maximal domain of grammatical deletion. The theories, however, diverge in other respects. Suppose, for instance, that Q -deletion applies to two adjacent MWs (* = linearization statement):



Here, W serves as an antecedent for deletion of the Q -feature Y possesses. Now, suppose that Y becomes a Subword because of some further morphological operation that adjoins it to another head Z (or X itself):



This should lead to a situation where terminal node Z is pronounced but Y is not. Under the I -Assignment system, instead, Y and Z are both subject to VI. This is so because the definition of Vocabulary Insertion Blocking makes reference to MWs as the minimal domain of blocking:

VI-Blocking (VIB):

- (97) Vocabulary Insertion does not apply in the domain of X^0 , X^0 a MW, if X^0 , or some projection of X^0 , is specified with a $[I]$ -feature.

Associated definitions:

- (i) The domain of X^0 , X^0 a MWd, is the set of terminal nodes reflexively contained in X^0 .
Morphosyntactic word
- (ii) At the input to Morphology, a node X^0 is (by definition) a *morphosyntactic word* (MWd) iff X^0 is the highest segment of an X^0 not contained in another X^0 .
Subword
- (iii) A node X^0 is a *subword* (SWd) if X^0 is a terminal node and not an MWd.

[(ii) and (iii) from Embick and Noyer 2001: 574]

As a corollary of the theory of VIB, no subword SW can be deleted with independence of the MW that contains SW. This is dubbed *Subword Deletion Corollary* in Saab (2008). Informally, it can be formulated in the following way:

- (98) *Subword Deletion Corollary* [adapted from Saab 2008: 375]

Given a subword X^0 , X^0 can only be deleted if the morphosyntactic word containing X^0 is deleted by (97).

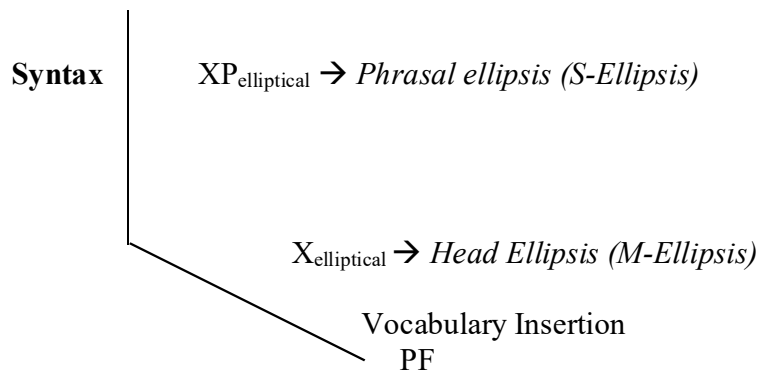
The empirical picture is one according to which parts of words cannot be deleted by ellipsis, as *ellipsis* is defined by the theory, i.e., the theory says nothing about other types of deletion. Again,

this follows by the definition of VIB. It doesn't follow under the *Q*-deletion view, since the theory is not about blocking VI, but about deletion of the unique trigger of insertion, the free variable *Q*. If the empirical picture is correct, and I think it is, then the theory of *Q*-deletion must ensure this result in some way. An option is just filtering certain illicit structures at PF (e.g., (96)). This is a reasonable way of taking the issue if what is behind the Subword Deletion Corollary is morphological well-formedness.

4.4. Interim Summary

Most mismatches involving the distribution of traces within E-sites follows as a timing issue. The proposed theory makes a division between elliptical objects according to their phrasal or head status. Phrases, including E-sites and phrasal copies, are deleted in the syntax under formal identity and different syntactic conditions, whereas heads are deleted at PF under identity and different morphological conditions. In (99), the general design emerging from our previous considerations is shown:

(99) Numeration



The sort of properties emerging from this model is studied in detail in Saab (2008), but some of them can be briefly mentioned here:

- (100) A. S-ellipsis only targets phrases; M-ellipsis only targets MWs.
 B. S-ellipsis respects syntactic locality constraints (**c**-command, selection); M-ellipsis respects morphological locality conditions (adjacency, immediate locality).
 C. S-ellipsis cannot be fed by post-syntactic operations; M-ellipsis can.

In the next section, I handle the question whether inflectional mismatches of the type discussed in the introduction are an argument against syntactic ellipsis as defined in this chapter. The argument I will make can be resumed as follows: certain inflectional mismatches are illusions, the byproduct of a matter of ellipsis size and ellipsis timing. What these illusions conclusively confirm is that identity in *ellipsis makes crucial reference to syntactic objects built up from items taken from List 1*. Any other syntactic or morphological information is irrelevant.

