Grammatical silences from syntax to morphology[1]
A model for the timing of ellipsis

Andrés Saab
IIF-SADAF-CONICET
University of Buenos Aires
andres.saab@uba.ar

Abstract: This chapter focuses on the mechanics of ellipsis at the syntax–morphology interface. It is proposed that ellipsis bleeds vocabulary insertion at PF by deleting the variables that trigger late insertion of phonological material at PF. Phrasal copies are also assumed to be subject to ellipsis in this sense and are shown to interact with ellipsis: phrasal traces are irrelevant when it comes to calculating identity within a given E-site. 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). The broad picture that arises is a model of 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 to syntactic identity in ellipsis resolve once the timing of ellipsis is taken into account. I 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 call this particular approach to ellipsis as non-insertion the *Q-deletion model*. 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, in the morphology, it deletes heads. Identity in ellipsis will then make reference to the relevant component in each case. Crucially, only information present in 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. I argue that syntactic selection by an [E]-feature and c-command are necessary conditions on phrasal ellipsis, while immediate locality and adjacency are necessary conditions on head ellipsis. This model, as I 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 theories of identity. In section 5, I define head ellipsis and show how the so-called lexical identity requirement in V-stranding ellipsis languages follows, when one assumes standard syntactic head movement. Finally, I turn to arguments against syntactic identity based on inflectional mismatches and show that in most cases they are illusions that disappear once the timing of ellipsis is considered.

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 notations apply to a case like (1c):

(2)   [$_A$ Laura met <u>someone</u>]. Guess <u>who</u> <$_{E\text{-site}}$ 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 antecedents 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>
          ... * how <I'll fix the car>
(8)   I remember meeting him, but I don't remember when.
          … when <I met him>
          … * when <meeting him>

---

[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 Saab (2008) for some details.

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 $g(2)$ = Laura and $g(3)$ = Jason. As it is evident now, A entails the E-site and the E-site entails A.

(9) $[\![_{\text{E-site}}\ \text{I}_2 \text{ met him}_3\ t]\!]^{t,g} = \exists t'\!: t' < t$ & Laura meet Jason in t'
        $[\![_{\text{Antecedent}}\ \text{PRO}_2 \text{ meeting him}_3\ t]\!]^{t,g} = \exists t'\!: t' < t$ & 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 what came to be known as the *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 problematic (Merchant 2013:81):[3]

(12)   a. *Joe was murdered, but we don't know who.
          (cf. Joe was murdered, but we don't know who murdered Joe.)

---

[3] Intolerable voice mismatches of this type were noticed by Merchant (2001), where it was suggested that this is due to a possible semantic difference between the passive and the active. Unlike clausal ellipsis, English VP-ellipsis tolerates voice mismatches in both directions (active antecedent/passive E-site or vice versa; cf. Merchant 2008b, 2013), as the following examples from Merchant (2013: 78-79) show.
(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 (2013) 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, excludes 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 across languages (gender and number asymmetries in NP-ellipsis, absence vs. presence of Tense mismatches in VP-ellipsis and TP-ellipsis, among many related phenomena). Saab (2008) is an in-depth study of size effects in Spanish.

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 2008a). 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 are illusory, once the timing of ellipsis and the size of elliptical material are taking 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):

(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, namely that identity in ellipsis makes crucial reference to the label information coming from abstract morphemes and Roots; information supplied in the post-syntactic component is completely irrelevant for identity in ellipsis. In Distributed Morphology terms, identity is about information contained in List 1 (see below). If the *Syntax First* thesis turns out be correct, then illusory inflectional mismatches 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

In this chapter, I 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):

(15) {numeration (subset of List 1)}

"Spell-Out"   Syntactic operations

Morphological operations

                                          Encyclopedic contribution to interpretation
                                          (from List 3)
                                    LF

Vocabulary Insertion
(from List 2)

        PF
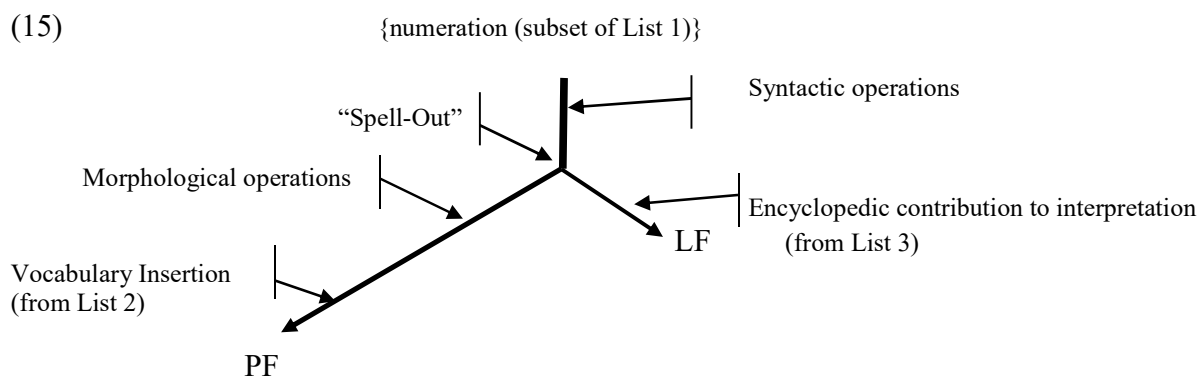
As this graph indicates, syntax manipulates abstract syntactic objects, from List 1. The primitives that syntax manipulates are Roots and abstract morphemes. Abstract morphemes are features drawn from a Universal Inventory of features such as [past], [plural] and so on. Roots are represented in the syntax by an index that is replaced at PF by a phonetic matrix (see Chomsky 1995a, 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 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]
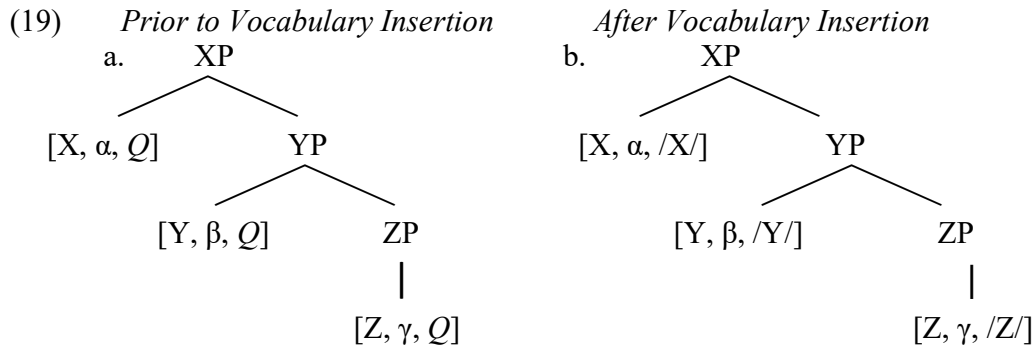
Finally, as for the LF side, syntax provides an abstract object built out from Roots and abstract morphemes that is interpreted on the basis of the information available in List 3. The information contained in each of the three lists is given in (17):

(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):

(18)   *Prior to Vocabulary Insertion*   *After Vocabulary Insertion*
        a.   XP   b.   XP
            [X, α]   YP   [X, α, /X/]   YP
                    [Y, β]   ZP   [Y, β, /Y/]   ZP
                            | |
                        [Z, γ]   [Z, γ, /Z/]

        c. *Vocabulary items:*   a. [α] ↔ /X/
                                 b. [β] ↔ /Y/
                                 c. [γ] ↔ /Z/

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 Vocabulary Insertion*　　　　*After Vocabulary Insertion*

　　　a.　　　　　XP　　　　　　　　　b.　　　　　XP

　[X, α, Q]　　　　YP　　　　　　　[X, α, /X/]　　　　YP

　　　　　[Y, β, Q]　　　ZP　　　　　　　　　[Y, β, /Y/]　　　ZP
　　　　　　　　　　　　　|　　　　　　　　　　　　　　　　|
　　　　　　　　　　[Z, γ, Q]　　　　　　　　　　　　　　[Z, γ, /Z/]

An important question is what type of objects are X, Y and Z under the additive or the replacive views. Halle (1990), who adopts a replacive approach, assumes that only certain abstract morphemes possess Q, namely, those that empirically call for a late insertion solution. Embick, who also favors the replacive procedure, generalizes late insertion to all abstract morphemes but not to Roots, which are conceived of as phonetic matrixes. Here, as mentioned above, I assume that, regardless of the view of vocabulary insertion one favors, late insertion applies to 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[I]-IMP-1PL
　　　'We used to love.'

Omitting from the representation a null Voice head for expository convenience, 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] When irrelevant, I use the label NP, AP or VP as a shorthand for the structure consisting of a category-defining head and a Root.

(21)　　a.　　　*n*P (=NP)　　b.　　　*a*P (=AP)　　c.　　　*v*P (=VP)

　　　　Root　　　　*n*　　　　Root　　　　*a*　　　　Root　　[*v*, theme vowel]
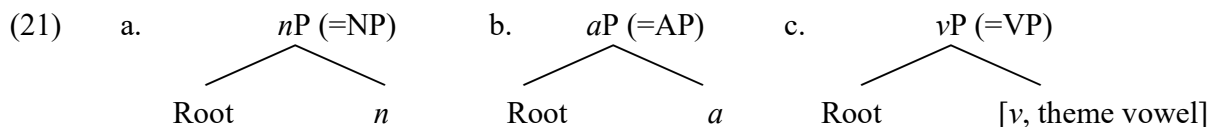
Finally, following Chomsky (2000, 2001), I adopt the hypothesis that there are no functional projections for agreement. Under this assumption, concrete agreement morphemes are not provided by syntactic means alone (independently of one's commitments to the existence of an abstract *Agree* operation). Put differently, the morphological piece of agreement present in (20)

---

[4] Universal late insertion is an assumption here, as in Saab (2008). See Sailor (2020) for a recent argument in favor of universal late insertion, construed on the basis of ellipsis.

