

Grammatical silences 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, label

1. Introduction

In this chapter, I argue that many previous objections against syntactic identity vanish once the timing of ellipsis is taken into account. In this respect, I will defend a particular model for the timing of ellipsis according to which ellipsis is an all-the-way operation applicable in the way from syntax to morphology consisting in the deletion of the variables (called *Q*) that instruct PF for vocabulary insertion. I will call this particular approach to ellipsis as non-insertion the *Q-deletion theory*. A crucial property of the model is that the type of objects that can be affected by ellipsis depends on the component of the grammar in which *Q*-deletion applies. In the narrow syntax, ellipsis deletes phrases, but only heads in the morphology. Identity in ellipsis will then make reference to the relevant component in each case. Crucially, only information present in

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narrow syntax is relevant when it comes to phrasal deletion. The licensing conditions also depend on the component involved in each instance of *Q*-deletion. As I will show, syntactic selection by an [E]-feature and c-command are necessary conditions on phrasal ellipsis and immediate locality and adjacency, on head ellipsis. This model, as I will argue in detail here, answers two of the more recalcitrant arguments against syntactic identity: copy and inflectional mismatches in ellipsis. On the present theory, both will be derived as timing issues involving (i) the interaction between *Q*-deletion of copies and E-sites, and (ii) the locus of identity for phrasal ellipsis.

The chapter is organized as follows. In section 2, I will state the problems to be answered and make a brief outline of the assumptions I adopt. In section 3, I will introduce the *Q*-deletion approach formally and give some preliminary illustrations. Section 4 discusses the interaction between phrasal copy deletion and phrasal ellipsis showing (i) that tolerable copy mismatches in ellipsis follow entirely from the present model and, more importantly, (ii) that is indeed superior to extant semantic or pragmatic theory of identity. In section 5, I define head ellipsis and show how the so-called lexical identity requirement in V-stranding ellipsis languages follows even assuming standard syntactic head movement. Finally, I handle the inflectional mismatch argument against syntactic identity and argue that in most cases they are simple illusions coming from timing considerations, as well.

2. The core issues and the background assumptions

2.1. The identity condition on 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 an overview). These anaphors are called *surface 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 met someone. Guess who. (Sluicing)
- d. Carthage's destruction and Rome's (NP-ellipsis)
- e. Jason read *Syntactic Structures* 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. Thus, consider how these notational decisions apply for a case like (1c):

- (2) [_A Laura met someone]. Guess who <_{E-site} Laura met *t*>.

When relevant, the underlined constituents in the antecedent and the elliptical sentence will be referred to as *correlate* and *remnant*, respectively.

A trait of surface anaphora is that it needs a linguistic antecedent, on the basis of which the meaning of E-sites is (partially) recovered. Currently, there is no explicit theory predicting what can and what cannot count as a linguistic antecedent for a given E-site. We do have instead

different views on the question how the meaning of E-sites is recovered on the basis of the information available in a salient linguistic antecedent. Broadly speaking, there are two lines of approaches. For some scholars, the relevant information is syntactic in nature, *i.e.*, 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), there are two members of the reconstruction of the VP *like ellipsis*, one of which is covert or elided. Fiengo and May use their reconstruction theory mainly for VP-ellipsis in English. Later, Chung *et al* (1995) recognized that the theory does not generalize straightforwardly to sluicing. In order to reconcile sluicing with some variant 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-copying of the antecedent into the E-site. Another crucial LF operation is what the authors called *sprouting*, that adds variables within sluiced clauses in cases where the relevant remnants lack an overt correlate:

- (3) 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]

In these contexts, recycling the antecedent IP in the E-site will not yield a licit LF representation, as the *wh*-remnant does not bind a variable, unless an appropriate manipulation, sprouting the required variable for the PP, takes place, cf. (4) illustrating the case in (3d) above.

- (4) Joan ate dinner but I don’t know [with whom]_i Joan ate dinner *t_i*. (*t_i* = sprouted trace)

As Merchant (2001) argued, even if one was willing to accept the type of LF manipulations that Chung *et al* propose, contrast sluicing remains irreconcilable with the theory:

- (5) 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 with the same vocabulary. IP-recycling would not produce any licit LF, either, as copying [*IP Laura has five cats*] in the E-site would produce both a syntactic and a semantic crash.

In addition, Merchant (2001) pointed out that reconstruction theories cannot account for attested inflectional mismatches between the antecedent and the E-sites, such as the following:²

- (6) Decorating for the holidays is easy if you know how!
 ... how <to decorate for the holidays>
 ... * how <decorating for the holidays>
 (7) I’ll fix the car if you tell me how.
 ... how <to fix the car>

² A third argument involves Vehicle Change phenomena (Fiengo and May 1994). Space reasons prevent detailed discussion of this argument, but see Murphy and Müller (this volume), footnote 9 and and Saab (2008) for detailed discussion.

- ... * how <I'll fix the car>
 (8) I remember meeting him, but I don't remember when.
 ... when <I met him>
 ... * when <meeting him>

According to Merchant, identity in ellipsis does not make any reference either to token structures or terminal nodes with which token structures are built, but rather to *semantic objects*. Concretely, sluicing requires identity in the propositional content of the antecedent and the E-site, more precisely: ellipsis is licit if the E-site and the antecedent entail each other under the operation of Focus-Closure, the so-called e-GIVENNESS condition (Merchant 2001: 26). For (8), for example, with reference to an evaluation time and an assignment function g , we obtain the denotations in (9), after some simplifications and assuming $g(2) = \text{Laura}$ and $g(3) = \text{Jason}$. As it is evident now, A entails the E-site and the E-site entails A.

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

Despite the ease with which the semantic identity condition could capture cases like (6)-(8), other types of data proved impossible to account for with this theory. Chung (2006:80) identified data such as (11), which minimally contrasts with those in (10). Mutual entailment is satisfied in both (10) and (11), yet only the former set of examples is well-formed. According to Chung (2006), this is put down to a violation of the so-called *no new words* condition, the ban on introducing novel lexical items in the ellipsis site.

- (10) 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.
 (11) 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).

Similarly, absence of voice mismatches in high ellipses (e.g., TP-ellipsis) is similarly problematic (Merchant 2013a:81):³

³ Intolerable voice mismatches of this type were also 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 their 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 6, this type of size-based solution generalizes to many inflectional mismatches of different types of ellipses across language (gender and number asymmetries in NP-

- (12) 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.)

These observations lead to the conclusion that syntactic isomorphism is too strong while mutual entailment is too weak a condition (Merchant 2008). Recent works, among others Chung (2006, 2013), Anderbois (2011, 2014) and, less explicitly, Barros and Kotek (2019) adopt a Solomonic solution, 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.

2.2. This chapter's core tenets in a nutshell

In this chapter, I try to defend the claim that ellipsis is an instruction for blocking Vocabulary Insertion (VI) at PF. On the account that I present **on** the coming pages, ellipsis applies to different types of phrases or heads under a formal identity condition and under several, independently needed, locality conditions. Put differently, I conceive of the theory of ellipsis as the theory of grammatical “deletion”. I will 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, 1995a). I will call this the *C-Thesis*, where *C* stands for *Chomsky*:

- (13) *C-Thesis*: Ellipsis and copies form a natural class of silent expressions.

The *C-Thesis*, in addition to one simple assumption about the timing of ellipsis, resolves all phrasal copy mismatches, including sprouting and contrast sluicing. I will also show that this approach yields better results than extant semantic approaches to the same problem. Put differently, copy mismatches in ellipsis are not only compatible with syntactic identity but 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 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, in which 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, strictly speaking, syntactic identity boils down to *label identity*: not all features present in the syntax are computed for identity, but only those that project as labels. I call this thesis *Syntax First* and formulate it as in (14):

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.

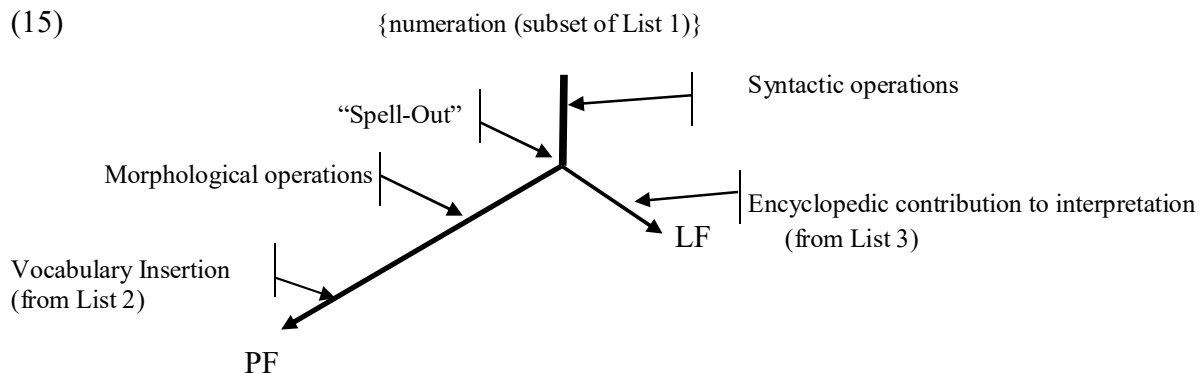
- (14) *Syntax First Thesis*: Identity under ellipsis makes primary reference to the syntactic and lexical information that is active in narrow syntax, *i.e.*, before spell-out.

The thesis by itself is not new; it is at the heart of the theories of syntactic identity in the transformational tradition (classical examples are Chomsky 1965 and Ross 1969). 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 the label information coming from abstract morphemes and Roots; information supplied after syntax is completely irrelevant for identity in ellipsis. In Distributed Morphology terms, identity is about information contained in List 1.

If the *Syntax First* thesis 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.

2.3. Assumptions regarding the architecture of the grammar

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



As this graph indicates, syntax manipulates abstract syntactic objects, from List 1. 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 (see Chomsky 1995, Embick 2000, Saab 2008, Acquaviva 2008, and Harley 2014, among others). These terminal nodes are supplied with a given phonological exponent after syntax and through a set of vocabulary insertion rules (List 2).

The post-syntactic component is not defined only by vocabulary insertion rules; if it was, 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:

(16) *Feature Disjointness*:

Features that are phonological, or purely morphological, or arbitrary properties of vocabulary items, are not present in the syntax; syntactico-semantic 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 that is interpreted on the basis of the information available in List 3. The information contained in each of the three lists is given in (17):

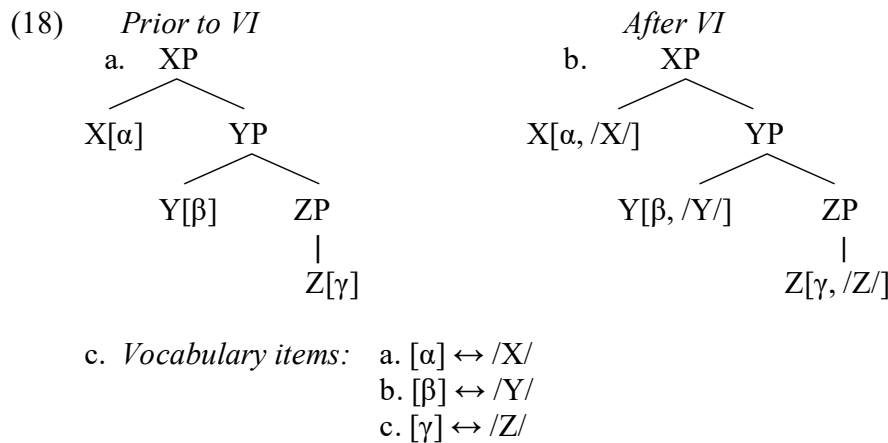
(17) List 1: *Feature bundles*: Syntactic primitives, both interpretable and uninterpretable, functional and contentful.