5. Timing issues #2: Inflectional mismatches and the timing of syntactic ellipsis

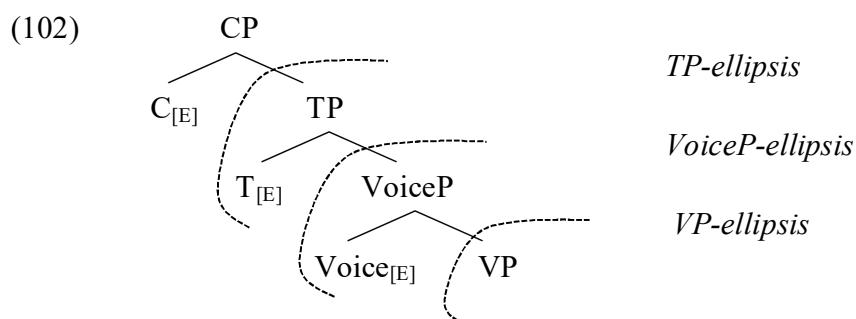
I finish this chapter commenting, through some discussion of certain case studies, the implications of *Syntax First Thesis* I presented in the introduction:

Syntax First Thesis: Identity is resolved on the basis of information provided by narrow syntax. Depending on the size of a given E-site (VP, TP, NP, NumP, etc.), identity under ellipsis makes primary reference to the syntactic and lexical information that is active in narrow syntax, *i.e.*, before spell-out.

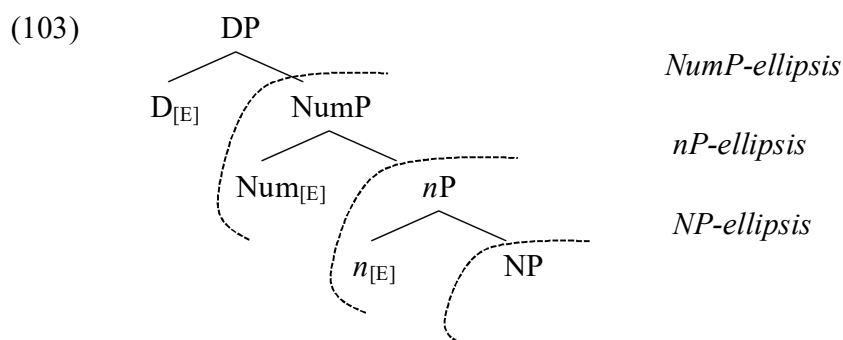
I have claimed that phrasal ellipsis is an operation of narrow syntax. Concretely, ellipsis deletes all *Q*-features for each terminal node contained within an E-site. *Q*-deletion for E-sites occurs in the syntax if certain conditions are met. Such conditions are conditions of licensing and lexical-syntactic identity. Licensing refers here to the fact that the type of phrases that can be elliptical is constrained by their formal distribution in the clause. This depends to a large extent on language particular properties. For instance, it is a well-known fact that the type of VP-ellipsis that occurs in English is impossible in languages like Spanish. This is evident in cases of auxiliary standing VP-ellipsis (Zagona 1982, 1988, among others):

- (101) a. Bill has read that book and Peter has too.
 b. *Guille ha leído ese libro y Pedro ha también.
 G. has read that book and P. has too

As we have already seen, Merchant (2001) proposes that licensing reduces to the presence or absence of a formal feature, the [E]-feature, that determines which phrases are eligible for ellipsis in a given language. This depends on the locus of the [E]-feature: if C encodes such a feature, we obtain different varieties of TP (including, sluicing, fragment answers and so on); if E is in T, we get VoiceP-ellipsis; and if it is in Voice, VP-ellipsis is licensed:



Similar considerations generalize to the nominal domain, where the following types of nominal ellipses are attested (see Saab 2019 for examples of each type and discussion):



- (105) Juan **fue** al cine y ellos también **<fueron>**.
 J. go.PAST.3SG to the cinema and they also go.PAST.3PL
 ‘Juan went to the cinema and they did too.’