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

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):

(22)

$$T^0$$

v [T, imp, *Q*]

[Root, 21, *Q*]   [*v*, I, *Q*]
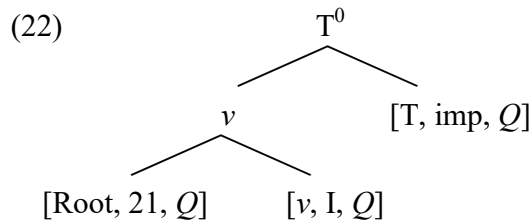
At PF, a dissociated agreement morpheme is added to the complex head in (22) on the basis of the person and number information of the subject or, depending on assumptions about *Agree*, on the basis of information present on T itself:
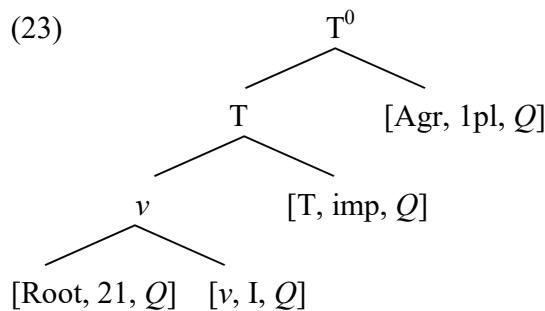
(23)

$$T^0$$

T   [Agr, 1pl, *Q*]

v [T, imp, *Q*]

[Root, 21, *Q*]   [*v*, I, *Q*]

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[1pl] ↔ -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]* ↔ *-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):

(25)

$$T^0$$

T   [Agr, 1pl, *-mos*]

v   [T, imp, *-ba-*]

[√, 21, *am-*]   [*v*, I, *-a-*]
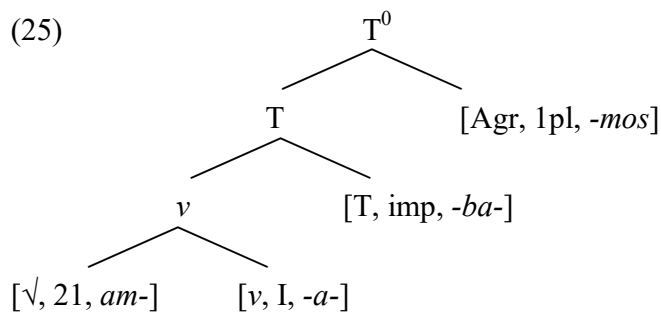
As noted above, there are several simplifications in this toy derivation. Some additional complexities are worth-mentioning for subsequent discussion. First, it is crucial to make explicit the identity relation that is at play between syntactic terminals and vocabulary items. There is a broad consensus 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 *–ia*. 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- / {$v_{[II]}$, $v_{[III]}$ }____
        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, *–ia*, 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 *-ia* is inserted into the relevant abstract morpheme:

(28)

```
                    T⁰
                   /    \
                  T      [Agr, 1pl, -mos]
                 /  \
                v    [T, imp, -ía-]
               / \
    [√, 21, tem-]  [v, II, - ø -]
```
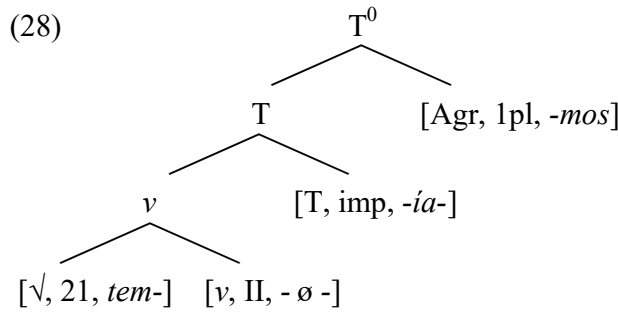
Both contextual allomorphy and syncretism will be relevant when deciding between alternative approaches to the nature of ellipsis, and we will get back to this issue in section 6.

3. Ellipsis as *Q*-deletion
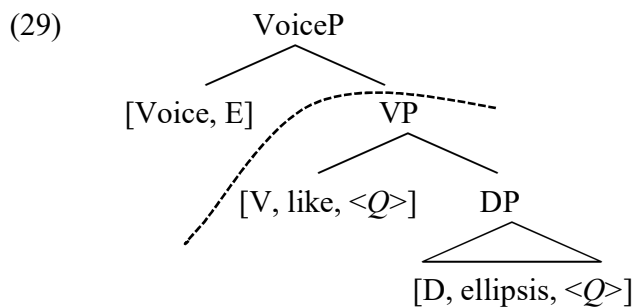In this section, I present the outline of the theory of ellipsis I propose.

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 narrow 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. In section 5 I turn to the mechanism of deletion targeting heads.

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 a dotted line.

(29)

```
              VoiceP
             /      \
    [Voice, E]       VP
                    /  \
         [V, like, <Q>]  DP
                        /  \
                  [D, ellipsis, <Q>]
```

There are two conceptual arguments that militate in favor of the *Q*-deletion view of ellipsis over other non-insertion approaches, such as Saab (2008), according to which ellipsis is a feature adding operation instructing PF for non-insertion. First, the *Q*-deletion approach dispenses with the need for any particular definition of Vocabulary Insertion 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 definitions are needed before discussing some examples in detail. I will assume 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. More specifically, the conditions can be formally stated in the following way, where x^{min} and X^{max} stand for terminal node and maximal projection, respectively:

(31) $\forall x_{[Q]}^{min} [X^{max} \vartriangleleft^* x_{[Q]}^{min} \,\&\, E \text{ c-commands } X^{max} \rightarrow x_{[<Q>]}^{min}]$
[E = the head with the [E]-feature and $\vartriangleleft^* =$ 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 carrying head) is deleted.[6] As is clear, this statement implies that, 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]

---

[6] I leave the technical implementation of this formal condition, as well as its compatibility with proposals that aim to derive the cyclic nature of ellipsis, for future research, as the interaction between ellipsis as non-insertion and phase theory has not been discussed in sufficient detail in the literature. Clearly, ellipsis as non-insertion is not readily compatible with well-established assumptions about cyclic derivations (I thank Craig Sailor for discussions on this topic). In Saab (2010: 108, footnote 20), I vaguely suggested that ellipsis applies cyclically (in order to account for some cases of island non-reparability). A cyclic approach to ellipsis is also implemented in Murphy & Müller (this volume), in which ellipsis is defined as non-spell out.
[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 Section 2.1.

(32)   *Q-Deletion under Identity*:
        $\forall x_{[Q]}{}^{min} \: [X^{max} \lhd^* x_{[Q]}{}^{min} \: \& \: E \: c\text{-commands} \: X^{max} \: \& \: \underline{Id(X^{max}, A_S{}^{max})} \to x_{[<Q>]}{}^{min}]$
        $\hspace{6cm} [A_s = \text{matching sub-antecedent for } X^{max}]$

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. Conceptually, the difference between the conditionals in (31) and (32) are 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 such an identity relation must be also syntactic in nature, since *Q*-deletion under ellipsis is, by definition, also syntactic. This is a *timing* requirement imposed by the model of the grammar assumed here.

    More precisely, on this theory, identity makes reference to information present in List 1 objects, that is, abstract morphemes and Roots. I assume that the identity calculus is restricted to 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). In Saab (2008), I defined identity in a strict manner, in the sense that for every abstract morpheme and Root there should be a matching *sub-antecedent* contained within the syntactic antecedent of the E-site. At this juncture, I choose to remain neutral as to how syntactic identity should best be defined (strict identity or as inclusion/subset relation, etc.). I content myself with stressing that syntactic identity means reference to information extracted from List 1 objects. As far as I can tell this is the sole thesis that can be sustained empirically in a somewhat definitive manner. In section 6, I will come back to this ingredient of the theory again.

    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.

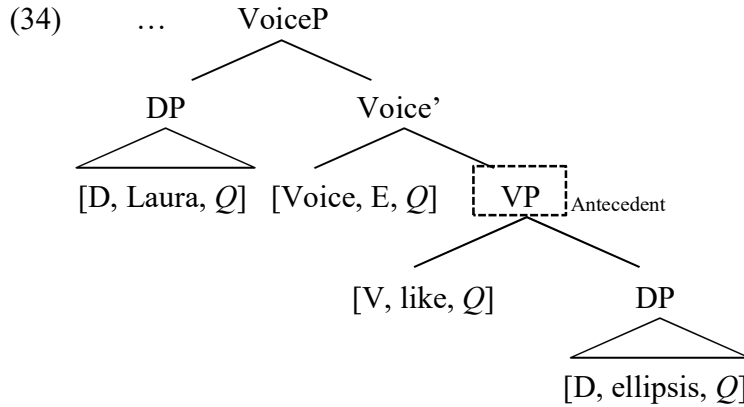### 3.2. Identity and labeling
In this section, I show how the more constrained version of the theory of *Q*-deletion works in simple cases of VP-ellipsis in English, such as (1a), repeated here.

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

---

[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.

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 the representation of Roots):

(34)　　　…　　　　VoiceP

```
                      VoiceP
                     /      \
                   DP        Voice'
                  /  \       /     \
        [D, Laura, Q]  [Voice, E, Q]  VP  Antecedent
                                    /    \
                            [V, like, Q]   DP
                                         /    \
                                   [D, ellipsis, Q]
```

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.

(35)　　　　　VoiceP

```
                  VoiceP
                 /      \
               DP        Voice'
              /  \       /     \
    [D, Jason, Q]  [Voice, E, Q]   VP
                                  /    \
                       [V, like, <Q>]   DP
                                      /    \
                                [D, ellipsis, <Q>]
```
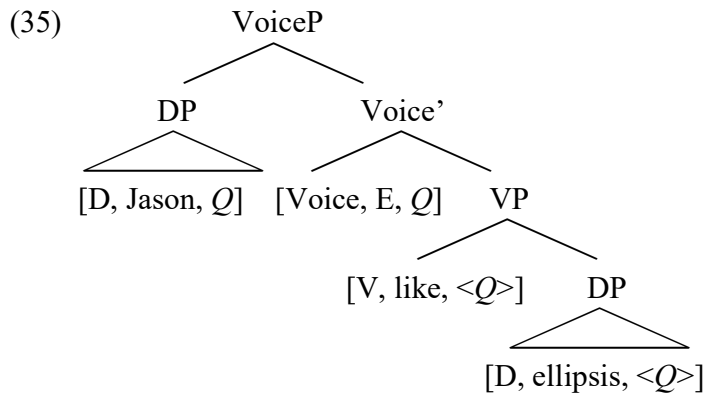
I claim that the identity relation is between each phrase and each matching sub-antecedent in the antecedent (A_S in the definition in (32)). Formally, there are various ways in which the identity relation can be established (see Saab 2008, Rudin 2019 and Stigliano 2020). A more or less straightforward 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 1995b):
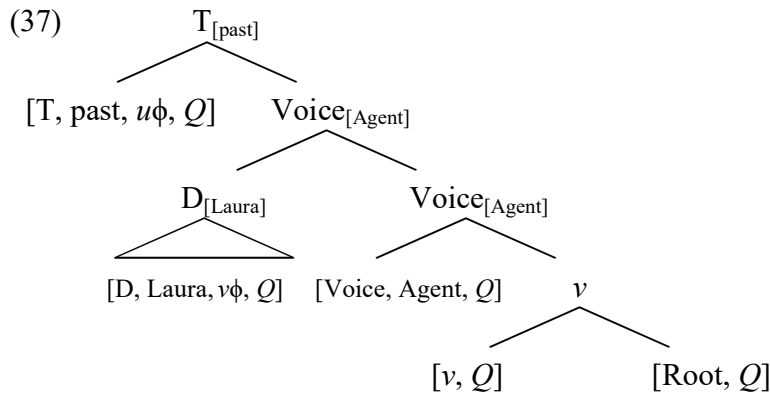
(36) External Merge: $M(\alpha, \beta) \rightarrow \{\alpha \{\alpha, \beta \}\}$

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, I follow Chomsky's suggestion 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 (such as 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. For an intransitive sentence like *Laura called*, a tree labeled as indicated would look then a follows (omitting some details), where labels are indicated with the projecting category plus a subscript indicating other inherent features in brackets:

(37)

$T_{[past]}$

[T, past, $u\phi$, Q] $Voice_{[Agent]}$

$D_{[Laura]}$ $Voice_{[Agent]}$

[D, Laura, $v\phi$, Q]   [Voice, Agent, Q] v

[v, Q]   [Root, Q]

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 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 as the default working hypothesis. Taking as a reference the VP-ellipsis example in (1a), the first step of the suggested algorithm consists of finding an Antecedent (in whichever way it is achieved), which is circled below.