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

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

[Harley 2014: 228]

In what follows, 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 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 (18a) by consulting the vocabulary items in (18c). 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 item is added to the abstract morpheme. The final result is illustrated in (18b):



Following Embick (2015), I call this view on vocabulary insertion *additive*, stressing the idea that terminal nodes are enriched with phonological information *via* vocabulary insertion. A less standard alternative is assuming that vocabulary insertion 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. Vocabulary insertion amounts then to “substitution of a free variable” (Embick 2015: 90). I illustrate the replacive view in (19):

- (19) *Prior to Lexical Insertion* *After Lexical Insertion*
- a. XP
- X[α, Q] YP
- Y[β, Q] ZP
- |
- Z[γ, Q]
- b. XP
- X[$\alpha, /X/$] YP
- Y[$\beta, /Y/$]

An important question is what type of objects are X, Y and Z both under the additive or the replative views. Halle (1990), who adopts a replative approach, assumes that only certain abstract morphemes possess *Q*, namely, those that empirically call for a late insertion solution. Embick, who also favors the replative 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 vocabulary insertion 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 Spanish verbal form that occurs in the following sentence:

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

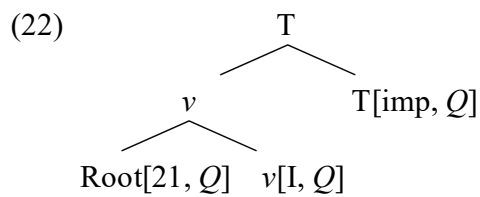
There are at least four morphological pieces in this complex verbal form, which correspond to the bare Root *am-*, the thematic vowel of the first conjugation *-a-*, the imperfect past *-ba*, and the agreement morpheme for the plural first person *-mos*. I assume that Roots have non-inherent category features; categorization of Roots occurs in the syntax *via* the combination with functional heads (Embick and Marantz 2008). An additional assumption is that theme vowels are realized on the category-defining head *v*.⁵

- (21) a. $nP (=NP)$ b. $aP (=AP)$ c. $vP (=VP)$
-
- Root n ... Root a ... Root v ...

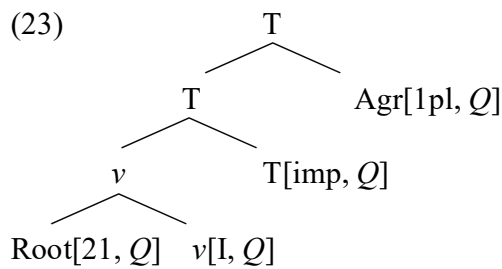
⁴ I take this as an assumption. There is the question, of course, whether ellipsis can be constructed as an empirical argument in favor of universal late insertion. In any case, if the point is made we have to be careful of not begging the question. The risk of circularity seems to be evident, but see 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.

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

Finally, following Chomsky (2000, 2001), I adopt the hypothesis that there are no functional projections for agreement. Under this assumption, concrete agreement morphemes are not given by syntactic means alone (and this is independent of one's commitments to the existence of an abstract *Agree* operation). Put differently, the morphological piece of agreement present in (20) 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. Therefore, 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 (22). Assuming the replacive view of VI, we obtain (22):



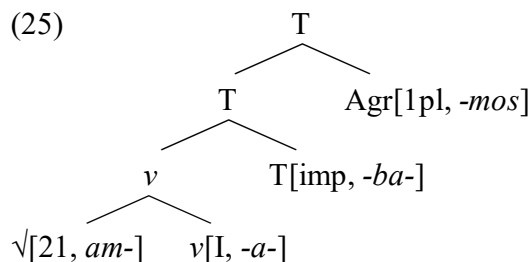
At PF, a dissociated agreement morpheme is added to the complex head in (22) on the basis of the person and number information of the subject or, depending on assumptions about *Agree*, on the basis of information present on T itself:



Vocabulary Insertion then proceeds to add phonological information to the terminal nodes in (23). This requires consulting List 2. Here is an oversimplified set of the vocabulary items for the relevant nodes:

- (24) *Partial set of Vocabulary Items for (23):*
- a. T[imp] ↔ -ba-
 - b. Agr[+1, +pl] ↔ -mos
 - c. v[I] ↔ -a-
 - d. √21 ↔ am-

Recall that the replacive view implies substitution of the free variable Q with a phonological exponent, whenever the syntactic-semantic content in the vocabulary item matches the syntactic-semantic content of the terminal node. Given (23) and (24), the matching is fully transparent in this case; *i.e.*, the syntactic-semantic information in the vocabulary item $T[imp] \leftrightarrow -ba$ matches the information in the abstract node $T[imp]$, and so on. So, after the VI process is completed, we obtain the representation in (25):



As noted above, there are several simplifications in this toy derivation. Some additional complexities are worth-mentioning for subsequent discussion. First, it is crucial to make explicit the identity relation that is at play between syntactic terminals and vocabulary items. There is a broad consensus regarding the hypothesis that such an identity relation is inclusion; concretely, the syntactic-semantic information encoded on a given vocabulary item must be a subset of the syntactic-semantic information encoded on terminal nodes. Patterns of systematic syncretism across languages justify this claim. Second, it is often the case that in principle more than one vocabulary item can apply to a given terminal node. In such cases, the most specified vocabulary item wins the competition. Both the subset relation and the competition problem are contemplated in the *Subset Principle* (Halle 1997: 128):

(26) *Subset Principle:*

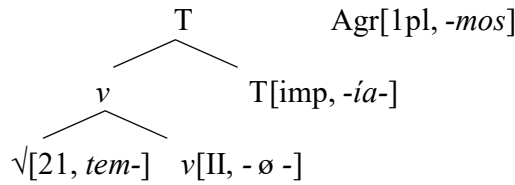
The phonological exponent of a Vocabulary Item is inserted into a morpheme of the terminal string if the item matches all or only a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features in the terminal morpheme must apply.

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:

- (27) T[imp] ↔ *-ía-* / { *v*_[III], *v*_[III] } ____
 T[imp] ↔ *-ba-*

Consider a second conjugation verb like *temer* ‘to be afraid’. Insertion of the exponent *-a* is blocked here by the presence of a more specified vocabulary item, *-ía*, which contains contextual information that is absent in the default vocabulary item. Therefore, the most specified second conjugation item wins the competition and the phonological exponent *-ía* 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, and we will get back to this issue in section 6.

3. Ellipsis as *Q*-deletion

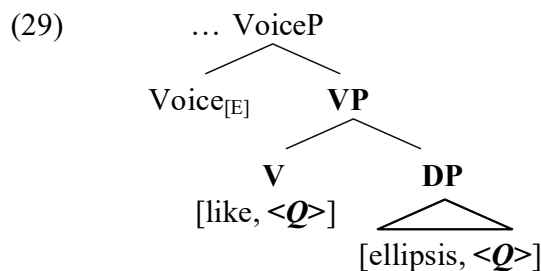
In this section, I present the basics of the theory of ellipsis I propose.

3.1. Formal definitions

Ellipsis is a grammatical operation that deletes the instructions for vocabulary insertion at PF. In principle, any object built up in the syntax can be subject to ellipsis in this sense, and as we will see, many syntactic objects meet the conditions for ellipsis at different stages of a given derivation. I furthermore propose that there is a distinction between phrases and heads: whereas phrases are elided in the syntax, heads are elided at PF. As we will see, the two types are elided under different locality conditions as well. In this section, I focus on phrasal ellipsis and the mechanism of deletion.

Phrasal ellipsis applies entirely in the syntax. Any syntactic object that is marked as elliptical (in a sense still to be defined) in the syntax is excluded from undergoing vocabulary insertion. Recall from the previous section that there are at least two views on vocabulary insertion: on the additive approach, phonological information is added to abstract morphemes following the principles that govern insertion (such as the *Subset Principle*), on the replacive view, vocabulary insertion consists of substitution of the free variable *Q*.

I propose that we adopt the replacive view on VI. On this conception, ellipsis can then be seen as *Q*-deletion in the syntax triggered by the mere presence of an [E]-feature in the relevant domain. Deleting a *Q*-feature automatically blocks the substitution operation that is at the core of the replacive approach to vocabulary insertion. The result of *Q*-deletion for the complement of a given [E]-feature-bearing head is illustrated in (29), for the VP ellipsis example (1a). Angled brackets indicate successful applications of *Q*-deletion, and the E-site is marked by strike-through.



There are two conceptual arguments that militate in favor of the *Q*-deletion view of ellipsis over other non-insertion approaches, like the one I have proposed in my previous work, according to which ellipsis is a feature adding operation instructing PF for non-insertion (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). Due to these advantages, in what follows I will adopt the Q -deletion strategy.

Some formal precisions are needed before discussing relevant case studies. Formal definitions would amount to taking a particular stance regarding certain relevant aspects 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:

(30) *Q-Deletion inside E-sites:*

Delete *all* Q -features contained in the complement of a given [E]-feature containing head.

The instruction in (30) is a principle of interface convergence and states that 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, where x^{min} and X^{max} stand for terminal node and maximal projection, respectively:

(31) $\forall x_{[Q]}^{min} [X^{max} \triangleleft^* x_{[Q]}^{min} \ \& \ E \ c\text{-commands } X^{max} \rightarrow x_{[\triangleleft Q \triangleright]}^{min}]$

[E = the head with the [E]-feature and \triangleleft^* = improper dominance, *i.e.*, reflexive; see Carnie 2008]

In words, the definition in (31) says that every Q -feature contained in a given E-site (*i.e.*, any complement of a given [E]-feature) is deleted.⁶ As is clear, this statement already implies that,

⁶ As Craig Sailor (pers. comm.) points out to me, without further precisions a theory of ellipsis as non-insertion looks incompatible with well-established assumptions on cyclic derivations, *i.e.*, phases. The problem is easy to pinpoint: any [E]-feature too far from lower phase heads (say, embedded C and v /Voice) fails to make the entire E-site elliptical, for the simple reason that all the relevant Q -features in the lowest phase domain has been already replaced by phonological information. The obvious solution would be to assume that ellipsis applies cyclically. In Saab (2010: 108, footnote 20), I vaguely suggested this idea in order to account for some particular cases of island non-reparability, but the idea is concretely implemented by Murphy & Müller (this volume) for different reasons related to their analysis of Vehicle Change. Specifically, they propose that all phase heads bear a [α spell-out] feature, where the [- spell-out] value amounts to null Spell-out. These features enter into a set of *Agree* relations in order to ensure that the entire E-site, and only the E-site, gets the [- spell out] value. Some brief remarks on their implementation are in order. First, their theory of ellipsis is modeled though the general idea of ellipsis as “non-spell-out”, which crucially differs of any theory of ellipsis as “non-insertion”. According to the former, the elliptical object never reaches PF. This is not the case for my theory or any other version of ellipsis as non-insertion. As I have tried to show in Saab (2008), elliptical objects are still active at PF. But this is a very subtle issue requiring more in-depth empirical research. Second, their theory requires a more complex mechanics according to which these spell-out features must enter into a set of stipulated *Agree* relations. While this could work as a concrete implementation, the Q -deletion theory is arguably simpler, since only requires deletion of an independent feature. Third, without further ado it seems that their implementation predicts that any language should have, say, VP-ellipsis or other lower ellipses. They save this potential problem assuming a difference between types of [spell-out] features, namely, some of them are licensing heads but others are not. See their work for details. At any rate, the right generalization points in the opposite direction: while it seems that all languages have some form of high ellipses, not all language has lower ones. This could be related to the interaction between ellipsis and the *Phase Impenetrability Condition* (PIC), commented above. Assume (i) some version of weak PIC (Chomsky 2001) and (ii)

although Q -features are properties of particular terminal nodes, well-formed ellipses consist of entire silent phrase markers. Thus, Q -deletion deletes all the Q -features dominated by any maximal projection c -commanded by the head carrying the [E]-feature. An ellipsis operation involving a non-constituent is thus ruled out by definition (but see Weir 2014 and Stigliano 2020, among others, for empirical considerations that would not necessitate the view that ellipsis always applies to constituents).