As is well-known, the *pretérito perfecto simple* shows massive allomorphy conditioned by person and number. An incomplete representation of the relevant vocabulary items would be as follows, where the zero exponent competes with the exponent *-ro*:

- (106) List 2: Partial representation of the T node in the *pretérito perfecto simple*:
 [+past, perf] ↔ **-Ø** / ____ [3sg]
 [+past, perf] ↔ **-ro** / ____ [3pl]

These two items are differentiated both by information regarding exponence and information about the context for insertion. Such a difference is represented at the right of each vocabulary item. The information at the left of each vocabulary item tells us that there is perfect identity with respect to the feature bundles they contain. As we already know, these are the feature bundles that are represented in the syntax by abstract morphemes. Tense information, thus, is identical in the syntax. Notice, however, that this is not the only difference between the T nodes in A and the E-site, they also differ in agreement information. We have assumed that agreement nodes are dissociated morphemes. If this is correct, then, the agreement mismatch in (105) illustrates a particular case of opacity induced by morphological operations. In the syntax, then, the TP nodes in (105) are strictly identical and *Q*-deletion can apply deleting the relevant *Q*-feature of the T node within the E-site:

- (107) Label identity + *Q*-deletion for $T_{[+past, perf.]} = \text{E-site}$: $T_{[+past, perf.]} \rightarrow T[+past, perf., (\phi), <Q>]$

Note that in the simplified representation in (107), I have annotated ϕ between parentheses. This is because its postulation would depend on one’s commitment to the existence of an abstract *Agree* operation, which would be only indirectly related to the existence of dissociated morphemes of agreement. Again, if there is not *Agree* heads in the syntax, then agreement pieces should be added after syntax, regardless of the very existence of an operation like *Agree*. The approach to identity offered here is compatible with any of these possible stances on abstract *Agree*. As I have already advanced, the theory of identity I am sketching captures Chomsky’s notion of nondistinctiveness, see the quote below, in terms of *label strict identity*, which amounts to capturing certain inflectional mismatches as the byproduct of the nondistinctiveness between terminal nodes and its labels.

For every morphological operation MO that affects the domain of X, where X contains the target of MO, MO cannot apply in X if X is subject to ellipsis. (Saab and Lipták 2016: 12)

According to the Elmo-Generalization, morphological insertion inside elliptical material is impossible. If this is correct, the *-n* morpheme should not be there. Since that this is orthogonal to the main points made here, I leave the issue unresolved, although of course I adhere to the Elmo-Generalization.

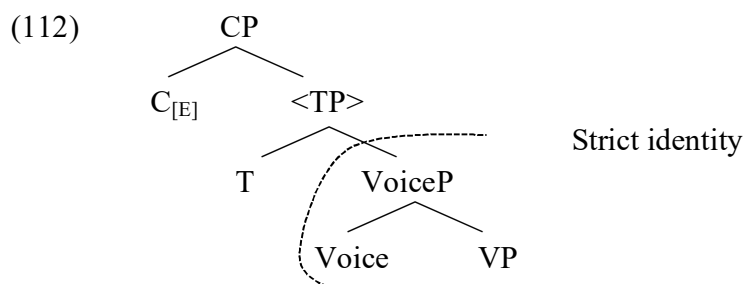
A term X of the proper analysis can be used to erase a term Y of the proper analysis just in case the inherent part of the formative X is not distinct from the inherent part of the formative Y.

[Chomsky 1965: 182]

Just to be clear: I am not claiming here that the identity condition must be formulated in strict terms; what I am claiming is that these types of inflectional mismatches cannot be taken as evidence in favor of more relaxed theories of identity (semantic or syntactic). This reasoning applies to more recalcitrant ellipsis mismatches, as well. Recall Merchant's data involving inflectional mismatches in the high part of the sluiced sentence, which Merchant introduced as one further argument against syntactic identity:

- (108) Decorating for the holidays is easy if you know how!
 a. \neq^* ... how [decorating for the holidays]
 b. = ... how [to decorate for the holidays]
- (109) a. I'll fix the car if you tell me how.
 b. \neq^* ... how [I'll fix the car]
 c. = ... how [to fix the car]
- (110) a. "I can't play quarterback: I don't even know how."
 [Bart, *The Simpsons*, 'Homer coaches football' episode]
 b. Close the window! Do I have to tell you how?
 c. Eat (something), if you can figure out what!
- (111) I remember meeting him, but I don't remember when. [=I met him]

Similar data lead Rudin (2018) to propose a theory of syntactic identity that makes a crucial division among the features contained within a given E-site. Concretely, he proposes that identity is relevant only for nodes contained within what he calls the *eventive core*, namely VoiceP and categories dominated by Voice:



Rudin's proposal aims to capture tolerable mismatches like those in (108)-(111) and, at the same time, intolerable mismatches regarding the behavior of Voice features in sluicing and other high ellipses. Effectively, recall that active-passive alternations are illicit in sluicing (Merchant 2013):

- (113) a. *Joe was murdered, but we don't know who.
 (cf. Joe was murdered, but we don't know who murdered Joe.)
 b. *Someone murdered Joe, but we don't know who by.
 (cf. Someone murdered Joe, but we don't know who Joe was murdered by.)
 [Merchant 2013a: 81]

These (im)possible mismatches seem to follow now under Rudin's proposal. Yet, such a proposal is not the default one; it requires further empirical motivation both internal to English sluicing and other varieties of ellipses within and across languages. Rudin doesn't provide such a motivation but offers, instead, a type of conceptual argument regarding the functional nature of the eventive core. However, it turns out that for many of the mismatches Rudin discusses there are alternative analyses. As I said, under the *Q*-deletion model system (or the *I*-Assignment one) some of these ellipsis mismatches are illusions, the result of two factors: (i) the syntactic licensing of ellipsis, which determines different elliptical sizes (TP-ellipsis vs. vP-ellipsis or nP-ellipsis vs. NumP-ellipsis), and (ii) the lack of isomorphism between syntax and morphology. The first factor accounts for well-known cases of tense mismatches in English vP-ellipsis and the lack of them in TP-ellipsis in several languages, a fact that doesn't follow on Rudin's identity condition (see below). The second factor, much less explored in the literature, is at the heart of most cases of feature mismatches in ellipsis. Again, the general idea is that the conditions that regulate *S-Ellipsis* are entirely calculated in the narrow syntax, before lexical insertion rules and other morphological operations - whose surface effect obscures the form of abstract syntax - apply. Therefore, it could be the case that the antecedents and the elliptical phrases involved in the examples in (108)-(111) have an identical syntax but a different surface realization. In other words, these have to be seen as cases of allomorphy in a general sense. Let me illustrate this point with a case of mood mismatch from Spanish. As shown in detail in Saab (2003, 2008), Spanish stripping can tolerate differences between imperative and subjunctive mood (Buenos Aires Spanish data):¹⁸

- (114) a. **Ahorrá** plata, no palabras <[_{TP} **ahorres** *t*]>.
 save.IMP money not words **save.SUBJ**
 'Save money, not words.'
- (from an Argentine commercial)
- b. No **ahorres** plata, pero sí palabras <[_{TP} **ahorrá** *t*]>.
 not **save.SUBJ** money but yes words **save.IMP**
 'Don't save money. Save words!'

As is well-known, Spanish, like other Romance languages, has a special form of the imperative mood in affirmative sentences, but only for the morphological second person (see Harris 1998 for extensive discussion). Thus when the pronoun involved is *usted* 'you', which conjugates as a third person - even when it refers to the hearer -, the verbal form occurs always in the subjunctive, regardless of the polarity of the sentence (e.g., *venga* 'come' vs. *no venga* 'don't come'). On the basis of this particular behavior of the imperative mood, Harris (1998) has convincingly argued in favor of a purely morphological analysis for the imperative. Concretely, he proposes that the form of the imperative is the result of an impoverishment rule that deletes the subjunctive feature on the verb under the presence of a morphological second person:

- (115) [+subjunctive] → Ø / ____ [2pers]]_c
- [Harris 1998: 40]

¹⁸ I am assuming that stripping is TP-ellipsis with movement of the remnant out of the elliptical site (see Depiante 2000 for an analysis of Spanish stripping).

This rule only applies under a structural condition that requires that the feature affected by deletion is located on C, which is precisely what happens in affirmative imperatives. In effect, clitic position in affirmative imperative sentences (*i.e.*, V-CL ordering, *hacé-lo* ‘do it’ vs. *no lo-hagas* ‘don’t do it’), among other facts (see Laka 1990), shows that there is V-to-C movement in such environments. As discussed at length in Saab (2008), Harris’ morphological analysis plus a identity condition on ellipsis applying in the narrow syntax leads to the conclusion that the tolerable mismatches in (114) are illusions: as far as syntax is concerned the labels of the verbal forms in the antecedent and the elided verb are strictly identical. As shown in (116), identity under ellipsis is trivially satisfied in this case; *i.e.*, the elliptical TP is correctly elided in the syntax (cf. 114a):

- (116) Ahorrá plata, pero no palabras <[TP **ahorres** *t*]>.
 save.SUBJ money but not words **save.SUBJ**
 ‘Save money, but not words.’