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

Voice$_{[experiencer]}$
├── D$_{[Laura]}$
│   └── [D, Laura, *Q*]
└── Voice$_{[experiencer]}$
      ├── [Voice, ɸ, experiencer, *Q*]
      └── V$_{[like]}$ Antecedent
            ├── [V, like, *Q*]
            └── D$_{[ellipsis]}$
                  └── [D, ellipsis, *Q*]
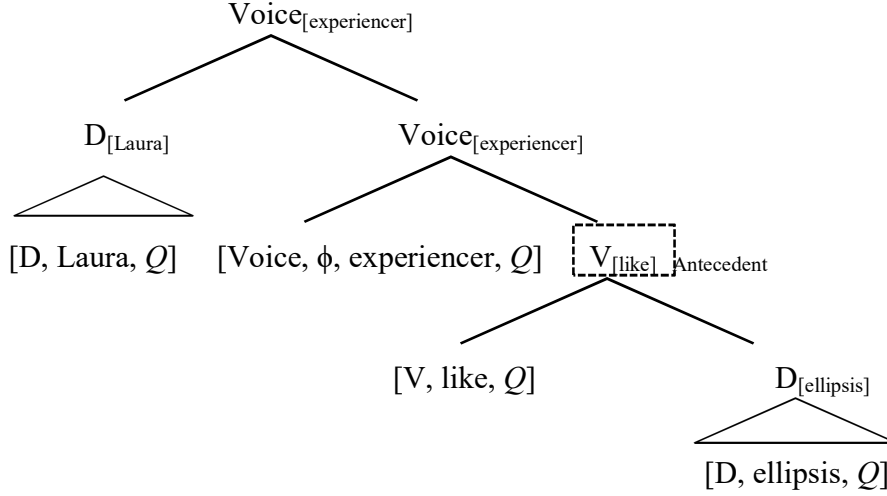
By stipulation, the second step is to make a temporary copy of the antecedent phrase and leave it in the work space corresponding to the E-site:[9]

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

Voice$_{[experiencer]}$ V$_{[like]}$
├── D$_{[Jason]}$ ├── [V, like, *Q*]
└── Voice$_{[experiencer]}$ └── D$_{[ellipsis]}$
      ├── [Voice, E, ɸ, experiencer, *Q*]   └── [ellipsis, *Q*]
      └── V$_{[like]}$
            ├── [V, like, *Q*]
            └── D$_{[ellipsis]}$
                  └── [D, ellipsis, *Q*]
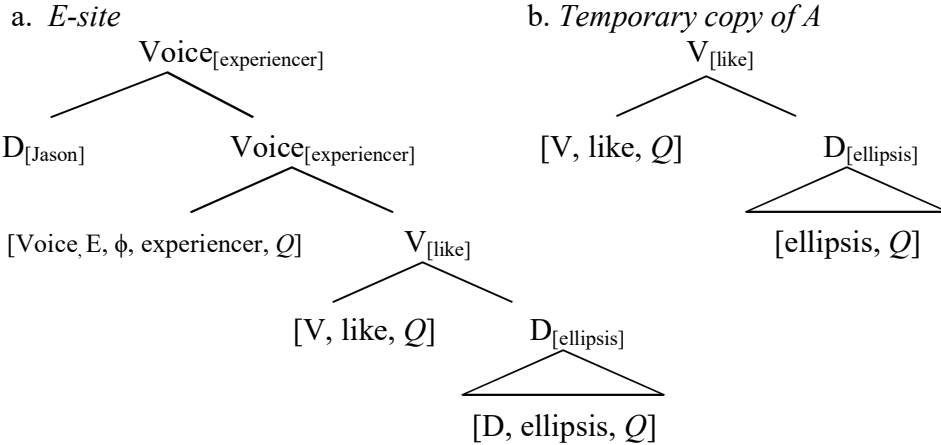
Once this step is reached, the system proceeds to calculate identity for each sub-label in the E-site starting from the top. In each step of the top-down algorithm, the system must ensure that for each X^{max} node in the E-site there is a label-identical node in the corresponding part of the temporary copy of the antecedent. In our example, the following sets of label identity relations obtain:

(40) Identity reference set: {<*like$_E$, like$_A$*>, <*ellipsis$_E$, ellipsis$_A$*>}

---

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

Given that identity obtains in this particular example, the *Q*-features dominated by the relevant labels are deleted.

(41) Step 3: *Q*-deletion

```
                          Voice[experiencer]
                         /                  \
              D[Jason]              Voice[experiencer]
                                   /                  \
                    Voice[E, φ, experiencer, Q]    V[like]   Q-deletion domain
                                                 /        \
                                    [V, like, <Q>]     D[ellipsis]
                                                      /          \
                                              [D, ellipsis, <Q>]
```
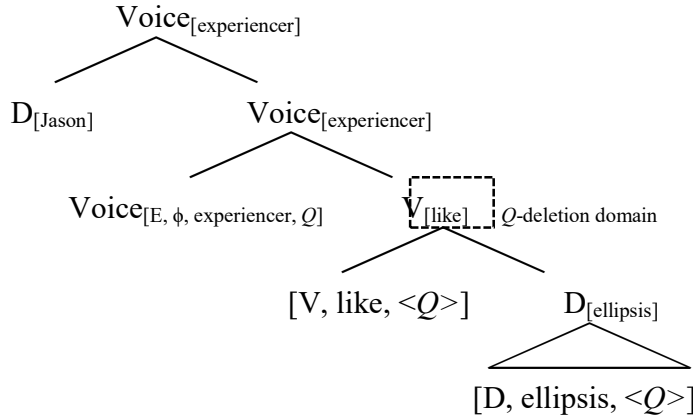
If identity is not satisfied, then *Q*-deletion is aborted for the relevant terminal nodes, as required by (30), with the consequence that the entire VP cannot converge. Consider the following example:

(42) *Laura likes ellipsis and Jason does <likes *pro*-drop> too.
(43) Identity reference set: {<*like_E*, *like_A*>, <*pro-drop_E*, *ellipsis_A*>}

Having outlined the basic aspects of the theory of ellipsis I propose, the rest of this paper is dedicated to showing the potential of this framework for dealing with issues that concern the effect of syntactic identity. Section 4 discusses how my theory can derive phrasal copy mismatches and section 5 complements this discussion by turning to head ellipsis and the behaviour of head copies under ellipsis. Section 6 turns to inflectional mismatches between antecedent and ellipsis site and ways of approaching the puzzles presented by them. All three sections will be concerned with the timing of ellipsis.

4. The distribution of phrasal copies within E-sites
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.

Recall from section 2.1 that both sprouting (exemplified in (44) repeated from (3)) and contrast sluicing (exemplified in (45) repeated from (5)) 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]

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 behaviour 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 ver   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 pronoun that is anaphoric to the *wh*-phrase in the antecedent:

(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	*trace*
contrast sluicing (45)	*focus*	*trace*
VP-ellipsis with A-extraction (ex. 46)	*trace*	*trace*
sluicing with anaphoric pronouns (ex. 47)	*trace*	*pronoun*
regular sluicing (ex. 1c)	*indefinite*	*trace*

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 (1995a) 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 in (13), repeated here.

(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.[10]

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

---

[10] 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.

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 $\{X^{,max}, X^{max}\}$:
         $\forall x_{[Q]}^{min} [X^{max} \vartriangleleft^* x_{[Q]}^{min} \ \& \ X^{,max} \ c\text{-commands} \ X^{max} \ \& \ X^{max} \subseteq X^{,max} \rightarrow x_{[<Q>]}^{min}]$

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):

(52)   John ate but I don't know …
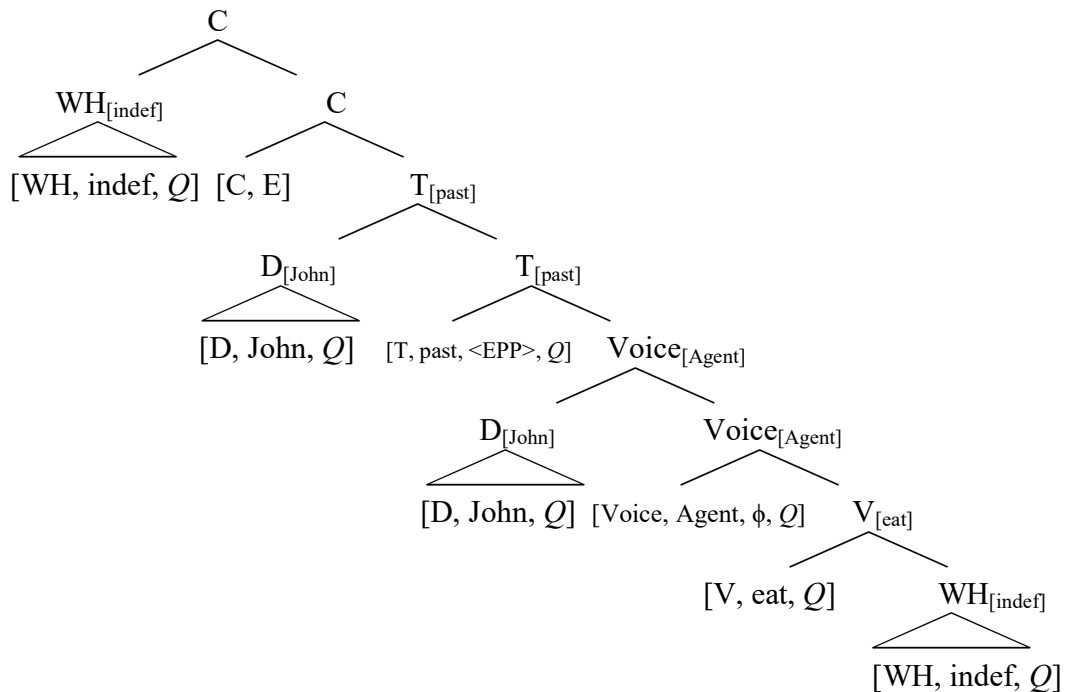
In this tree, the *Q*-features of the lower copy of the *wh*-remnant and the copy left by subject movement are deleted, since both identity and *c*-command are met.