I will also assume that *Q -deletion by ellipsis proceeds under identity*, which means that Q -deletion is in fact more constrained than (31), and should be rather captured by the definition in (32), with an identity condition in the conditional clause:⁷

$$(32) \quad \textit{Q-Deletion under Identity:} \\ \forall x_{[Q]}^{min} [X^{max} \triangleleft^* x_{[Q]}^{min} \ \& \ E \ c\text{-commands } X^{max} \ \& \ \underline{Id(X^{max}, A_s^{max})} \rightarrow x_{[<Q>]}^{min}] \\ [A_s = \text{matching sub-antecedent for } X^{max}]$$

In words, the definition in (32) says that every Q -feature *with a matching sub-antecedent for X^{max}* contained in a given E-site (*i.e.*, any complement of a given [E]-feature) is deleted. Like (31), this definition is not empirically driven. Conceptually, the difference between the conditionals in (31) and (32) are enough clear. Whereas the definition in (31) only requires the presence of Merchant's [E]-feature as a precondition for Q -deletion, the conditional in (32) adds an identity condition in its conditional clause. This is, of course, a crucial difference, at least as far as the mechanism of deletion is concerned. Under the definition in (31), 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.⁸ 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 (32), instead, *some* additional identity relation is required for Q -deletion to apply. Note that it seems that such 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 a part of the information present in List 1 objects, that is, abstract morphemes and Roots. As we will see, I will assume that easiest way to restrict the identity calculus is through label information extracted from the atoms taken from List 1. In other words, the identity calculus uses the information present in X^{max} , *i.e.*, labels (for different ideas on what a label is, see Chomsky 1995a,b, Hornstein 2009 and Chomsky 2013). As I defined identity in Saab (2008), instead,

ellipsis as non-insertion. Then, the optimal way of saving the ellipsis-phase interaction is assuming that the [E]-feature must be cyclically inserted in each cyclic high head (say, C or D) for any given E-site. This is the minimal assumption we need in order to make ellipsis as non-insertion compatible with phase theory (with weak PIC). The net prediction is that then all languages must have high ellipses, which, as already mentioned, seems to be the correct empirical picture. Of course, a subset of languages makes the [E]-feature also available for low phase heads, like *v* or *n* (English VP-ellipsis or perhaps Spanish NP-ellipsis). The interaction between ellipsis as non-insertion and phase theory has not been discussed with the detail that deserves in the relevant literature. Space reasons prevent more discussion regarding this interesting line of inquiry. I am grateful to the editors for pointing out to me Murphy and Müller's work and, in particular, to Craig Sailor for fruitful exchange of ideas on the issue.

⁷ 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.

⁸ This is not Merchant's theory, in any case, since for him, the [E]-feature instructs deletion at PF and mutual entailment at LF.

identity was strict in the sense that for every abstract morpheme and Root there is a matching *sub-antecedent* contained within the syntactic antecedent of the E-site.⁹ 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 6, I will come back to 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 information extracted from 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, the key ingredients of the theory of ellipsis I proposed are as follows:

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

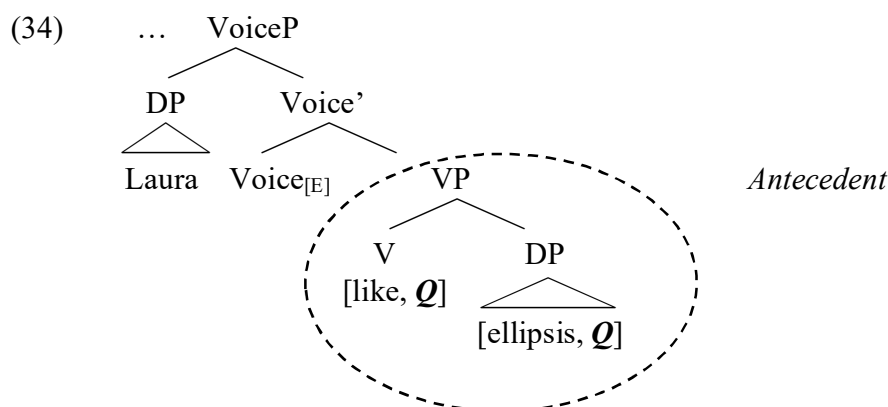
In the next subsection, I further elaborate on other aspects of the theory of *Q*-deletion.

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, such as (1a), repeated here.

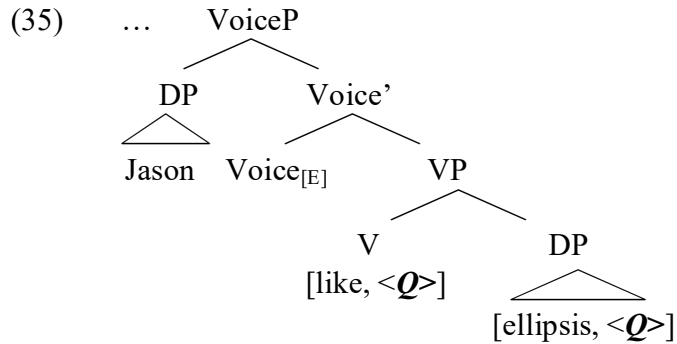
- (1a) Laura likes ellipsis and Jason does <like ellipsis> too.

The condition in (32) requires the presence of a syntactic antecedent as a precondition for *Q*-deletion in the elliptical clause. Let's assume the following antecedent for this E-site (for clarity sake, I use words instead of indexes for Root representation):



What the circle indicates here is the maximal syntactic domain in which every relevant phrase in the E-site, the elided VP illustrated in (35), must find a matching sub-antecedent.

⁹ 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.



I claim that the identity relation is between each phrase and each matching sub-antecedent in the antecedent (A_S in the definition in (32)). 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 (made available in the working space (WS) of the elliptical clause) of the Antecedent for the purposes of checking identity of the elliptical phrase. Starting from the top node of the E-site, this temporary copy is compared, by scanning 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 necessarily reduces to *label identity*. Label information is provided by the labeling algorithm, which, unlike Chomsky (2013), provides labels as a byproduct of Merge (Chomsky 1995a,b, and, in particular, Hornstein 2009).

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):

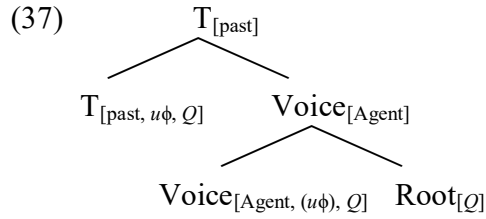
(36) External Merge: $M(\alpha, \beta) \rightarrow \{\alpha \{\alpha, \beta\}\}$

In this case, α provides the label for the entire phrase. I will follow Chomsky (1995b) in two respects. First, I take the label of the resultant phrase as being determined by the projecting head. Second, although less explicitly, he also suggests that the identity relation between the projecting head and the label is not always strict.

[...], we take $\gamma = \{k, \{\alpha, \beta\}\}$, where k is the head of α , and its label as well, in the cases so far discussed. We keep to the assumption that the head determines the label, *though not always through strict identity*.

[Chomsky 1995b:398, my emphasis]

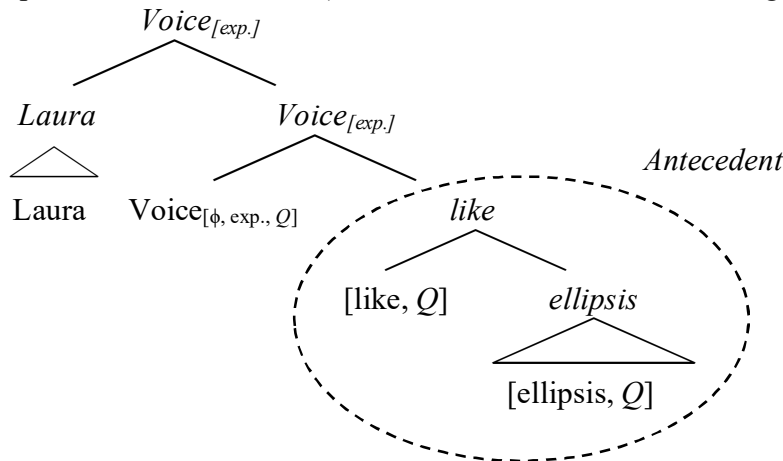
More concretely, I will assume that only category features and LF interpretable features project, *i.e.*, the identity relation reduces to nondistinctiveness in Chomsky's (1965) sense. Crucially, Q -features, uninterpretable ϕ -features (valued or unvalued) and other formal properties of some heads (say, EPP features) do not project as labels. As we will see, these assumptions allow us to explicitly capture Chomsky's (1965) nondistinctiveness effects under ellipsis. A tree labeled as indicated would look then as follows:



Under the Bare Phrase Structure model I assume here, Roots present a particular case, one in which the Root itself counts as minimal and maximal as far as the computational system is concerned. For our present goals, this has two important consequences. First, the element $\text{Root}_{[Q]}$ in the tree (37) is by definition also a maximal element for the purposes of identity. Second, in this particular situation the identity relation between the Root and its label is strict identity. This follows from reflexivity or improper dominance.

Let's proceed assuming that label identity between As and E-sites must be strict, the default working hypothesis, as far as I can tell. Taking as a reference the VP-ellipsis example in (1a), and shamelessly omitting many syntactic details, the first step of the suggested algorithm consists of finding an Antecedent (in whichever way it is achieved), which is circled below. Labels appear in *italics* in this simplified representation:

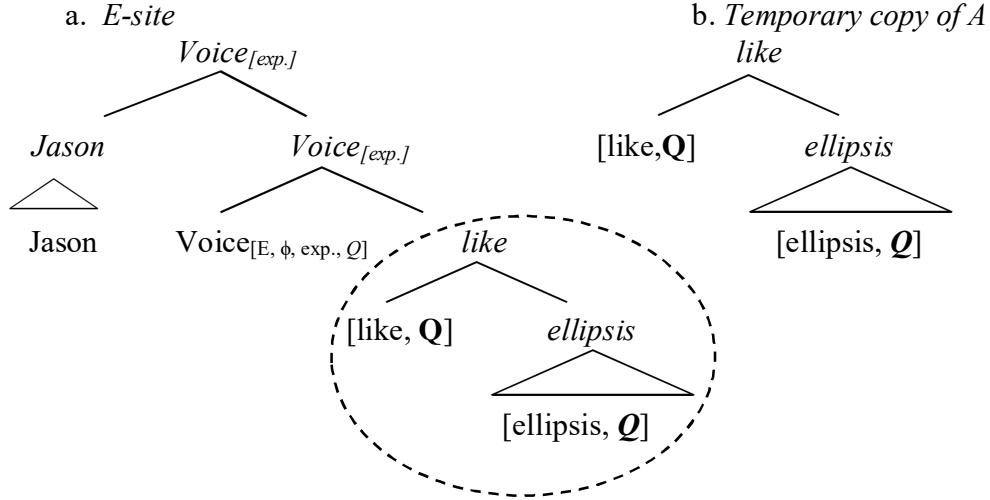
(38) Step1: Find an Antecedent (*i.e.*, a maximal domain for checking identity)



By stipulation, the second step is making a temporary copy of the antecedent phrase and leaving it in the WS corresponding to the E-site:¹⁰

¹⁰ 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).