Even though in most cases there are clear basis to decide if a given legitimate mismatch should be derived as matter of elliptical size or as a syntax-morphology mismatch, there are however situations where both possibilities might overlap. Indeed, the case in (111b) seems to be, in principle, amenable to both solutions. Tanaka (2011), for instance, has proposed that the alternation between nonfinite *-ing* forms and *to* infinitives in cases like (111b) are explained by the fact that sluicing here deletes a VP and not a TP and, in consequence, the tense node is simply not evaluated for the purposes of the identity condition on ellipsis.¹⁹ A similar analysis has been suggested by Saab (2003) for cases in which a finite form in Spanish can be a suitable antecedent for a nonfinite form or vice versa:

- (117) Recuerdo [FinP [TP haber arreglado el auto]], pero no
 remember.1SG have.INF fixed the car but not
 recuerdo [FinP cuándo <[TP **arreglé** **el** **auto**]>
 remember.1SG when fixed. 1SG the car
 ‘I remember having fixed the car, but I do not remember when.’
- (118) [FinP Juan finalmente [TP arregló el auto]] aunque
 J. finally fixed the car although
 parecía no saber [FinP cómo <[TP **arreglarlo**]>]
 seemed not know.INF how fix.INF-it
 ‘John finally fixed the car, although he seemed not to know how.’

In cases like these, we can assume that the syntactic difference between A and the E-site is in the finiteness property that, under reasonable assumptions, is not a property of the tense node by itself but of another higher functional category (labeled FinP in Rizzi 1997, for instance). If this is on track, the tolerable mismatches in (117) and (118) are derived from the licensing of ellipsis,

¹⁹ Tanaka’s system should explain why a non-elliptical version of (108b) is ruled out:

- (i) *Decorating for holidays is easy if you know how [_{VP} decorate for the holidays].

Tanaka acknowledges the problem and proposes that the exponent of the T head (*i.e.*, *to*) is deleted at PF whenever its VP complement is elliptical. This stipulation would be justified by the exceptional behavior of non-finite sluicing with remnant *how*.

However, this is not the whole story. Rudin also provides the following relevant examples involving mismatches in tense, modality, polarity and illocutionary force (Rudin 2018: 13-14 and references therein):

- Consider, for instance, the tense mismatch in (119). It would follow under the present theory either if (i) tense is outside the E-site or (ii) tense features are dissociated. The latter option is, of course, untenable. The former could be implemented if tense features are inherently on C and passes to T through an inheritance mechanism (Chomsky 2007, 2008). This would imply a formulation of identity able to distinguish between inherent and noninherent features (maybe along the lines of Chomsky 1965 with obvious adaptations). This, however, would be a hasty move by virtue of the fact that tense mismatches under ellipsis are an understudied phenomenon. Many facts coming from Spanish TP-ellipsis shows that in the normal case tense mismatch is not tolerable, against the expectations of Rudin's theory (see Brucart 1987, Murguia 2004, Saab 2008, and Saab and Vicente 2015 for some important qualifications). Consider an intolerable tense mismatch in a simple case of TP-ellipsis:

- 45

An inheritance approach to (119) would be in obvious conflict with the basic fact in (123), unless one assumes that identity works differently for different varieties of TP-ellipsis, not a desirable conclusion. In a recent reply to Rudin, Ranero Echeverría (2019) argues that, unlike to what happens in (123), Rudin's paradigm involves cases where there is no feature clash between the conflicting heads. In a sluice like (119), the tense node in A is present but the corresponding T node in the E-site is tenseless. The sluice also contains a modal which is absent in the antecedent. Ranero Echeverría contends that this is indeed part of a larger generalization: ellipsis mismatches are allowed whenever the matching features are nondistinct. Here is a simplified version of Ranero Echeverría's identity condition:

(124) Antecedent and ellipsis site must be featurally nondistinct.