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

$$C$$

```
            C
       /        \
  WH[indef]        C
     |          /     \
[WH, indef, Q] [C, E]   T[past]
                      /       \
                D[John]        T[past]
                   |          /      \
            [D, John, Q]  [T, past, <EPP>, Q]  Voice[Agent]
                                           /            \
                                    D[John]              Voice[Agent]
                                       |                /          \
                              [D, John, <Q>]  [Voice, Agent, φ, Q]  V[eat]
                                                                   /     \
                                                          [V, eat, Q]    WH[indef]
                                                                            |
                                                                    [WH, indef, <Q>]
```
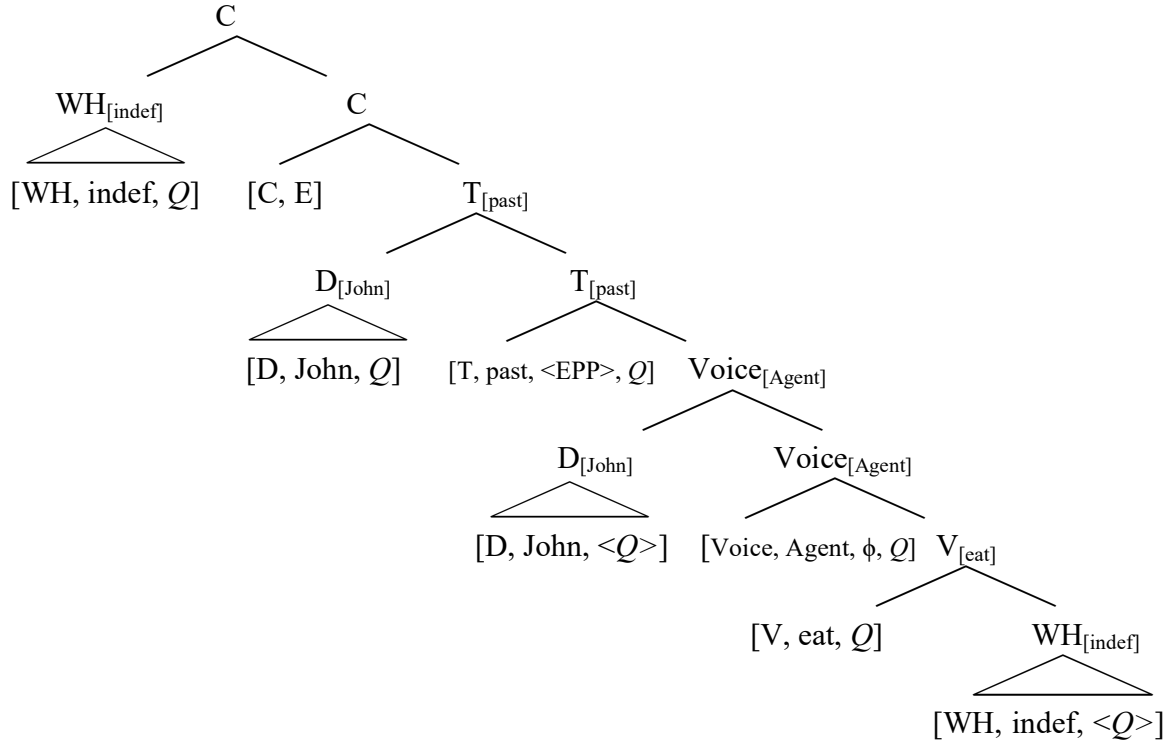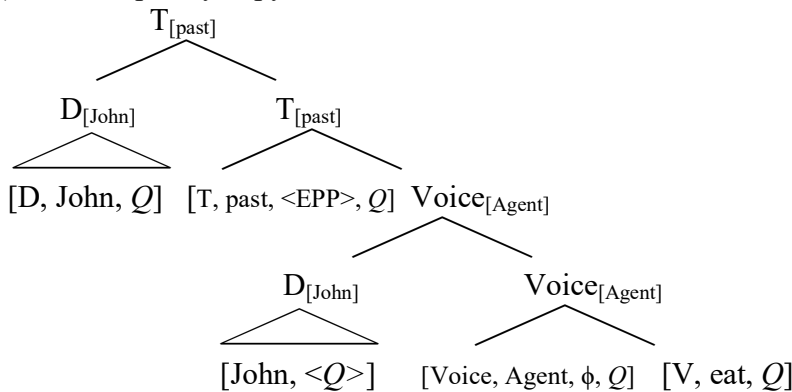
In the next step, once an antecedent TP for the E-site is found, it is copied as a temporary file in the E-site's work space. The copied antecedent can be represented as follows:

(54) A's temporary copy:

```
            T[past]
         /         \
    D[John]         T[past]
       |          /       \
  [D, John, Q]  [T, past, <EPP>, Q]  Voice[Agent]
                                   /           \
                             D[John]            Voice[Agent]
                                |              /          \
                          [John, <Q>]  [Voice, Agent, φ, Q]  [V, eat, Q]
```

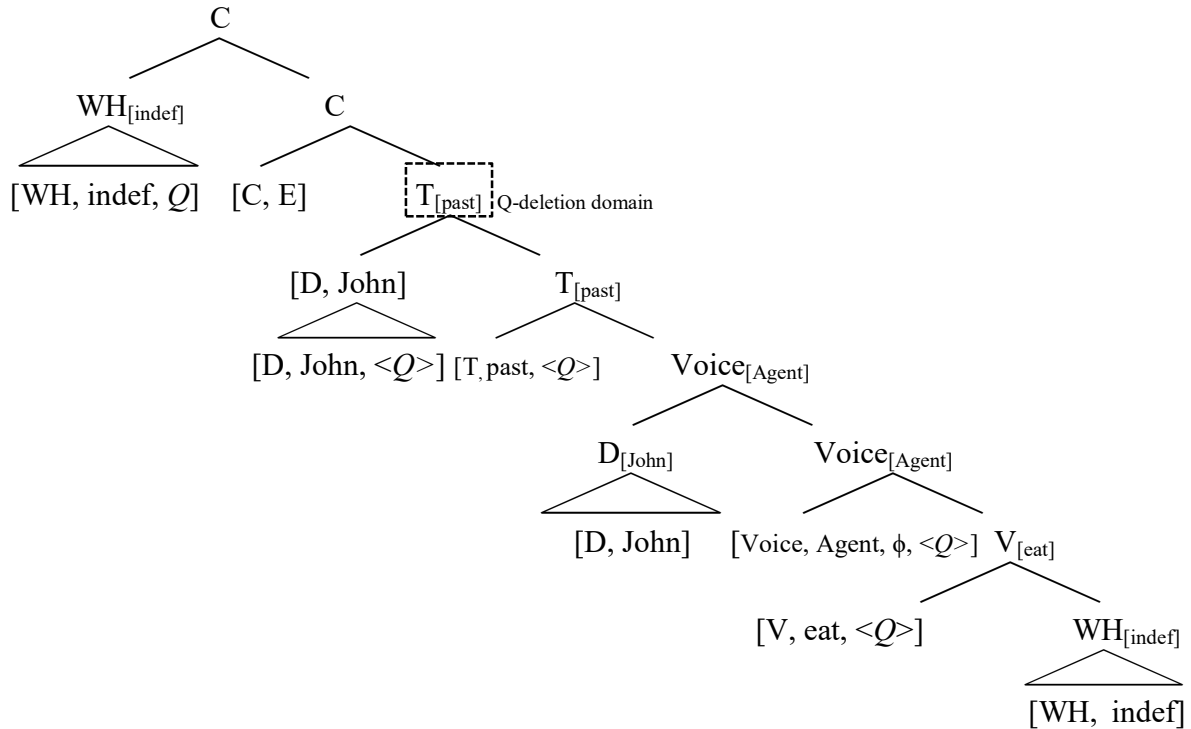Starting from the top, we can see now that each node X^{max}, such that X^{max} dominates $x_{[Q]}^{min}$, has a strict identical sub-antecedent contained in the ellipsis site, with the exception of the Root *eat*. In effect, note that in this particular case, and given the approach in Section 3, the 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. Since the antecedent Root is maximal and minimal and identity is strict (given reflexivity) as far as label-head identity is concerned, the identity reference set concerning the Root amounts to the representation in (55).

(55)   Identity reference set: {… $<eat_E, eat_A>$…}

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

(56)   *Q*-deletion under ellipsis

```
                          C
                 ┌────────┴────────┐
            WH[indef]              C
           ┌────┴────┐       ┌─────┴─────┐
      [WH, indef, Q]  [C, E]   ┌T[past]┐ Q-deletion domain
                             ┌────┴────┐
                        [D, John]    T[past]
                        ┌───┴───┐   ┌───┴───┐
               [D, John, <Q>] [T, past, <Q>]  Voice[Agent]
                                      ┌────────┴────────┐
                                 D[John]            Voice[Agent]
                                 ┌──┴──┐        ┌────────┴────────┐
                             [D, John] [Voice, Agent, φ, <Q>]   V[eat]
                                                           ┌──────┴──────┐
                                                    [V, eat, <Q>]     WH[indef]
                                                                      ┌───┴───┐
                                                                   [WH, indef]
```

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.[11] In addition, the trace of the *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 $a_{<Q>}$ qué$_{<Q>}$ profesor$_{<Q>}$],
    knows DOM what professor hire.INF DOM what professor
    pero no sabe [cuándo [contratar$_{<Q>}$-lo$_{<Q>}$ cuándo$_{<Q>}$]].
    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 assuming also the copy theory of movement. 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

---

[11] 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):

(ii) Jack: I$_i$ don't want to be divorced from you$_j$.
    Jill: Well, I$_j$ do ! = [$_E$ want to be divorced from you$_i$]
(iii) 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]
(iv) 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 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.

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 in a certain car or that Sally left with someone). 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 the same focus-theoretic propositional content as the E-site. In simple terms, this condition can be stated as follows:[12]

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

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. $\bigcup \{w:$ Sally left in $w\} \neq \bigcup \{\lambda w.$ Sally left with x 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 note, this sort of accommodation is not a trait of their proposal, but is required for any semantic account.