(39) Step2: Make a temporary copy of A in E-site's WS

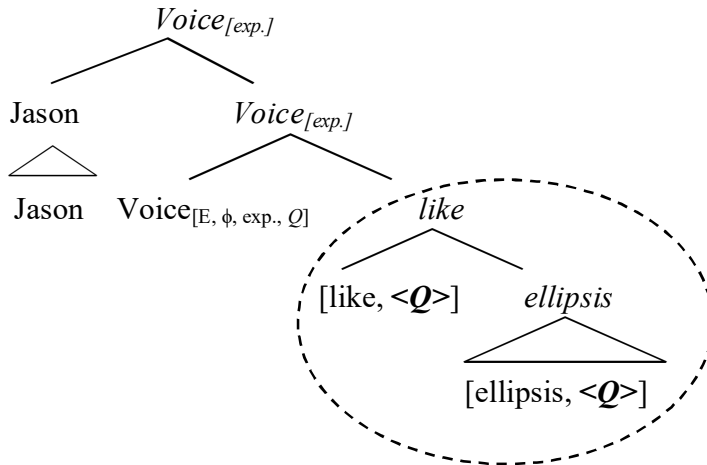


Once this step is reached, the system proceeds to calculate identity for each sub-label in the E-site starting from the top. In each step of the top-down algorithm, the system must ensure that for each X^{max} node in the E-site there is a label-identical node in the corresponding part of the tree. In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

(40) Identity reference set: $\{ \langle like_E, like_A \rangle, \langle ellipsis_E, ellipsis_A \rangle \}$

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

(41) Step 3: Q -deletion



If identity is not satisfied, then Q -deletion is aborted for the relevant terminal nodes with the consequence that the entire VP cannot converge as required by (30):

(42) *Laura likes ellipsis and Jason does <likes *pro-drop*> too.

(43) Identity reference set: $\{ \langle like_E, like_A \rangle, \langle pro-drop_E, ellipsis_A \rangle \}$

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 6).

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

In this section, I discuss phrasal copy mismatches under the theory sketched in the previous section. As already advanced in the introduction, the *C*-Thesis in (13), plus the theory of syntactic ellipsis just introduced, will not only be shown to be compatible with this type of mismatches; they are a robust piece of evidence in its favor.

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:

- (44) 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]
- (45) John has five cats but I don't know how many dogs. [Merchant 2001: 36]

In reality, both sprouting and contrast sluicing are part of a broader generalization, namely that traces of phrasal copies do not count when it comes to calculating identity for a given E-site. In addition to examples like those in (44) and (45), where traces of A-bar movement are irrelevant, traces of A-movement are irrelevant, as well:

- (46) a. John was punished t_{John} and Anne was too <punished t_{Anne} >.
 b. John seems t_{John} to be sick and Anne does too <seem t_{Anne} to be sick>.

An obvious difference when we compare (44)/(45) with (46) is that while in (44)/(45) the traces in the E-sites do not have a parallel trace within the antecedent, the traces in the E-sites in (46) do have a parallel trace within the corresponding antecedents. Examples like (46), then, seem to respect syntactic isomorphism, regarding the behavior of bound variables in ellipsis. Concretely, variables bound from parallel positions in the antecedent 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:

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

cuándo < contratar-**lo**>.
 when hire.INF-him
 ‘The department knows which professor to hire, but doesn’t know when.’

In (47a), the antecedent has a variable left by the topic extraction of the direct object, whereas in (47b), the antecedent contains a *wh*-variable. However, the relevant E-sites do not contain parallel bound variables. Consider a simplified underlying structure for (47b), where it can be seen that ellipsis is licit even when the *wh*-trace in A does not have a corresponding bound variable in the E-site, but a free pronoun:

(48) ... 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

An explanation for (48) in terms of parallel bound variables therefore does not generalize to each case involving different distribution of traces in antecedents and E-sites. Taking into consideration the entire paradigm emerging from the cases discussed in (44)-(47), and adding regular cases of (merger-type) sluicing to this list as well, we can give a more complete picture of the distribution of phrasal traces in antecedents and E-sites. A trace of an ellipsis remnant that has escaped the E-site can have different types of correlates in the antecedent and a trace within the antecedent can indeed license a non-variable (a non-trace) in the corresponding position within the E-site:

Table 1: The distribution of correlates and variables present in the E-site and its antecedent

	Antecedent	E-site
sprouting (ex. 44)	no correlate	<i>trace</i>
contrast sluicing (45)	<i>focus</i>	<i>trace</i>
VP-ellipsis with A-extraction (ex. 46)	<i>trace</i>	<i>trace</i>
sluicing (ex. 47)	<i>trace</i>	<i>pronoun</i>
regular sluicing (ex. 1c)	<i>indefinite</i>	<i>trace</i>

This table makes clear that syntactic isomorphism/parallelism cannot be on the right track and poses the challenging question why traces of maximal phrases within E-sites are irrelevant when it comes to calculating identity.

I propose that the copy theory of movement as originally proposed by Chomsky (1993) and (1995) offers an interesting answer to this question. Chomsky himself pointed out that ellipsis and copy deletion would be part of same natural class of phenomena, which I termed the *C*-thesis above.

(13) *C-Thesis*: Ellipsis and copies form a natural class of silent expressions.

Chomsky 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 1995a: 253, my emphasis]

In other words, surface anaphora and copies left by movement are subtypes of the same phenomenon.¹¹

I further assume that *Q*-deletion for phrasal copies and *Q*-deletion of E-sites are strictly ordered operations: *Q*-deletion for phrasal copies applies *before* *Q*-deletion of E-sites. As for the conditions that syntactic copy deletion must satisfy, there are basically two such conditions: an identity requirement on chain formation and c-command. I refrain from providing a definition of the identity requirement on chain formation, as the need for such a requirement largely depends on one's view about the very nature of copies – if copies are the result of a particular copy operation (Chomsky 1993, Nunes 2004, Muñoz-Pérez 2017) or as syntactically-defined occurrences of a single syntactic object (Chomsky 2000, 2001), the identity condition can even be dispensed with. As for c-command, I adopt the most traditional view of *c*-command in terms of sisterhood and reflexive containment:

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

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

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

In words, for any terminal containing *Q*, *Q* gets deleted if such a terminal is dominated by a label c-commanded by a higher chain link with which a subset identity relation is established.

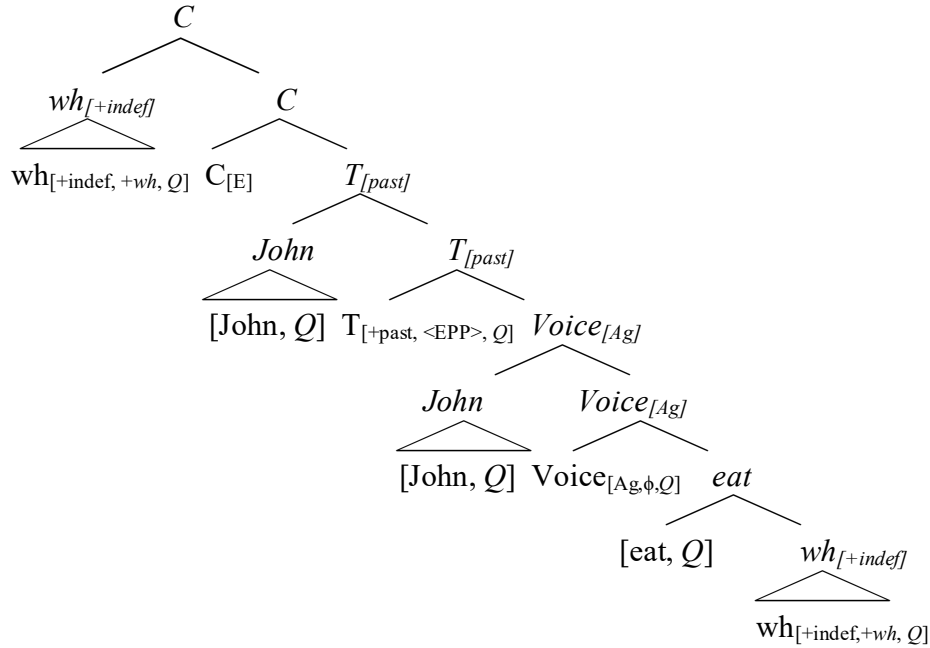
Let's see then how this approach derives the paradigms in (44)-(47), starting with the following case of sprouting:

(51) John ate but I don't know what.

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 (51), the abstract representation prior to copy deletion and TP-deletion, would be as shown in (52), assuming the labeling approach suggested in the previous section (labels in italics):

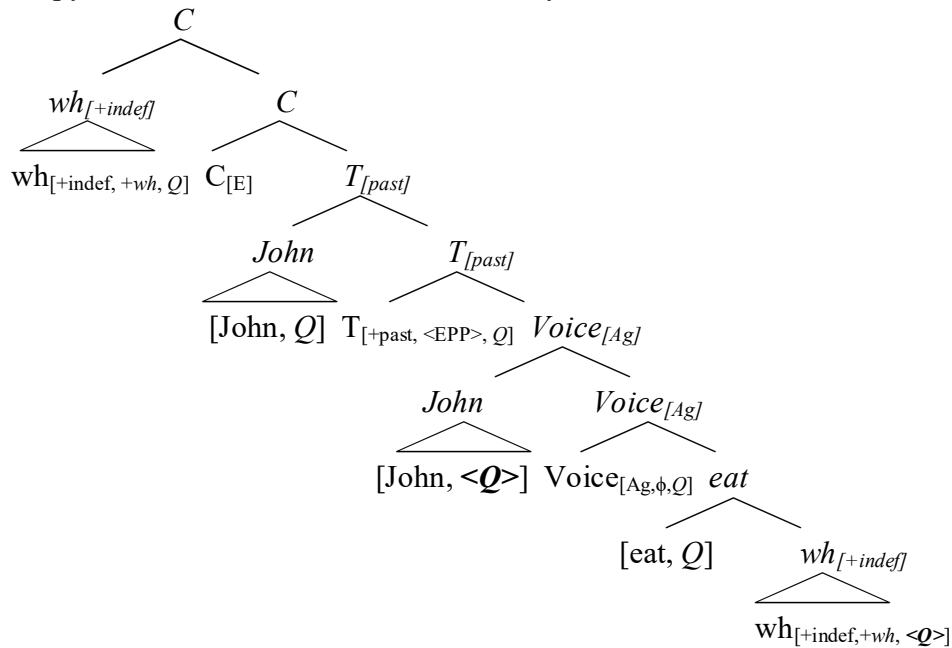
¹¹ In Chomsky (1993) the relation between copy deletion and ellipsis is defined in the opposite way: copy deletion reduces to ellipsis. See Nunes (2004) for a discussion of both alternatives.