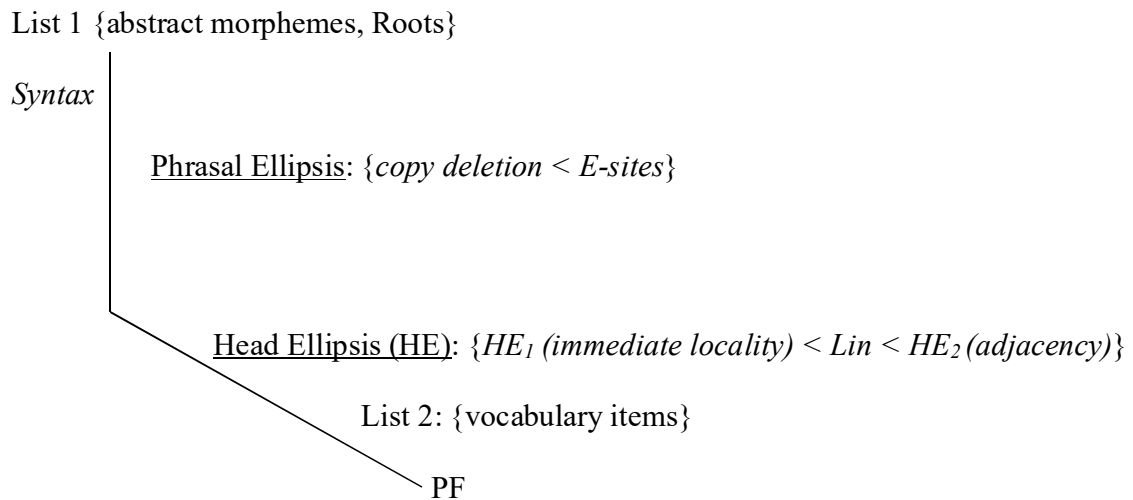
Two terminal nodes are nondistinct if a given feature is present in one node but absent in the other; *i.e.*, the feature is privative. Absence vs. presence of a node also satisfies (124), according to Ranero Echeverría. So, in (119) the T node in A is [present] but it is zero in the E-site. In addition, the E-site contains a modal which is absent in A. Both mismatches meet the condition in (124). The same reasoning extends to other examples provided by Rudin. As for (123) and several other intolerable tense mismatches in TP-ellipsis, it has to be the case that the tense nodes are featurally distinct. This account implies a theory of feature representation that I cannot evaluate here, but as far as I can tell, Ranero Echeverría's approach to the pattern in (119)-(122) is more promising than Rudin's and can be empirically evaluated with large consequences. The hope is that once matters of licensing and ellipsis timing are factored out, we will be able to be close to a proper definition of syntactic identity.²⁰

6. Conclusion. A model for the timing of ellipsis

The preceding discussion had as a main objective to offer a model for the timing of ellipsis in the framework of an explicit theory of the syntax-morphology interface (Distributed Morphology). The final picture is illustrated as follows:

²⁰ The problem of identity in ellipsis obviously connects to the broader question of identity in grammar. Chomsky (1965) is particularly clear about this point. In the ideal case there is a unique recoverability condition in grammar (discourse recoverability involves other type of inferential mechanisms). The way in which he formulated nondistinctiveness is indeed motivated by recoverability. Recall: according to Chomsky, only noninherent features can obviate the identity condition because the information such features introduce is recoverable from information given by the transformational apparatus (Chomsky 1965, chap. 4). Another way to see nondistinctiveness is in terms of inclusion: B obeys identity with respect to A only if B is a subset of A (see Murphy 2016 and Muñoz-Perez 2017 for detailed discussion). This definition predicts only a subtype of the mismatches than Ranero Echeverría's system predicts. As Chomsky's nondistinctiveness, identity as inclusion makes sense in terms of recoverability of deleted material. If the E-site is a subset of its antecedent, then no information is lost after ellipsis. Ellipsis, copy deletion and other related phenomena can be seen as obeying some of these versions of non-distinctiveness as consistent with some intuitive idea of recoverability under deletion. Now, Ranero Echeverría's definition in privative terms is conceptually counter-intuitive as far as recoverability is concerned.

(125) *A model for the timing of ellipsis*



Among other facts discussed previously in this chapter, the theory explains the particular behavior of phrasal vs. head copies within E-sites and many inflectional mismatches in surface anaphora. I hope to have shown that even if many details of the present theory must be worked out in more detail (and others rectified), the type of mismatches explored here does not defeat a theory of ellipsis with syntactic identity at its heart. If I am correct, quite the opposite; these phenomena can be used as an argument in favor of a particular model for the timing of ellipsis. Thus, the final picture I offered resulted in an integral theory of ellipsis with large empirical coverage. I conclude contending that competing theories of ellipsis should be evaluated with respect to their descriptive power regarding the same set of apparently unrelated phenomena

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