---

[12] Condition (60) 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 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)):

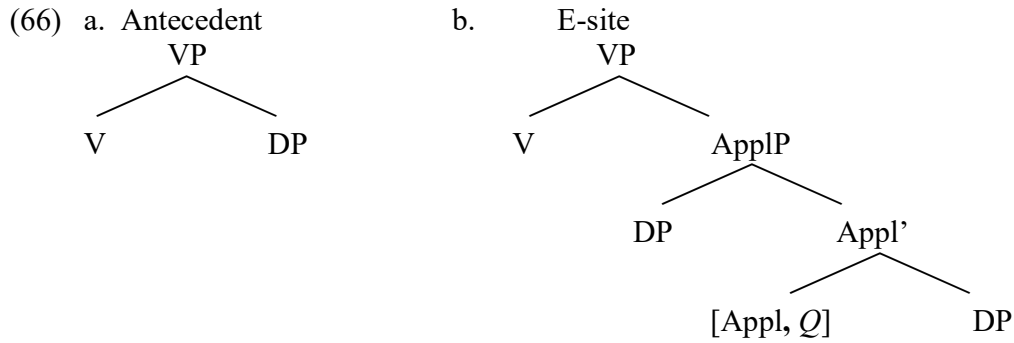(64)   a. Juan cortó el   pasto,   pero no sé   a quién
            Juan cut   the   grass   but   not know.1SG to whom
            le   cortó el   pasto.
            CL.DAT.3SG   cut   the   grass
            lit. 'Juan cut the grass but I do not know to whose benefit he cut the grass.'
         b. ?? 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 worlds 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}
            = $\cup$ {λw. John cut the grass for x 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   b.   E-site
              VP   VP
            /   \   /   \
          V   DP   V   ApplP
                                                      /   \
                                                    DP   Appl'
                                                             /   \
                                                      [Appl, Q]   DP

The adjunct sprouting sluice in (64c) follows in the same way as any other case of sprouting, see (51)-(56) above.
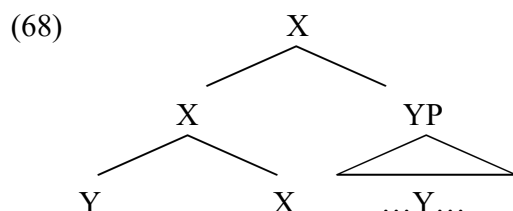
In summary, in order to obtain good results for the entire paradigm, the semantic identity with accommodation approach must be supplemented with an identity condition making reference to formal identity, such as the framework I introduced in Section 3. As mentioned in the introduction, my claim here 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 account for the observed data in a manner that 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 very specific predictions regarding the distribution of copies within E-sites, as Q-deletion of lower copies in the syntax requires c-command.

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

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

(68)
```
                    X
                   / \
                  /   \
                 X     YP
                / \    /\
               /   \  /  \
              Y     X …Y…
```

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. In this section, I briefly turn to the analysis of elliptical configurations that contain head movement and head copies and discuss some of the implications that arise from a system with syntactic head adjunction and *Q*-deletion as operations of grammar.

5.1 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 independently established 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* or M-ellipsis for short, to distinguish it from syntactic ellipsis, or S-ellipsis, which I introduced in the previous sections. Having shown what the properties of syntactic 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.

(69)

```
            TP
          /    \
        T⁰      VP
       /  \    /  \
      V    T  …V⁰…
```
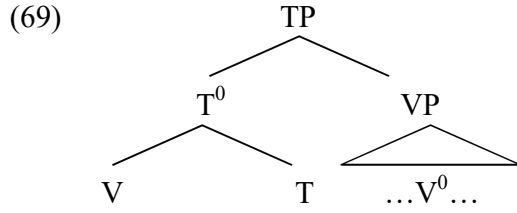
Under the *Q*-deletion approach, we can therefore state head ellipsis as follows:[13]

(70)   *Head Ellipsis (under Q-deletion)*:
       Given a morphosyntactic word MWd, delete every *Q*-feature contained in MWd iff:
       (i) There is an identical antecedent contained in a morphosyntactic word MWd',
       (ii) MW is adjacent or immediately local to MWd'.[14]

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

(71)

```
            TP
          /    \
        T⁰      VP
       /  \    /    \
      V    T  [V, α, <Q>]
```
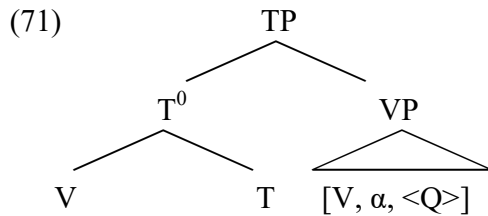
Q-deletion can also apply to two adjacent morphosyntactic words (the star * refers to a linearization statement):

(72)

```
        X⁰          *       [Y, α, <Q>]
       /  \
 [W, α, Q]  [X, β, Q]
```
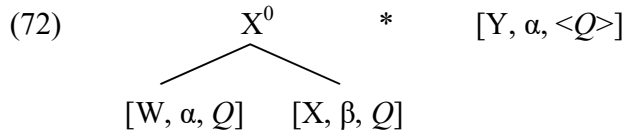
Here, W serves as an antecedent for deletion of the *Q*-feature Y possesses.

---

[13] This statement follows 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':
      $\forall x_{[Q]}{}^{min} [MW \lhd^* x_{[Q]}{}^{min}$ & $\exists y^{min}[MW' \lhd^* y^{min}$ & 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]

[14] The associated definitions are as follows (ii) and (iii) from Embick and Noyer (2001: 574):
(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.

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

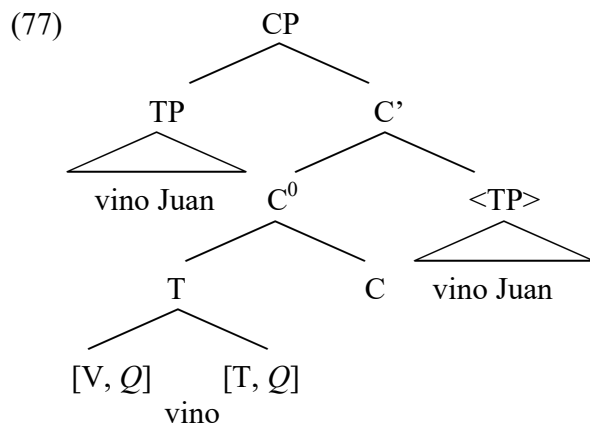(73) John said that he would clean the house, and [<he> clean the house] he did <[<he> clean the house]>

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

(74)
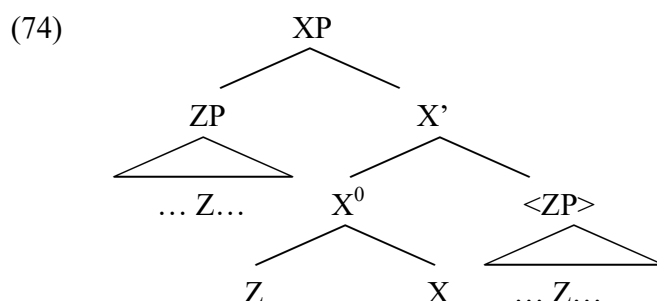
The reason should be clear: extracting a head *via* head adjunction leads to a configuration in which the moved head does not *c*-command its trace. In turn, additional remnant movement of ZP will end up in a situation in which each *Q*-feature is deleted in the lower ZP trace, but the two remaining 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:

(77)

```
                      CP
                 ╱          ╲
              TP              C'
           ╱     ╲         ╱      ╲
    vino Juan    C⁰      <TP>
              ╱     ╲    ╱    ╲
            T        C  vino Juan
         ╱    ╲
    [V, Q]   [T, Q]
         vino
```

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:[15]

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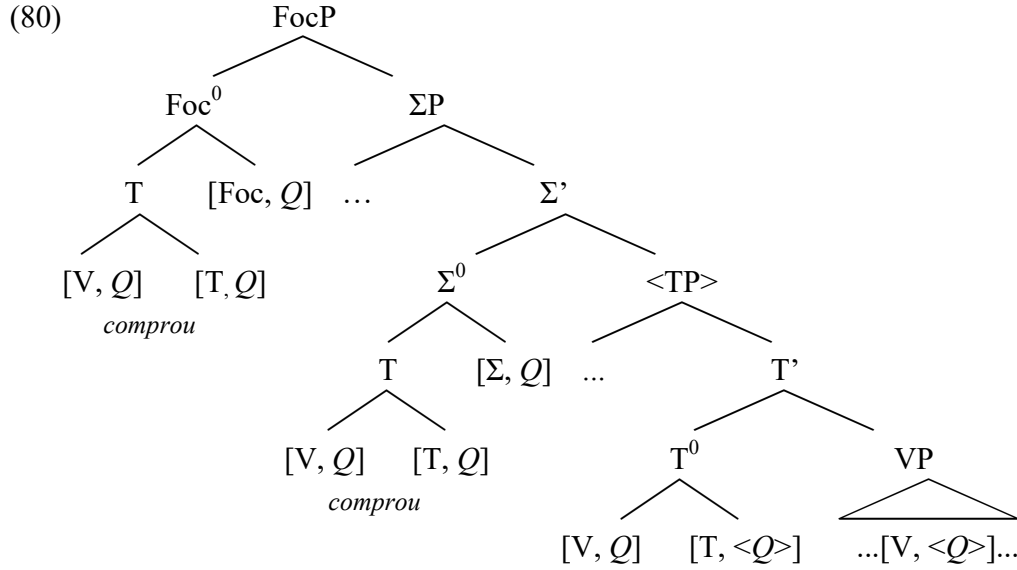   eat   eat

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

---

[15] 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!*).

(80)

```
                        FocP
               ┌─────────┴─────────┐
             Foc⁰                  ΣP
        ┌─────┴─────┐         ┌─────┴─────┐
        T        [Foc, Q]    …            Σ'
   ┌────┴────┐                       ┌─────┴─────┐
[V, Q]    [T, Q]                    Σ⁰          <TP>
 comprou                       ┌─────┴─────┐   ┌────┴────┐
                               T        [Σ, Q] …         T'
                          ┌────┴────┐              ┌──────┴──────┐
                       [V, Q]    [T, Q]           T⁰            VP
                        comprou              ┌────┴────┐    /‾‾‾‾‾\
                                          [V, Q]  [T, <Q>]  …[V, <Q>]…
```

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.[16]

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. 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. The interaction of head movement and ellipsis: consequences of Q-deletion for head-stranding ellipsis

The interaction between head movement and ellipsis can be studied in the empirical domain 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 2012,

---

[16] 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 various kinds.

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

(81)

```
                    TP
          ┌─────────┴─────────┐
         T⁰                 <VP>
      ┌───┴───┐           ┌───┴───┐
      V      [T, E]       …V⁰…
```
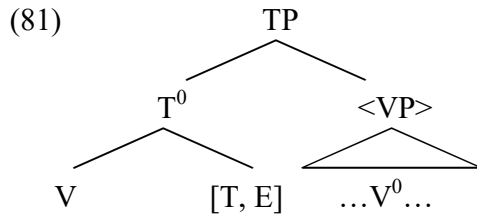
Since the required *c*-command relation between the two copies of the verb is not met after V-to-T has taken place, there is no trigger for *Q*-deletion for the lower V head. Consequently, in the *Q*-deletion model, the V label in the E-site must find an identical sub-antecedent in the antecedent. The prediction is that head copies inside the ellipsis site must obey lexical identity. This prediction is borne out in 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
          the   Luís arrived to.the library   at nine o'clock
          e   o   Pedro   também foi < à   biblioteca às   nove horas >.
          and the P.   too   went 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?