(52) John ate but I don't know ...



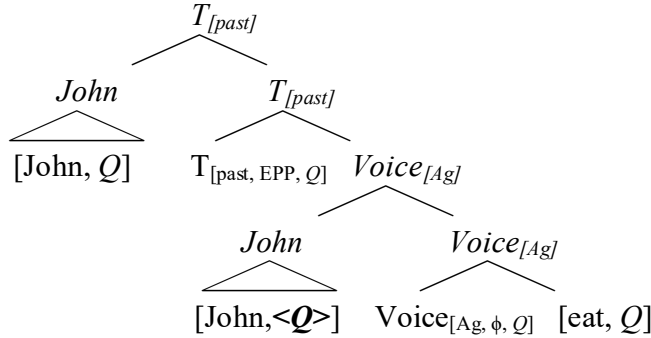
In this tree, the *Q*-features of the lower copy of the *wh*-remnant and the copy left by subject movement are deleted, since both identity and *c*-command are met.

(53) Copy deletion under *c*-command & identity



In the next step, once an antecedent TP for the E-site is found, it is copied as a temporary file in the E-site's work space. The copied antecedent can be represented as follows:

(54) A's temporary copy:



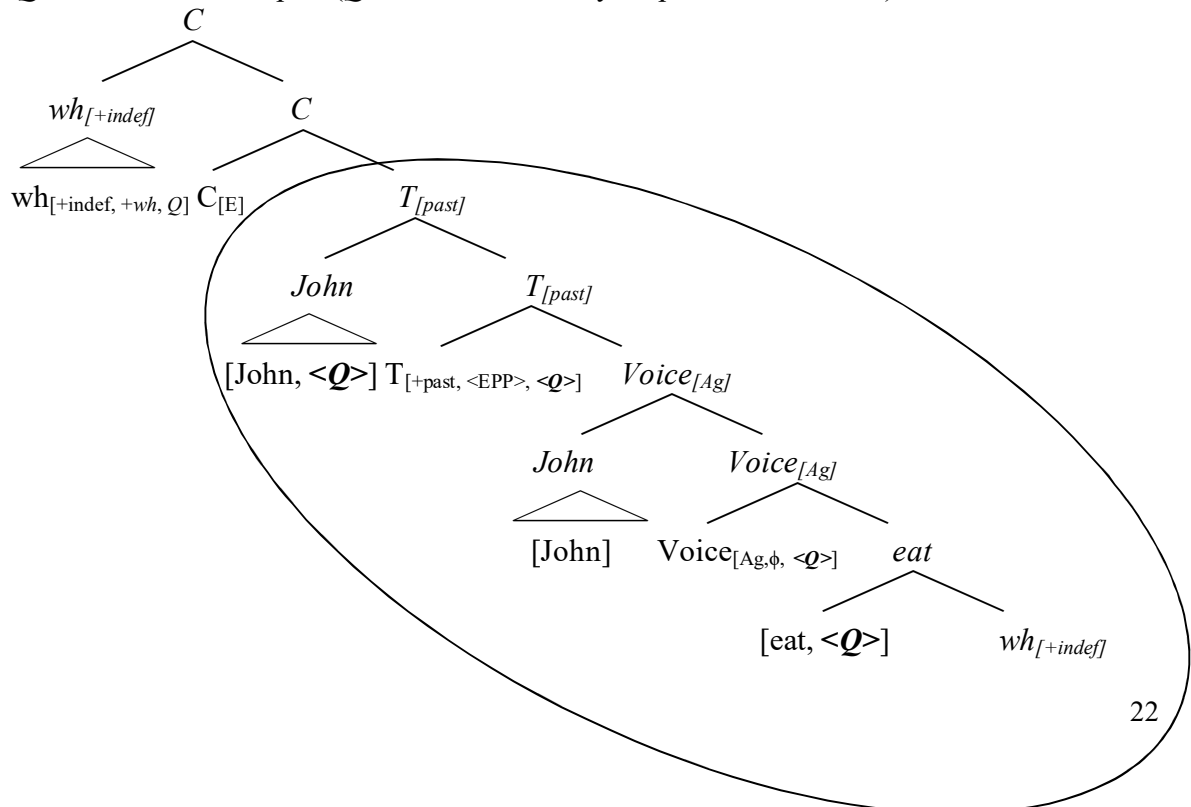
Starting from the top, we can see now that each node X^{max} , such that X^{max} dominates $x_{[Q]}^{min}$, has an strict identical sub-antecedent contained in the antecedent, with the exception of the Root *eat*. In effect, note that in this particular case, and given the provided analyses, the Root in the antecedent is minimal and maximal, since the Root is the first, most embedded, non-projecting head, while it takes a complement in the E-site and, consequently, it projects. Depending on how the labeling algorithm is defined, we could end up with a difference in the content of each label. If the antecedent Root is maximal and minimal and identity is strict (given reflexivity) as far as label-head identity is concerned, then the identity reference set would amount to:

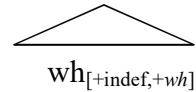
(55) Identity reference set: $\{\dots \langle eat_E, [eat, Q]_A \rangle \dots\}$

If we want to maintain a strict identity condition for Q -deletion, then the obvious solution would be to stipulate that Q features never project. I will adopt such assumption for the purposes of this paper, although the issue is not strictly relevant for the discussion that follows.

Coming back to our E-site, Q -deletion of the relevant nodes is illustrated as follows:

(56) Q -deletion under ellipsis (Q -features deleted by ellipsis are boldfaced)





This view implies that copies of phrasal movement are never in the need for a corresponding phrase in the antecedent. The prediction is that whenever a phrase moves to a higher *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 (45), and the VP-ellipsis cases in (46). As for examples like (47), 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 identity is satisfied *modulo* Vehicle Change (Fiengo and May 1994), *Q*-deletion applies deleting every *Q*-feature contained in the pronoun.¹² In addition, the trace of the

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).

- (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 do 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 ! = [_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 _ = [_E reluctant to criticize you_j in public]
 (ii) Jack: You_m pushed me_j first!
 Mike: No, you_j did! = [_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.

wh-adjunct *cuándo* ‘when’ does not need a sub-antecedent in A, because a prior instance of *Q*-deletion has deleted its *Q*-feature. In (57), I provide a simplified representation for (47b), in which each relevant instance of *Q*-deletion in the E-site appears between angled brackets.

- (57) ... 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 1 are correctly ruled in under this syntactic approach to ellipsis.

In summary, I have demonstrated that 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. Importantly, the *Q*-deletion approach is capable of explaining the differences between (10) and (11) above, data that pose a serious challenge for semantic identity approaches (as for example formulated by Merchant 2001). Let’s illustrate this point with the contrast between (10a) and (11a). In this pair of data, the ungrammatical (11a) is ruled out as violation of *Q*-deletion under identity, since the label of the PP node does not have an identical sub-antecedent in the TP antecedent. This requires the extraction of the entire PP out of the ellipsis site in order to obtain a legitimate E-site (see 32 above):

- (58) a. They’re jealous, but it’s unclear of who <they are jealous [pp <of who>]. (=10a)
 b. *They’re jealous, but it’s unclear who(m) <they are jealous [pp of [DP <who>]]> (=11a)

The system I am introducing 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 similar mechanisms) without further ado. Consider the following examples of adjunct sprouting from Barros and Kotek (2019) (see also Anderbois 2014 and references therein):

- (59) a. Sally left, but I don’t know in which car.
 b. Sally left, but I don’t know with whom.

Merchant’s mutual entailment cannot ensure the right result here, since the proposition in the antecedent (*i.e.*, that Sally left) does not entail the proposition expressed in the elliptical sentence (*i.e.*, that Sally left with someone or that Sally left in a certain car). It does not 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

$$(60) \quad U[\llbracket CP_A \rrbracket^f] \leftrightarrow U[\llbracket CP_E \rrbracket^f] \quad [\text{Barros and Kotek 2019: 6}]$$

¹³ (61) reads 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 $\llbracket CP_A \rrbracket^f$.

The condition in (60) does not give good results in examples like (61) (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:

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

To explain why sprouting is well-formed nevertheless, Barros and Kotek (2019) appeals to the process of accommodation, along the lines proposed by Lewis (1979):

- (62) 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 sprouting examples in (61) trigger the presupposition that the relevant leaving-events include a companion or a car. Such a presupposition then removes denotation worlds inconsistent with it from the antecedent. As Barros and Kotek notice, this sort of accommodation is not a trait of their proposal, but is required for any semantic account.

The syntactic approach I defend here does not 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. I believe that this approach should be preferred over semantic approaches, which need to appeal to accommodation (which remains an internal fix in these approaches). But even if one is willing to accept this modification, and appeal to accommodation, there are still some facts that cannot be derived under the 'semantic identity with accommodation' approach. These facts also involve sprouting.

Concretely, Pujalte (2012, 2013) shows that added datives in Spanish do not 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). In addition, a benefactive participant introduced by preposition *para* 'for' is licit as well.

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

Interestingly, Pujalte notices that while adjunct sprouting is possible (see (64c)), sprouting of the dative argument is illicit (see 64a), even when its non-elliptical counterpart is grammatical (see (64b)):

- (64) a. Juan cortó el pasto, pero no sé a quién
 Juan cut the grass but not know.1SG to whom

- le cortó el pasto.
 CL.DAT.3SG cut the grass
 lit. ‘Juan cut the grass but I do not know to whose benefit he cut the grass.’
- b. ?? Juan cortó el pasto, pero no sé a quién
 Juan cut the grass but not know.1SG to whom
 <le cortó el pasto>.
 CL.DAT.3SG cut the grass
 lit. ‘Juan cut the grass but I do not know to whose benefit.’
- c. Juan cortó el pasto, pero no sé *para* *quién*
 Juan cut the grass but not know.1SG for whom
 <cortó el pasto>.
 cut the grass
 lit. ‘Juan cut the grass but I do not know for whose benefit <he cut the grass>.’

The sharp contrast between the well-formed adjunct sprouting case in (64c) and the non-well-formed dative sprouting case in (64b) is problematic for Barros and Kotek’s proposal. In both cases, the condition in (60) is not met, as shown in (65). The set of worlds used to construct the alternatives in the elliptical clause is not equivalent to the set of world used to construct alternatives in the antecedent.

- (65) a. Juan cortó el pasto.
 = { w : John cut the grass in w }
- b. Juan cortó el pasto {a alguien, para alguien}
 = $\bigcup \{\lambda w. \text{John cut the grass for } x \text{ in } w \mid x \in D_e\}$

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, and should be able to license both (64b) and (64c). However, accommodation only licenses the latter case, involving adjunct sprouting.