                                                                              32

INTERR[PAST]   enjoy   you   it
'Did you enjoy it?
    B: * Bhain.
           took
           'I did.'
    c. *Níor   cheannaig siad ariamh teach   ach   dhíol.
        NEG.PAST bought   they ever   house   but sold
    'They never bought a house but they sold (a house).'

[McCloskey 2004]

V-stranding ellipsis in these languages is licit only if there is strict identity between the V head in the antecedent and in the E-site. Consider how the contrast between (82a) and (82b) would be derived under the present theory:

(85) a. E-Site: TP   Temporary copy of A: VP

              T⁰   <VP>   ... pôs ...

         V   [T, E] ...{pôs/*colocou}...

   b. Identity reference set for (82a): {... <pôs $_E$, pôs $_A$>...}
   c. Identity reference set for (82b): {... <pôs $_E$, colocou$_A$>...}

Clearly, lexical identity is satisfied only in (82a) for all the terminal nodes of the E-site, crucially including the verbal head. Note in passing that this particular instance of *Q*-deletion for the verbal head in the syntax bleeds head ellipsis of the same head in the morphology, a harmless consequence. Put differently, in cases of head copies inside ellipsis sites, a prior process of syntactic ellipsis bleeds morphological ellipsis.

Importantly, in these data focusing the verb does not have the effect of making their non-identity licit. It is also not the case that there is some kind of pragmatic constraint at play, which could explain why the elliptical versions are ill-formed, as the non-elliptical counterparts of the above examples are perfectly grammatical, as was pointed out by Goldberg (2005). To explain the above type of strict identity effects for heads, Goldberg proposed an additional constraint on V-stranding ellipsis, which is formulated as follows:

(86)   GIVEN-ness Constraint on the Heads of Elided Constituents:
        The head of the constituent targeted for deletion must be semantically GIVEN (in the sense of Schwarzschild 1999).

[Goldberg 2005: 182]

Goldberg concludes that even though this additional constraint does not make mutual entailment theories worse than other theories she discusses (such as LF copy theories), it is indeed an *ad-hoc* requirement.

As I pointed out in the beginning of this section, the behaviour of head copies in the above languages conforms to the expectations of the theory advocated in this chapter (see Saab 2008

for extensive discussion). Having said this, there are, however, languages exhibiting V-stranding ellipses 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.ACC
        '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.M book.aCC   in library.PREP
        i   žurnal   v stolovoj?
        and magazine.ACC   in cafeteria.PREP
        'Did Pasha lose a book in the library, and a magazine in the cafeteria?'
     b. * Da,   posejal.
          yes   lose.PAST.SG.M   [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   knigu   v
        find.PAST.SG.M   Q Paša   book.ACC   in
        biblioteke,   i   žurnal   v stolovoj?
        library.PREP   and   magazine.ACC   in cafeteria.PREP
        'Did Pasha find a book in the library, and a magazine in the cafeteria?'
     b. Net,   ne   našel,   a   poterjal.
        no   NEG   find.PAST.SG.M but   lose.PAST.SG.M
        'No, he didn't find (…), he lost (…).'
     c. Našel,   no   potom   poterjal
        find.PAST.SG.M   but   then   lose.PAST.SG.M
        'He did (…), but then he lost (…).'   [Gribanova 2018:13]

To explain the difference between the two types of languages, Gribanova assumes 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 (see also Schoorlemmer & Temmerman 2012 for a related view). 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 account of the verbal identity mismatches in Russian (and related languages) is perfectly compatible with the Q-deletion model, in fact it meets its predictions. 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 to be licit.

It is also important to mention that the verbal identity condition in V-stranding ellipsis follows from the model of Q-deletion, both under syntactic or PF analyses of head movement. In other words, the particular behaviour 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 2021, among others).[17]

6. Inflectional mismatches revisited

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 paper. I will try to show that certain inflectional mismatches are illusory, the byproduct of the size of E-sites and the timing of ellipsis. What these illusory cases 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 for the calculation of identity.

In sections 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), repeated here:

(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-

---

[17] 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, 2005) and Santos (2009) provide contradictory evidence. Second, 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. Without a doubt, more comparative research is needed to shed light on these and related issues.

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, nP or NP (see Saab 2019 for examples of each type and discussion about the differences between them):

(91) a.   b.   c.
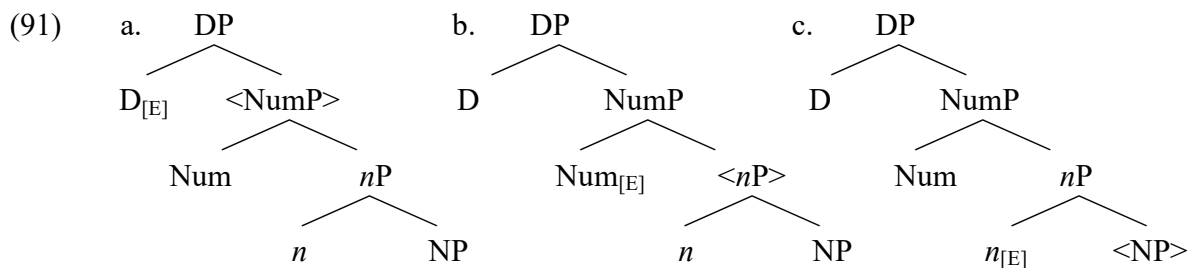
The view that ellipsis can elide distinct types of phrases also allows us to handle many tolerable inflectional mismatches. In the sentential domain, this view predicts tense mismatches in cases of VP-ellipsis, but not in ellipsis that elides a TP or a larger category. In the nominal domain, this predicts number mismatches for nP or NP-ellipses but not for NumP-ellipsis. According to the received view, identity in ellipsis only affects material inside the E-site, so many mismatches of this type are only apparent in that they do not present mismatches between antecedent and ellipsis site.

As for the identity condition, the approach in this paper makes specific predictions related to the syntax-morphology interaction as well. 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:[18]

---

[18] 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

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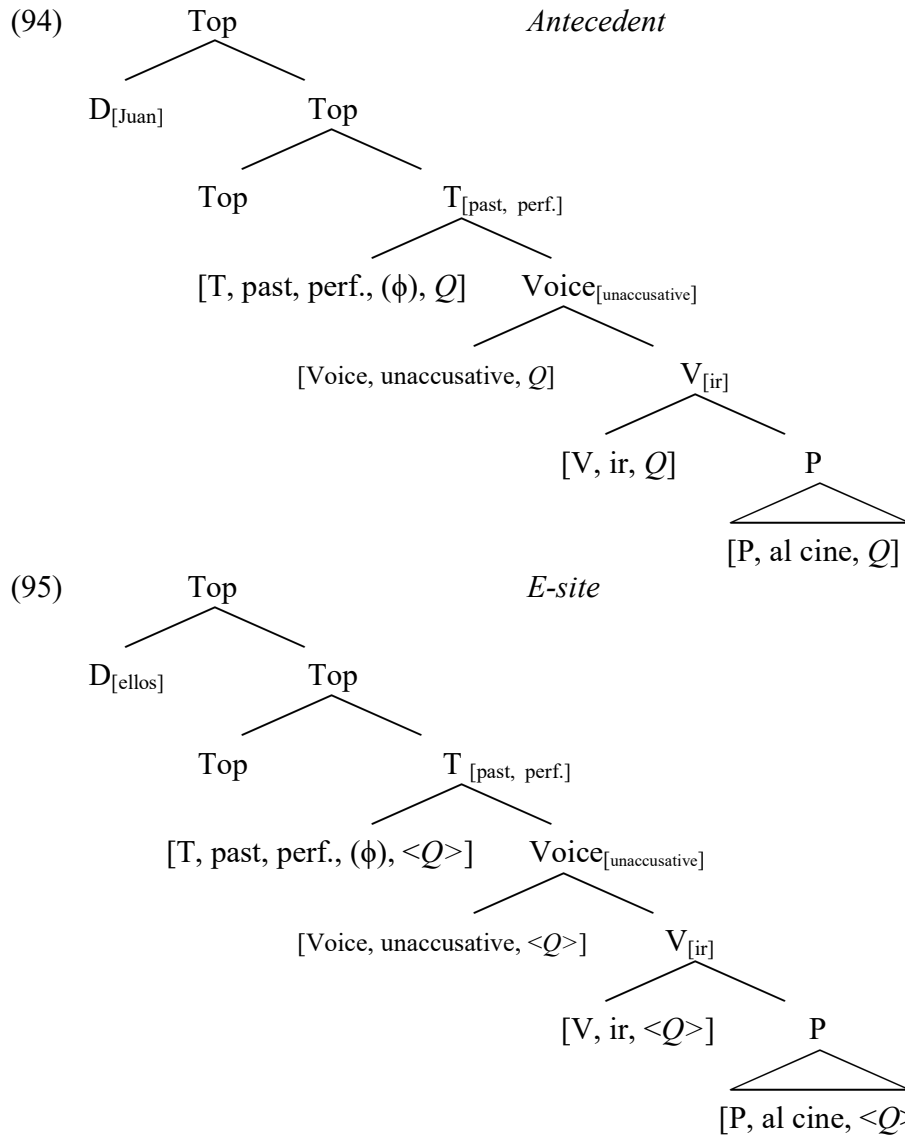
   Note, however, that this is not the only difference between the T nodes in A and the E-site: antecedent and ellipsis also differ when it comes to subject agreement. If agreement nodes are dissociated morphemes, as we assumed in subsection 2.3, the agreement mismatch in (92) illustrates a particular case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

---

dissociated morpheme added after ellipsis should be pronounced. I have two reactions to this. The first one is that regardless of whether dissociated morphemes are added to an elliptical object before or after any instance of ellipsis this piece of morphology cannot to 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 MWds (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 in the E-site of (92) should not be there. Since that this is orthogonal to the main points made here, I leave the issue unresolved, although I continue to adhere to the Elmo-Generalization.