In contradistinction, the analysis I defend on these pages 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 (64a) contains an Appl phrase, that does not 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 does not have a corresponding sub-antecedent in the antecedent TP and the derivation is cancelled immediately when this failure obtains:

- (66) a. Antecedent
- ```

 graph TD
 VP[VP] --- V[V]
 VP --- DPtheme[DPtheme]

```
- b. E-site
- ```

      graph TD
      VP[VP] --- V[V]
      VP --- ApplP[ApplP]
      ApplP --- DPbenefactive[DPbenefactive]
      ApplP --- Applprime[Appl']
      Applprime --- Node[ ]
      Node --- Node2[ ]
  
```

The adjunct sprouting sluice in (64c) follows in the same way as any other case of sprouting, see (51)-(56) above.

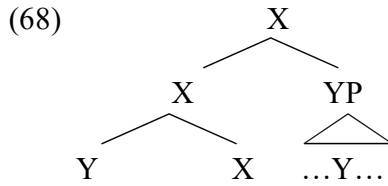
In summary, in order to obtain good results for entire paradigm, the semantic identity with accommodation approach must be supplemented with an identity condition making reference to formal identity. As mentioned in the introduction, this is not to deny that a complete theory of ellipsis might include semantic or pragmatic ingredients, but for the cases analyzed so far a *Q*-deletion approach alone is able to do the job, and is superior to the ‘semantic identity with accommodation’ approach.

5. The distribution of head copies within E-sites

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.

- (67) 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 do not 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:



Here, the higher head copy Y does not c-command its lower copy. This raises several questions crucially regarding the way in which head copies are deleted and the distribution of head copies in ellipsis. Here, I briefly discuss some of the implications that arise from a system with syntactic head adjunction and *Q*-deletion as operations of grammar.

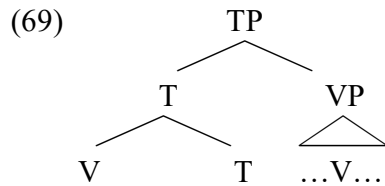
5.1 On morphological head ellipsis

In order to provide a full picture about the timing of deletion in grammar in this section I sketch my view on the question how head copies are deleted. Following Saab (2008), I propose that head copies 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. I will call this kind of ellipsis, taking place at PF, morphological ellipsis (M-ellipsis). Having shown what the properties of syntactic ellipsis (S-ellipsis) are in the previous sections, I turn my attention to some core properties of morphological ellipsis. The discussion in this section is expository; the reader is welcome to consult a more detailed discussion of head ellipsis in Saab (2008).

In Saab (2008), I cashed out the intuition that the locality conditions for head deletion 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.*, as can be observed in English affix hopping). Local Dislocation, instead, applies after Linearization and under adjacency (*e.g.*, as can be observed in comparative/superlative formation in English).

In a typical head adjunction configuration like (69), immediate locality obtains between T and the lower copy of V and both verbal heads are identical.



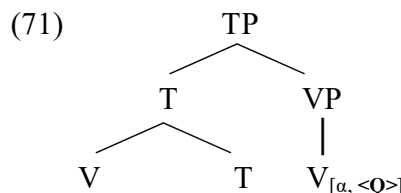
Under the *Q*-deletion approach, we can therefore state head ellipsis as follows:¹⁴

(70) *Head Ellipsis (under Q-deletion):*

Given a morphosyntactic word MW, delete every *Q*-feature contained in MW iff:

- (i) There is an identical antecedent contained in a morphosyntactic word MW',
- (ii) MW is adjacent or immediately local to MW'.¹⁵

The effect of head ellipsis given the tree in (69) is that *Q*-deletion deletes the *Q*-feature encoded on the lower verbal copy.



¹⁴ This statement follows the word conventions used in Saab (2008). The same can be stated in the more familiar predicate logic language used through this chapter:

(i) Given two morphosyntactic words MW, MW':

$\forall x_{[Q]}^{min} [MW \triangleleft^* x_{[Q]}^{min} \ \& \ \exists y^{min} [MW' \triangleleft^* y^{min} \ \& \ MLoc(MW', MW) \ \& \ Id(x_{[Q]}^{min}, y^{min})] \rightarrow x_{[<Q>]}^{min}]$

[MLoc = morphological locality, *i.e.*, immediate locality or adjacency depending on the relevant derivational stage]

¹⁵ 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

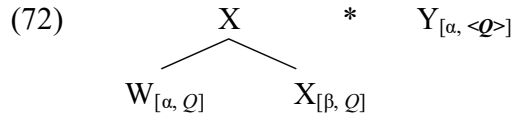
(ii) At the input to Morphology, a node X^0 is (by definition) a *morphosyntactic word* (MWd) iff X^0 is the highest segment of an X^0 not contained in another X^0 .

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]

Q -deletion can also apply to two adjacent morphosyntactic words (the star * refers to a linearization statement):

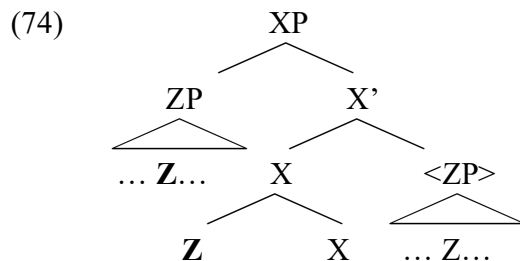


Here, W serves as an antecedent for deletion of the Q -feature Y possesses.

The conditions in (70) capture some crucial properties of head ellipsis that distinguishes it from phrasal ellipsis. Consider, in this respect, VP-topicalization in English, involving remnant movement of the νP :

- (73) John said that he would clean the house, and [$\langle \text{he} \rangle$ clean the house] he did $\langle [\langle \text{he} \rangle$ clean the house] \rangle .

Here the subject vacates its base position and ends up in Spec,TP, a position from which it c-commands its trace. Since both identity and c-commands is met, Q -deletion deletes the Q -features of the subject DP. Remnant movement of the νP to a topic position triggers another instance of Q -deletion for the νP copy. As expected, only the copy in Spec,TP is subject to vocabulary insertion at PF. In contradistinction, a structure involving head extraction out of a remnant phrase should lead to double pronunciation of the two higher heads, as shown in the abstract structure in (74):

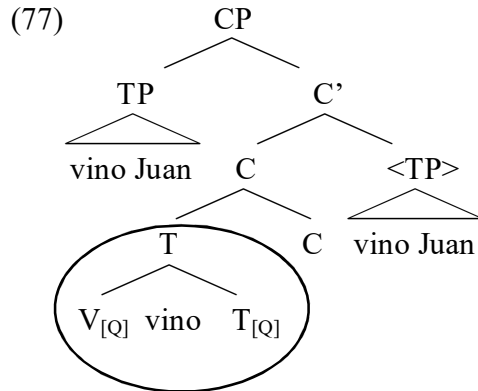


The reason should be evident: extracting a head via head adjunction leads to a configuration in which the moved head does not c-command its trace. In turn, additional remnant movement of ZP will end up in a situation in which each Q -feature is deleted in the lower ZP trace, but the two remaining head 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 (see Saab 2008, 2017):

- (75) Vino Juan, vino. *Río de la Plata Spanish*
 came J. came
 ‘John came!’
- (76) a. È andato a Parigi, è andato. *Italian*, [Gullì 2003: 3]
 is gone to Paris is gone
 ‘He really did go to Paris.’
 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 (74), namely, head adjunction plus remnant movement of some constituent containing the original head trace:



As mentioned, the two higher links of *vino* do not stand either in a c-command configuration or in a configuration of immediate locality. Crucially, they are not adjacent, either. If they were adjacent, head deletion would apply after linearization. This predicts that structures of this sort should be ungrammatical. As discussed at length in Saab (2008, 2017) verbal doubling of the Italian or Rioplatense type leads to strong ungrammaticality, as predicted by the present approach:¹⁶

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

Now, in addition to instantiating the anti-adjacent verbal doubling structure, European Portuguese does allow for adjacent verbal doublings of the following type (see Martins 2007, 2013):

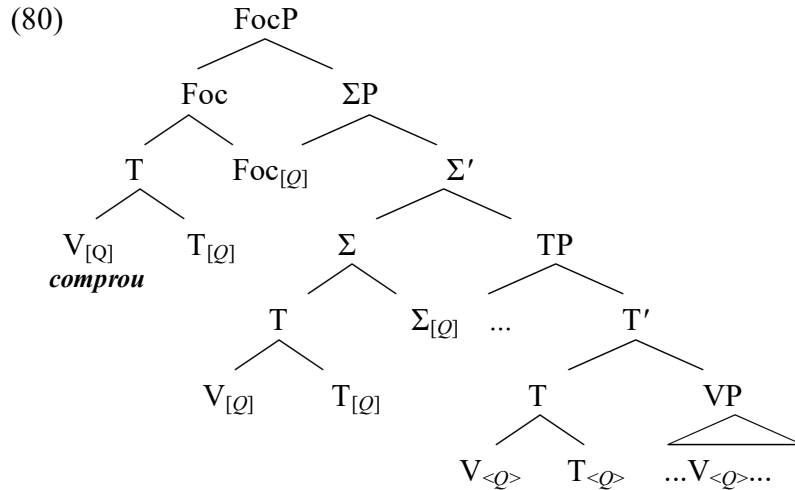
- (79) A: O João não comprou o carro, pois não? *European Portuguese*
 the João not bought the car pois NEG
 ‘John didn’t buy the car, did he?’
 B: Comprou, comprou.
 bought bought
 ‘Yes, he DID.’

[Martins 2007: 81]

According to Martins, the answer in (79B) involves an instance of V-stranding (or T-stranding) ellipsis, a typical feature of the language, plus several instances of head movement. The last step

¹⁶ As noticed by an anonymous reviewer, the present analysis correctly rules out the adjacent duplications in (78), but also rules in cases in which one of the two copies is deleted (e.g., *Mangia!* or *Vino!*).

of head movement, however, is implemented through T excorporation from Σ to Foc. The output structure is illustrated in (80):



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 maximal domain for Q -deletion inside heads, is not met because Σ itself does not have a matching head in the Foc head.¹⁷

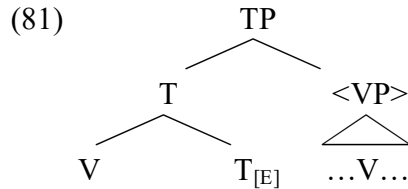
To sum up the above discussion, unlike phrases, heads are deleted at PF under identity and different locality conditions, which are essentially morphological. Complementing the proposal on phrasal ellipsis in section 3 and 4, this means that the proposed theory makes a division between elliptical objects according to their phrasal or head status, a division that originates ultimately in differences between the timing of the elliptical processes: 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. These differences yield distinct properties of the two types of phenomena, as consequence of the timing. First, while S-ellipsis only targets phrases; M-ellipsis only targets morphosyntactic words (MWs). Second, S-ellipsis respects syntactic locality constraints (c-command, selection) while M-ellipsis respects morphological locality conditions (adjacency, immediate locality). Third, S-ellipsis cannot be fed by post-syntactic operations; M-ellipsis can.

5.2. Considerations on head-stranding ellipsis

If one considers the interaction between head movement and ellipsis, the relevant empirical domain is constituted by languages that have V-stranding ellipsis that elides constituents of various types, among which VP or TP. Phenomena of this sort have been identified in languages like Irish (McCloskey 1991, 2004, 2012), Portuguese (Cyrino and Matos 2002, 2005, Lipták and Saab 2014), Russian (Gribanova 2013a,b, 2018), Greek (Merchant 2018), Hungarian (Lipták

¹⁷ The complex T head incorporated onto Σ does have an identical antecedent in Foc, but Q -deletion inside MWs requires exhaustive Q -deletion of their terminals for morphological reasons. The reader is referred to Saab (2008) for further illustration of intricate effects of head copy deletion in various syntactic environments, interacting with morphological well-formedness of all kinds.