(94) Top   *Antecedent*

    D$_{[Juan]}$ Top

         Top   T$_{[past, \; perf.]}$

       [T, past, perf., (ϕ), Q]   Voice$_{[unaccusative]}$

         [Voice, unaccusative, Q]   V$_{[ir]}$

           [V, ir, Q]   P

                 [P, al cine, Q]

(95) Top   *E-site*

    D$_{[ellos]}$ Top

         Top   T$_{[past, \; perf.]}$

       [T, past, perf., (ϕ), $<Q>$]   Voice$_{[unaccusative]}$

         [Voice, unaccusative, $<Q>$]   V$_{[ir]}$

           [V, ir, $<Q>$]   P

                 [P, al cine, $<Q>$]

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, either semantic or syntactic. In the remaining part of this section, I turn my attention 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:

(96)

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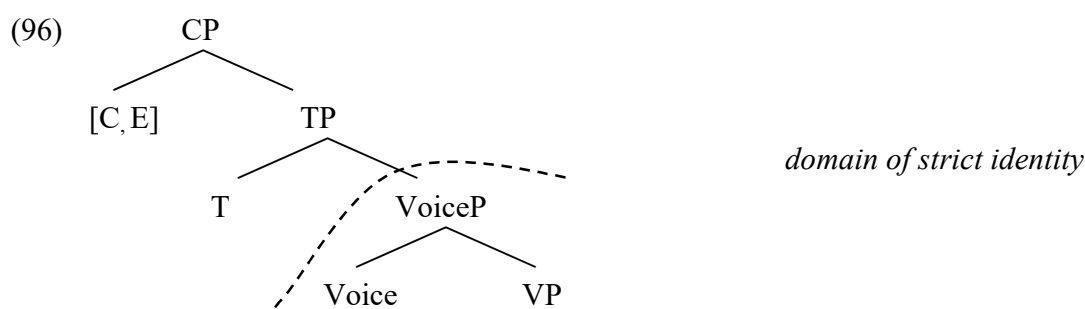
Rudin's proposal aims to capture tolerable mismatches like those in (6)-(8) and, at the same time, intolerable mismatches regarding the behaviour of Voice features in sluicing and other high ellipses, such as active-passive alternations, which are illicit (Merchant 2013:81):

(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 follow under Rudin's proposal. Yet, a proposal that confines identity to operate on the eventive core is not the default one, and as such as in need of further empirical motivation internal to English sluicing and other varieties of ellipses across languages (see also Ranero 2019, 2021 and footnote 22 for more discussion).

It turns out that for many of the mismatches that Rudin discusses there are possible alternative analyses. Under the *Q*-deletion model some of these ellipsis mismatches can be the result of two factors: (i) the syntactic licensing of ellipsis, which determines different sizes of ellipsis (TP-ellipsis vs. *v*P-ellipsis; *n*P-ellipsis vs. NumP-ellipsis), and (ii) the lack of isomorphism between syntax and morphology. The first factor accounts for well-known cases of tense mismatches in English *v*P-ellipsis and the lack of them in TP-ellipsis in several languages, a fact that does not immediately follow from the identity condition proposed by Rudin. The second factor, much less

explored in the literature, is that the conditions that regulate *S-ellipsis* are calculated in the narrow syntax, before lexical insertion rules and other morphological operations (whose surface effect obscures the form of abstract syntax) apply. Therefore, it could be the case that the antecedents and the elliptical phrases involved in the examples in (6)-(8) have an identical syntax but a different surface realization. In other words, these have to be seen as cases of allomorphy in a general sense.

Let me illustrate this point with a case of mood mismatch from Spanish. As shown in detail in Saab (2003, 2008), Spanish stripping can tolerate differences between imperative and subjunctive mood (Buenos Aires Spanish data):[19]

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

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

(98)   [+subjunctive] → Ø / ___ [2pers]]$_C$ [Harris 1998: 40]

This rule only applies under a structural condition that requires that the feature affected by deletion is located on C, which is the case in affirmative imperatives. The placement of clitics in affirmative imperative sentences (*i.e.,* V-CL ordering, *hacé-lo* 'do it' vs. *no lo-hagas* 'don't do it'), among other facts (see Laka 1990), shows that there is V-to-C movement in such environments. As discussed at length in Saab (2008), Harris' morphological analysis plus an identity condition on ellipsis applying in the narrow syntax leads to the conclusion that the tolerable mismatches in (97) do not pose a problem for syntactic identity accounts: as far as syntax is concerned the labels of the verbal forms in the antecedent and the elided verb are strictly identical, as shown in (99) for the case in (97a). As syntactic identity under ellipsis is trivially satisfied in the elliptical domain, CP is successfully elided:

(99) Ahorrá$_{[IMP]}$ plata,   pero no   palabras   <[$_{CP}$ ahorres$_{[SUBJ]}$ *t*]>.
     save   money   but not   words   save
     'Save money, but not words.'

---

[19] I assume that stripping is CP-ellipsis with movement of the remnant out of the elliptical site, perhaps to a Focus projection in an expanded CP domain, see Depiante (2000) on Spanish stripping.

Returning to the issue of mismatches in general, even though in most cases there is a clear basis to decide whether a given legitimate mismatch should be derived as matter of elliptical size or as a matter of syntax-morphology mismatch, there are, however syntactic contexts where both possibilities might overlap. The case in (6) for example, seems to be amenable to both solutions. Tanaka (2011) proposed that the alternation between nonfinite *–ing* forms and *to* infinitives in cases like (6) should be explained with reference to the fact that sluicing deletes a VP and not a TP and, as a consequence, the tense node is simply not evaluated for the purposes of the identity condition on ellipsis.[20] A similar analysis was suggested by Saab (2003) for cases in which a finite form in Spanish can be a suitable antecedent for a nonfinite form and 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, for instance the FinP in Rizzi (1997). If this is on the right track, the tolerable mismatches in (100) and (101) are due to the fact that the feature causing the mismatch 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 (6), 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 is Spanish arises not as the result of a syntactically relevant feature, but as the PF reflex of a particular syntactic configuration, *e.g.*, nonfinite forms are inserted in the context of certain tenseless local heads. Abstractly, this should be considered as a case of allomorphy conditioned by syntax.

While a lot is uncertain at this point,[21] this section aimed to show what kind of explanations a syntactic identity condition on ellipsis could propose in order to explain the mismatches

---

[20] Tanaka's system aims to explain why a non-elliptical version of (6), illustrated in (i), is ruled out:

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

Tanaka 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 behaviour of non-finite sluicing with remnant *how*.

[21] I refrain from providing an explicit analysis of mismatches involving tense, modality, polarity and illocutionary force, such as (i)-(iv), from Rudin (2019) and references therein.

(i) Your favorite plant is alive, but you can never be sure for how long <your favorite plant will be alive>.

identified in the literature. The modest purpose of this section was to illustrate some facts that can receive an analysis in terms of a syntax-morphology mismatch, 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 to arrive at a more articulated 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, this takes place

---

(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>.

These examples require careful considerations, and I contend with offering some notes about them.

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. This proposal, however, would be a hasty move, as tense mismatches are in fact intolerable in many languages, such as Spanish, contrary to the expectations of Rudin (2019) (see Brucart 1987, Murguia 2004, Saab 2008, and Saab and Vicente 2015 for some important qualifications) and (v). A feature inheritance approach to such cases would give wrong results.

(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 Murguia 2004: 86]

In a recent reply to Rudin, Ranero (2019, 2021) argues that Rudin's cases in (i)-(iv) and other examples 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's identity condition:
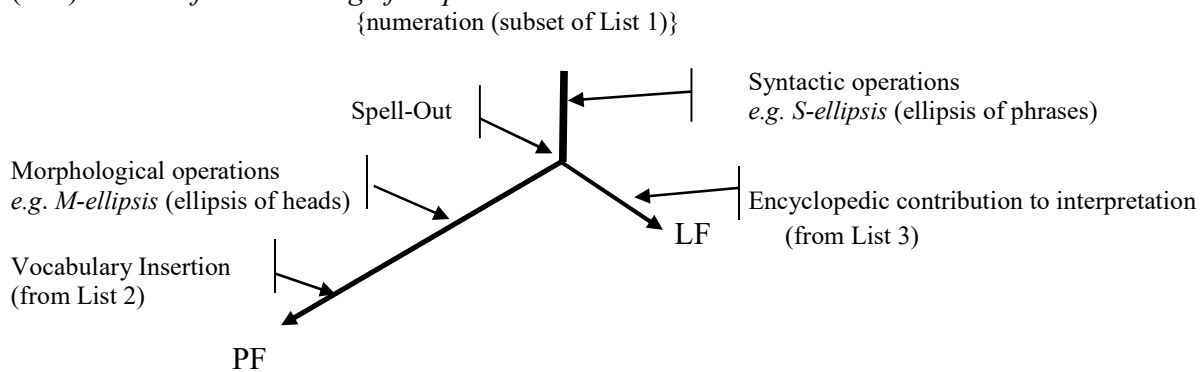
(vi) Antecedent and ellipsis site must be featurally nondistinct.

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. 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, but it faces conceptual issues, one being how the problem of identity in ellipsis connects to identity in grammar in general.

Another way to derive non-distinctiveness would be 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 definition predicts only a subtype of the mismatches that Ranero's system predicts. The intuition expressed by this approach is that 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.

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*

{numeration (subset of List 1)}

Spell-Out

Syntactic operations
e.g. S-ellipsis (ellipsis of phrases)

Morphological operations
e.g. M-ellipsis (ellipsis of heads)

Encyclopedic contribution to interpretation
(from List 3)

LF

Vocabulary Insertion
(from List 2)

PF

Among other facts discussed previously in this chapter, the theory explains the particular behaviour 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 is true; these phenomena can be used as an argument in favor of a particular model for the timing of ellipsis. Thus, the final picture offered results 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.

References

Acquaviva, Paolo. 2008. "Roots and Lexicality in Distributed Morphology." Talk given at the 5th York-Essex Morphology Meeting [ling.auf.net/lingBuzz/000654].

AnderBois, Scott. 2011. "Issues and Alternatives." PhD diss., University of California Santa Cruz.

AnderBois, Scott. 2014. "The Semantics of Sluicing: Beyond truth conditions." *Language* 90(4): 887–926.

Arregi, Karlos, and Andrew Nevins. 2012. *Morphotactics: Basque Auxiliaries and the Structure of Spellout*. Berlin: Springer.

Arregi, Karlos & Asia Pietraszko. 2021. "The Ups and Downs of Head Displacement." *Linguistic Inquiry* 52(1): 241–290.

Baker, Mark. 1988. *Incorporation. A Theory of Grammatical Function Changing*. Chicago: The University of Chicago Press.

Barros, Matthew and Andrés Saab. 2016. "Implicatures from silence: A remark on Chung's puzzle." Ms., Yale University and IIF-SADAF-CONICET.

Barros, Matthew, and Hadas Kotek. 2019. "Ellipsis Licensing and Redundancy Reduction: A Focus-Based Approach." *Glossa: a journal of general linguistics* 4(1): 100. 1–36.

Brucart, José María. 1987. *La elisión sintáctica en español*. Barcelona: Bellaterra.

Carnie, Andrew. 2008. *Constituent Structure*. Oxford: Oxford University Press.

Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 1993. "A Minimalist Program for Linguistic Theory." In Kenneth Hale, and Samuel Keyser (eds.), *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, 1-52. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 1995a. *The Minimalist Program*. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 1995b. "*Bare Phrase Structure.*" In Gert Webelhuth (ed.) The Principles and Parameters Approach to Syntactic Theory: A Synopsis. Oxford, Blackwell: 385-439.

Chomsky, Noam. 2000. "Minimalist Inquiries: The Framework." In Roger Martin, David Michaels, and Juan Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, 89-156. Cambridge, Mass.: MIT press.

Chomsky, Noam. 2001. "Derivation by Phase." In Michael Kenstowicz (ed.), *Ken Hale. A Life in Language*, 1-52. Cambridge, Mass.: MIT press.