2012, 2013), and Hebrew (Goldberg 2005, but see Landau 2018, 2020 and footnote 18). The case of V-stranding VP-ellipsis would have the following structure.



Since c-command between the two copies of the verb is not met after V-to-T has taken place, there is no trigger for *Q*-deletion for the lower V head. Consequently, in the *Q*-deletion model, the V label in the E-site must find an identical sub-antecedent in the antecedent. The prediction therefore is that head copies obey lexical identity. This is correct for a subset of the languages that show V-stranding ellipses, an observation that goes by the name of the *verbal identity requirement* (see Goldberg 2005). The examples in (82)-(83) illustrate this requirement for Portuguese in the analysis of Cyrino and Matos (2002, 2005) and (84) does that for Irish.

- (82) 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]
- (83) a. O Luís foi à biblioteca às nove horas e o Pedro também foi
 the Luís went to.the library at nine o’clock and the P. too went
 < à biblioteca às nove horas >.
 to.the library at nine o’clock
 ‘Luis went to the library at nine o’clock and Peter did, too’. (EP/BP)
 b. * O Luís chegou à biblioteca às nove horas e o Pedro também foi
 the Luís arrived to.the library at nine o’clock and the P. too went
 < à biblioteca às nove horas >.
 to.the library at nine o’clock
 ‘Luis went to the library at nine o’clock and Peter did, too’. (EP/BP)
 [Cyrino and Matos 2005: 9]
- (84) a. A: A-r bhain tú sult as?
 INTERR[PAST] take you fun from-it
 ‘Did you enjoy it?’
 B: Bhain.
 took
 ‘I did.’
 b. A: A-r enjoy-áil tú é?
 INTERR[PAST] enjoy you it

[McCloskey 2004]

b. Identity reference set for (82a): $\{\dots \langle \hat{p}os_E, \hat{p}os_A \rangle \dots\}$
 c. Identity reference set for (82b): $\{\dots \langle \hat{p}os_E, colocou_A \rangle \dots\}$

[Goldberg 2005: 182]

33

where verbal mismatches are allowed if the verbs contrast, among others, Russian, Hungarian and Greek.

One of the best studied cases is Russian, thanks to works by Vera Gribanova. For instance, Gribanova (2018) presents a detailed comparison between Russian and Irish, a language that does not allow for verbal mismatches (recall (84)). In Russian, instead, lexical mismatches are 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 (87) and (88):

- (87) a. Evgenija otpravila posylku v Mosku?
 Evgenija send.PAST.SG.F package.ACC to Mosku
 ‘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]
- (88) a. Paša poterjal knigu v biblioteke,
 Paša lose.PAST.SG.MS book.ACC in library.PREP
 i žurnal v stolovoj?
 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:

- (89) a. Našel li Paša poterjal knigu v
 find.PAST.SG.MS Q Paša lose.PAST.SG.MS book.ACC in
 biblioteke, i žurnal v stolovoj?
 library.PREP and magazine.ACC in cafeteria.PREP
 b. No, ne našel, a poterjal.
 no NEG find.PAST.SG.MS but lose.PAST.SG.MS
 ‘No, he didn’t find (...), but he lost (...).’
 c. Našel, no potom poterjal
 find.PAST.SG.MS but then lose.PAST.SG.MS
 ‘He did (...), but then he lost (...).’ [Gribanova 2018:13]

To explain the difference between the two types of languages, Gribanova bases herself on 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. Specifically, she proposes that constructions obeying the verbal identity requirement involve amalgamation at PF. Thus, in the syntax the surface stranded verb actually stays within the E-site and, consequently, must respect identity as any other constituent inside an E-site. On the other hand, constructions in which verbal identity is not operative involve syntactic movement; crucially, this movement is

not syntactic head adjunction (an option disallowed 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 movement (as proposed in Vicente 2007 and others).

Gribanova's proposal and her account of the verbal identity mismatches in Russian (and related languages) is perfectly compatible with the *Q*-deletion approach, in fact it meets the predictions of the *Q*-deletion theory. If syntactic head movement of focused heads targets specifier positions (arguably, due to reasons of scope), then the c-command condition for *Q*-deletion is satisfied and, therefore, verbal mismatches are correctly predicted as licit.

It is also important to mention that the verbal identity condition in V-stranding ellipsis follows from the theory of *Q*-deletion, both under syntactic or PF analyses of head movement. In other words, the particular behavior of head traces within E-sites does not depend on specific 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).¹⁸

6. Timing Issues #2: inflectional mismatches

In this last section, I turn to the question whether inflectional mismatches of the type discussed in the introduction could present an argument against syntactic ellipsis as defined in this chapter. I will try to show that certain inflectional mismatches are illusions, the byproduct of the size of E-

¹⁸ In addition to the nature of head movement, which is under debate, there are still several poorly understood issues regarding the scope of X-stranding ellipsis within and across languages. First, it is a matter of debate whether some languages allow for deviations of the verbal identity condition, Portuguese being a prominent case, as Cyrino and Matos (2002, 2006) and Santos (2009) provide contradictory evidence. Second, as already noticed, Landau (2018, 2020) claims that there are both conceptual and empirical reasons to deny the existence of V-stranding VP-ellipses in all languages, while allowing the existence of some other types of V-stranding, such as V-stranding TP-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 analyses 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. This argument does require 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. As I have shown in the previous, such evidence indeed exists.

sites and the timing of ellipsis. What these illusions 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.

In section 2 and 3, I claimed that phrasal ellipsis is an operation of narrow syntax and identity is only sensitive to syntactic material, as summarized in (16):

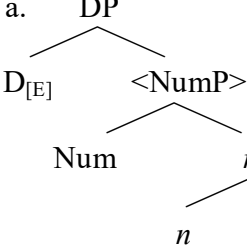
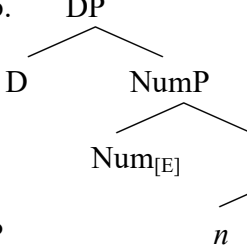
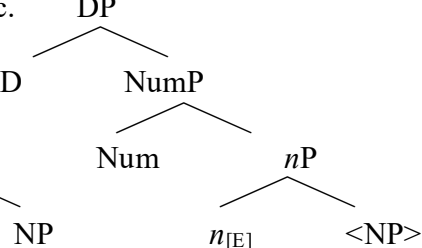
- (16) *Syntax First Thesis*: Identity under ellipsis makes primary reference to the syntactic and lexical information that is active in narrow syntax, *i.e.*, before spell-out.

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 the condition of lexical-syntactic identity is met.

In addition, ellipsis also needs *licensing*, which refers to the fact that the type of phrases that can be elliptical is constrained by their formal distribution in the clause, and 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):

- (90) a. Bill has read that book and Peter has too.
 b. *Guille ha leído ese libro y Pedro ha también.
 Guille has read that book and Pedro has too
 ‘Guille has read that book and Pedro has, too.’

To capture language and construction-specific differences of this sort, 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 (in turn determined by the features of [E] itself): if [E] is located on a C head, we obtain different varieties of TP ellipses, including sluicing or fragment answers; if [E] is in T, we obtain VoiceP-ellipsis; and if it is on Voice, VP-ellipsis is licensed. Similar considerations generalize to the nominal domain, where different types of nominal ellipses are attested, to wit, ellipsis of NumP, *n*P or NP (see Saab 2019 for examples of each type and discussion):

- (91) a.  b.  c. 

The view that ellipsis can elide distinct types of phrases also allows us to handle many tolerable inflectional mismatches. In the sentential domain, this view predicts apparent tense mismatches in cases of VP-ellipsis, but not in ellipsis that elides a TP or something bigger. In the nominal domain, it predicts apparent number mismatches for *n*P or NP-ellipses but not for NumP-ellipsis. According to the received view, identity in ellipsis only affects material inside the E-site, so lot of apparent mismatches like those just mentioned are indeed mere appearances.

As for the identity condition, the approach in this paper makes specific predictions related to the syntax—morphology interaction. Since ellipsis of phrases applies in the syntax (S-ellipsis), it follows that identity can only make reference to objects taken from List 1, *i.e.*, bundles of syntactic and semantic features arranged in terminal nodes and Roots. S-ellipsis is insensitive to the effects of morphological operations. Thus, although they might make opaque a certain identity relation in the syntax, adding or deleting features at PF cannot alter identity in the syntax.

The hypothesis that identity for surface anaphora only makes reference to objects taken from List 1 has high importance: it predicts that mismatches concerning List 2 items are possible under ellipsis. Mismatches of this sort do indeed exist. Consider a simple case of TP-ellipsis in Spanish involving allomorphy for the tense nodes:¹⁹

- (92) Juan fue al cine y ellos también <fueron>.
 Juan 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*:

- (93) 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 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; these are the feature bundles that are represented in the syntax by abstract morphemes. Tense information, thus, is identical in the syntax.

Note, however, that this is not the only difference between the T nodes in A and the E-site: antecedent and ellipsis also differ when it comes to subject agreement. If agreement nodes are dissociated morphemes, as we assumed in subsection 2.3, the agreement mismatch in (92) illustrates a particular case of opacity induced by morphological operations. As shown in the

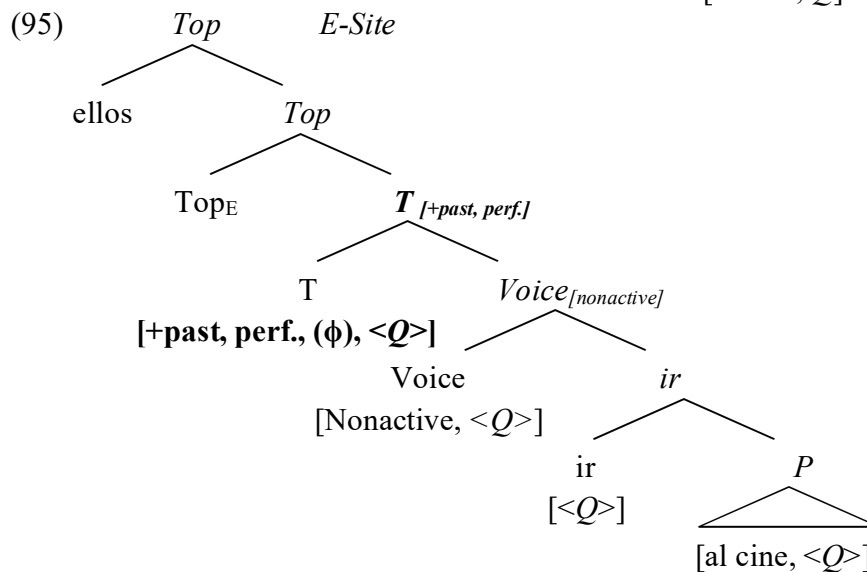
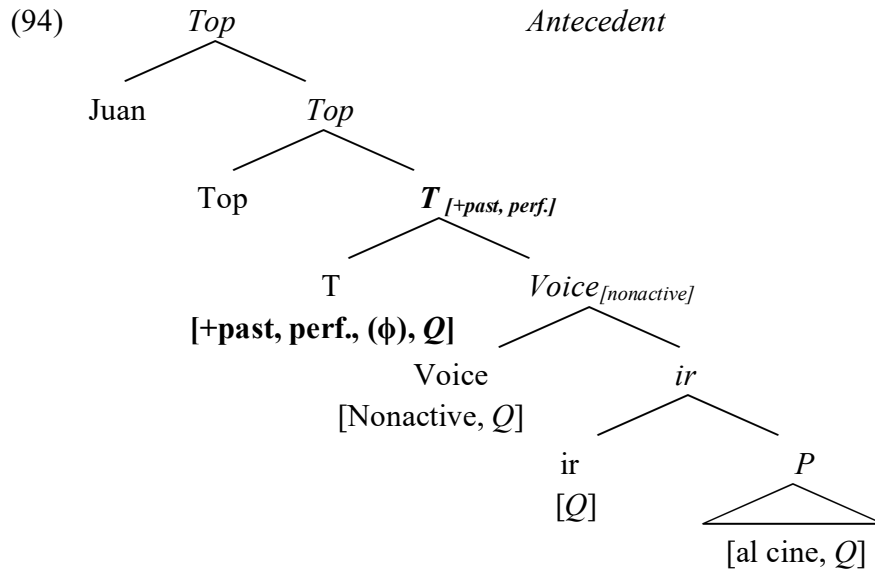
¹⁹ An anonymous reviewer wonders how the theory of ellipsis I am defending here deals with dissociated morphemes after ellipsis. In particular, the reviewer wonders whether the present system incorrectly predicts that dissociated morpheme added after ellipsis should be pronounced. I have two reactions to this. The first one is that regardless whether dissociated morphemes are added to an elliptical object before or after any instance of ellipsis this piece of morphology cannot be pronounced for reasons having to do with what I have dubbed the *Sub-Word Deletion Corollary*, which prevents lexical realization of sub-words inside elliptical MWs (Saab 2008). My second reaction is to some extent independent of the theory presented here and is related to the following empirical claim defended in Saab (2008) and Saab and Lipták (2016):

(i) *Ellipsis-Morphology Generalization (Elmo-generalization)*:

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.

trees in (94) and (95), in the syntax, *all* the labels contained in the TP are strictly identical to those in the Antecedent and *Q*-deletion can apply eliminating the relevant *Q*-feature of the T node within the E-site:

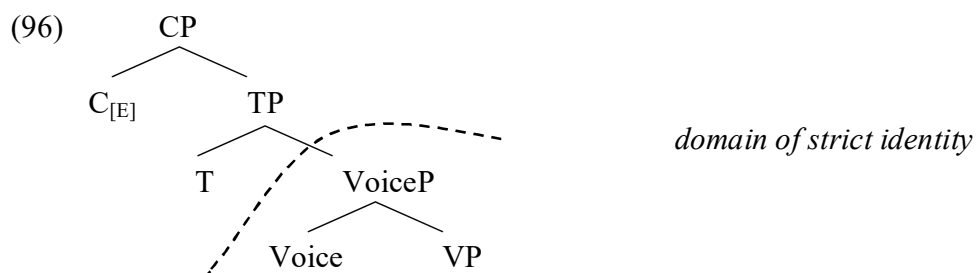


In the simplified representations in (94) and (95), ϕ is between parentheses, as the presence of such a feature depends on one's commitment to the existence of an abstract *Agree* operation (only indirectly related to the existence of dissociated morphemes of agreement). Again, if there are no agreement heads in the syntax, then agreement morphemes 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 mentioned the theory of identity I am sketching captures Chomsky's (1965) notion of nondistinctiveness, in terms of *strict label identity*, which amounts to capturing certain inflectional mismatches as the byproduct of the nondistinctiveness between terminal nodes and its labels.

At any rate, inflectional mismatches of the sort illustrated in (92) cannot be taken as evidence in favor of more relaxed theories of identity (semantic or syntactic). Let's then come back to the issue of recalcitrant cases of inflectional mismatches, mentioned in section 2 above, and repeated here, and to the question to what extent they pose problems for a syntactic identity theory:

- (6) Decorating for the holidays is easy if you know how!
 ... how <to decorate for the holidays>
 ... * how <decorating for the holidays>
- (7) I'll fix the car if you tell me how.
 ... how <to fix the car>
 ... * how <I'll fix the car>
- (8) I remember meeting him, but I don't remember when.
 ... when <I met him>
 ... * when <meeting him>

Similar data lead Rudin (2019) to propose a theory of syntactic identity that makes a crucial division between nodes contained within what he calls the *eventive core* in a given E-site and outside the eventive core, where the *eventive core* is VoiceP and categories dominated by VoiceP:



Rudin's proposal aims to capture tolerable mismatches like those in (6)-(8) and, at the same time, intolerable mismatches regarding the behavior of Voice features in sluicing and other high ellipses, such as active-passive alternations, which are illicit (Merchant 2013a:81):

- (12) 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.)

If ellipsis identity is only concerned with material in the eventive core, these (im)possible mismatches seem then to follow 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 (see also Ranero Echeverría 2019 and footnote 22 for more discussion). However, it turns out that for many of the mismatches Rudin discusses there are alternative analyses. As I said, under the *Q*-deletion model 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. *v*P-

(97) 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!’

(98) [+subjunctive] $\rightarrow \emptyset$ / [2pers]]_C [Harris 1998:40]

²⁰ 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).

- (99) Ahorrrá_[SUBJ] plata, pero no palabras <[TP ahorres_[SUBJ] t]>.
 save money but not words save
 ‘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 (8) 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 (8) 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.²¹

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:

- (100) 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.’
- (101) [FinP Juan finalmente [TP arregló el auto]] aunque
 Juan 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 the antecedent 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 the right track, the tolerable mismatches in (100) and (101) are due to the fact that the feature causing the difference is not part of the elided phrase and, consequently, not computed for identity. The fact that finite and nonfinite forms are also distinguished by the analytical-synthetic distinction is a surface effect that arises because of the way in which PF realizes the abstract syntactic nodes. Both the English mismatch in (8), on the one hand, and the Spanish ones in (100) and (101), on the other, are amenable to an analysis under which this kind of grammatical mismatches follows from the syntax—morphology connection, as well. For instance, it is conceivable that the nonfinite form in Spanish arises not as the result of a syntactically relevant feature, but as the PF reflex of particular syntactic configuration, *e.g.*, nonfinite forms are inserted in the context of certain tenseless local heads. Abstractly, this should be thought as a case of allomorphy conditioned by syntax.

²¹ Tanaka’s system should explain why a non-elliptical version of (8) 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*.

While a lot is uncertain at this point²², I hope to have shown what kind of explanations a syntactic identity condition on ellipsis could take to explain the mismatches identified in the

²² For instance, examples like (i)-(iv), involving mismatches in tense, modality, polarity and illocutionary force (all from Rudin 2019 and references therein) require careful attention:

- (i) Your favorite plant is alive, but you can never be sure for how long <your favorite plant will be alive>.
- (ii) Sally knows that there is always the potential for awful things to happen, but she doesn't know when <awful things {will, might} happen>.
- (iii) Either turn in your final paper by midnight or explain why <you didn't turn it in by midnight>.
- (iv) Always save a little from each paycheck. Once you're older, you'll understand why <you should always save a little from each paycheck>.

The tense mismatch in (i) would follow under the present theory if tense can be argued to be outside the E-site (the alternative would be to say that tense features are dissociated, a clearly untenable claim), perhaps as a result of tense features originating inherently on C and passing to T through an inheritance mechanism (Chomsky 2007, 2008), which could be achieved via the formulation of ellipsis identity that distinguishes between inherent and noninherent features (possible along the lines of Chomsky 1965 with obvious adaptations). This, however, would be a hasty move, because tense mismatches are in fact not tolerable in many languages, such as Spanish, against the expectations of Rudin's theory (see Brucart 1987, Murguía 2004, Saab 2008, and Saab and Vicente 2015 for some important qualifications):

- (v) * En el pasado, María ha leído mucho y
in the past María has read a-lot and
Elena en el futuro < habrá leído mucho> también.
Elena in the future will-have read a-lot also
'María has read a lot in the past and Elena in the future will have too.' [adapted from Murguía 2004: 86]

A feature inheritance approach to (v) would give wrong results in the case of (v).

In a recent reply to Rudin, Ranero Echeverría (2019) argues that Rudin's cases in (i)-(iv) and others involve a syntactic configuration in which there is no feature clash between the relevant heads in the ellipsis site and the antecedent. In (i), for instance, the tense node is present in the antecedent but the corresponding tense node is tenseless in the E-site. In addition, the E-site 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:

- (vi) Antecedent and ellipsis site must be featurally nondistinct.

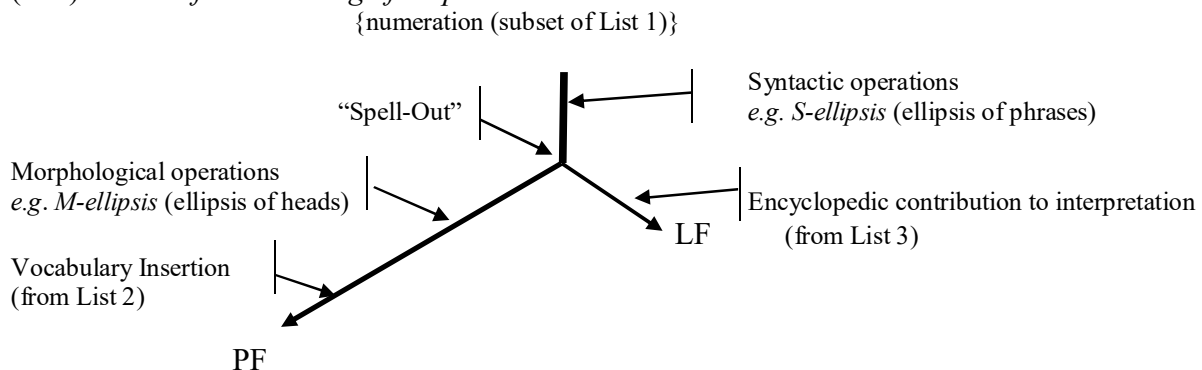
Two terminal nodes are nondistinct if a given feature is present in one node but absent in the other; *i.e.*, the feature dependency is privative. Absence vs. presence of a node also satisfies (vi), according to Ranero Echeverría. In (i), the T node in A is [present] but is zero in the E-site and modal node is present in the E-site but absent in A. Both mismatches meet the condition in (vi). The same reasoning extends to other examples provided by Rudin. As for (v) and 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 is promising and has the potential to capture a proper definition of syntactic identity. Yet, it also faces some conceptual problems. 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-Pérez 2017 for detailed discussion). This

literature. The modest purpose of this section was to illustrate some facts that can receive an analysis in terms of a syntax—morphology mismatch and leaving the fully worked out proposals for future work. 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

7. 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). I have suggested that there is a distinction between ellipsis of phrases and of heads. Phrases are elided in the syntax, under syntactic identity. When it comes to ellipsis of heads, it takes place at PF and is defined as a morphological operation that can take place under immediate locality (preceding linearization) or under adjacency (following linearization). The final picture is illustrated as follows:

(102) *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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definition predicts only a subtype of the mismatches that Ranero Echevarría's system predicts. Like 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 Echevarría's definition in privative terms is conceptually counter-intuitive as far as recoverability is concerned.

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