Chomsky, Noam. 2007. "Approaching UG from Below." In Uli Sauerland, and Hans Gärtner (eds.), *Interfaces + Recursion = Language?: Chomsky's Minimalism and the View from Syntax-Semantics*, 1-30. Berlin: Mouton de Gruyter.

Chomsky, Noam. 2008. "On phases." In Robert Freidin, Carlos Peregrín Otero, and María Luisa Zubizarreta (eds.), *Foundational Issues in Linguistic Theory. Essays in Honor of Jean-Roger Vergnaud*, 134-166. Cambridge, Mass., MIT Press.

Chomsky, Noam. 2013. "Problems of Projection." *Lingua* 130: 33-49.

Chung, Sandra. 2000. "Close Encounters with Pronouns in VP Ellipsis." Ms., Available at http://ling.ucsc.edu/Jorge/chung.html.

Chung, Sandra. 2006. "Sluicing and the Lexicon: The Point of No Return." In Rebecca T. Cover, and Yuni Kim (eds.), *Proceedings of the Annual Meeting of the Berkeley Linguistics Society* 31, 73–91. Berkeley: University of California, Berkeley Linguistics Society.

Chung, Sandra. 2013. "Syntactic Identity in Sluicing: How Much and Why." *Linguistic Inquiry* 44(1): 1-44.

Chung, Sandra, William Ladusaw, and James McCloskey. 1995. "Sluicing and Logical Form." *Natural Language Semantics* 3: 239–282.

Chung, Sandra, William Ladusaw & James McCloskey. 2010. "Sluicing: Between Structure and Inference." In Rodrigo Gutiérrez Bravo, Line Mikkelsen & Eric Potsdam (eds.), *Representing Language: Essays in Honor of Judith Aissen*, 31– 50. Santa Cruz: University of California, Santa Cruz: Linguistic Research Center.

Cyrino, Sonia, and Gabriela Matos. 2002. "VP-ellipsis in European and Brazilian Portuguese: a Comparative Analysis." *Journal of Portuguese Linguistics* 1(2): 177-195.

Cyrino, Sonia, and Gabriela Matos. 2005. "Local Licensers and Recovering in VP Ellipsis." *Journal of Portuguese Linguistics* 4: 79-112.

Cuervo, Cristina. 2003. *Datives at large*. PhD Dissertation, MIT.

Depiante, Marcela. 2000. "The Syntax of Deep and Surface Anaphora: A study of Null Complement Anaphora and Stripping/Bare Argument Ellipsis." PhD diss., University of Connecticut.

Embick, David. 2000. "Features, Syntax, and Categories in the Latin Perfect." *Linguistic Inquiry* 31(2): 185-230.

Embick, David. 2007. "Linearization and Local Dislocation: Derivational Mechanics and Interactions." *Linguistic Analysis* 33(3-4): 2-35.

Embick, David. 2015. *The Morpheme. A Theoretical Introduction*. Berlin: de Gruyter Mouton.

Embick, David, and Rolf Noyer. 2001. "Movement Operations after Syntax." *Linguistic Inquiry* 32(4): 555-595.

Embick, David & Alec Marantz. 2008. "Architecture and Blocking." *Linguistic Inquiry* 39(1): 1-53.

Fiengo, Robert, and Robert May. 1994. *Indices and Identity*. Cambridge, Massachusetts: MIT Press.

Goldberg, Lotus. 2005. "Verb-Stranding VP-Ellipsis: A Cross-Linguistic Study." PhD diss., McGill University.

Gribanova, Vera. 2013a. "A New Argument for Verb-Stranding Verb Phrase Ellipsis." *Linguistic Inquiry* 44 (1): 145–157.

Gribanova, Vera. 2013b. "Verb-Stranding Verb Phrase Ellipsis and the Structure of the Russian Verbal Complex." *Natural Language and Linguistic Theory* 31 (1): 91–136.

Gribanova, Vera. 2017. "Head Movement and Ellipsis in the Expression of Russian Polarity Focus." *Natural Language and Linguistic Theory* 35 (4): 1079–1121.

Gribanova, Vera. 2018. "Head Movement, Ellipsis, and Identity." Ms., Stanford University.

Griffiths, James, and Anikó Lipták. 2014. "Contrast and Island Sensitivity in Clausal Ellipsis." *Syntax* 17(3): 189-234.

Gullì, Antonino. 2003. "Phrasal Reduplication in Syntax." PhD diss., The City University of New York.

Halle, Morris. 1990. "An Approach to Morphology." In Proceeding of *NELS* 20:150-184, University of Massachusetts, Amherst.

Halle, Morris. 1997. "Distributed Morphology: Impoverishment and Fission." *MIT Working Papers in Linguistics* 30: 425-449.

Halle, Morris, and Alec Marantz. 1993. "Distributed Morphology and the Pieces of Inflection." In Kenneth Hale, and Samuel Keyser (eds.), *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, 111-176. Cambridge, Mass.: MIT Press.

Halle, Morris, and Alec Marantz. 1994. "Some Key Features of Distributed Morphology." In Andrew Carnie, Heidi. Harley, and Tony Bures (eds.). *Papers on Phonology and Morphology*. *MITWPL* 21: 275-288.

Hankamer, Jorge, and Ivan Sag. 1976. "Deep and Surface Anaphora." *Linguistic Inquiry* 7: 391-426.

Harley, Heidi. 2014. "On the identity of Roots." *Theoretical Linguistics* 40: 225–276.

Harizanov, Boris, and Vera Gribanova. 2019. "Whither Head Movement?" *Natural Language and Linguistic Theory* 37: 461–522.

Hornstein, Norbert. 2009. *A Theory of Syntax. Minimal Operations and Universal Grammar*. Cambridge: Cambridge University Press.

Harris, James. 1998. "Spanish Imperatives: Syntax Meets Morphology." *Journal of Linguistics* 34: 27-52.

Laka, Itziar. 1990. "Negation in Syntax: On the Nature of Functional Categories and Projections." PhD diss., MIT.

Landau, Idan. 2018. "Missing Objects in Hebrew: Argument Ellipsis, not VP ellipsis." *Glossa: a journal of general linguistics* 3(1): 76. 1–37.

Landau, Idan. 2020. "On the Nonexistence of Verb-Stranding VP-ellipsis." *Linguistic Inquiry* 51(2): 341-365.

Lewis, David. 1979. "Scorekeeping in a Language Game." *Journal of Philosophical Logic* 8: 339–359.

Lipták, Anikó. 2012. "V-Stranding Ellipsis and Verbal Identity: The Role of Polarity Focus." *Linguistics in the Netherlands* 29: 82–96.

Lipták, Anikó. 2013. "The syntax of Positive Polarity in Hungarian: Evidence from Ellipsis." In Anne Breitbarth, Karen De Clercq, and Liliane Haegeman (eds.) *Emphatic polarity*. Special issue of *Lingua* 128: 72–94.

Lipták, Anikó, and Andrés Saab. 2014. "No N-raising out of NPs in Spanish: Ellipsis as a Diagnostic of Head Movement." *Natural Language and Linguistic Theory* 32: 1247–1271.

McCloskey, James. 1991. "Clause Structure, Ellipsis and Proper Government in Irish." In James McCloskey (ed.), *The Syntax of Verb-Initial Languages*, 259-302. *Lingua* Special Edition.

McCloskey, James. 2004. "Three Puzzles about Head Movement." Talk given at the *Coloquio de Morfosintaxis*, Universidad de Buenos Aires.

McCloskey, James. 2012. "Polarity, Ellipsis and the Limits of Identity in Irish." *Workshop on Ellipsis*, Nanzan University. http://ohlone.ucsc.edu/~jim/PDF/nanzan-handout.pdf.

Martins, Ana Maria. 2007. "Double Realization of Verbal Copies in European Portuguese Emphatic Affirmation." In Norbert Corver, and Jairo Nunes (eds.), *The Copy Theory of Movement*, 78-118. Amsterdam: John Benjamins.

Martins, Ana Maria. 2013. "Emphatic Polarity in European Portuguese and Beyond." *Lingua* 128: 95-123.

Masullo, Pascual. 1992. "Incorporation and Case Theory in Spanish: A Crosslinguistic Perspective." PhD diss., University of Washington.

Matushansky, Ora. 2006. "Head Movement in Linguistic Theory." *Linguistic Inquiry* 37: 69–109.

Merchant, Jason. 2001. *The Syntax of Silence: Sluicing, Islands and the Theory of Ellipsis*. Oxford: Oxford University press.

Merchant, Jason. 2008a. "Variable Island Repair under Ellipsis." In Kyle Johnson (ed.), *Topics in Ellipsis*, 132-153. Cambridge: Cambridge University Press.

Merchant, Jason. 2008b. "An Asymmetry in Voice Mismatches in VP-ellipsis and Pseudogapping." *Linguistic Inquiry* 39:169–179.

Merchant, Jason. 2013. "Voice and Ellipsis." *Linguistic Inquiry* 44(1): 77-108.

Merchant, Jason. 2018. "Verb-stranding Predicate Ellipsis in Greek, Implicit Arguments, and Ellipsis-Internal Focus." In Jason Merchant, Line Mikkelsen, Deniz Rudin, and Kelsey Sasaki (eds.) *A Reasonable Way to Proceed. Essays in Honor of Jim McCloskey*, 229-270. California: University of California.

Merchant, Jason. 2019. "Ellipsis. A Survey of Analytical Approaches." In Tanja Temmerman, and Jeroen van Craenenbroeck (eds.) *The Oxford Handbook of Ellipsis*, 19-45. Oxford: Oxford University Press.

Muñoz Pérez, Carlos. 2017. "Cadenas e intefaces." PhD diss., Universidad de Buenos Aires.

Murphy, Andrew. 2016. "Subset Relations in Ellipsis Licensing. *Glossa: a journal of general linguistics* 1(1). 44. 1–34.

Murphy, Andrew, and Gereon Müller. This volume. "Derivational ellipsis and Vehicle Change." In Güneş, Güliz, and Anikó Lipták (eds.) *The Derivational Timing of Ellipsis*. Oxford: Oxford University Press.

Murguia, Elixabete. 2004. "Syntactic identity and locality restrictions on verbal ellipsis." PhD diss., University of Maryland.

Nunes, Jairo. 2004. *Linearization of Chains and Sideward Movement*. Cambridge, Mass.: MIT Press.

Pylkkänen, Liina. 2008. *Introducing Arguments*. Cambridge, Mass.: MIT.

Pujalte, Mercedes. 2012. "Condiciones sobre la introducción de argumentos en español." PhD diss., Universidad de Buenos Aires.

Pujalte, Mercedes. 2013. "(Non)-Added Datives in Spanish." In LaCara, N., L. Fainleib and Y. Park (eds.) *Proceedings of NELS 41.*Amherst, Mass: GLSA.

Ranero, Rodrigo. 2019. "The Eventive Core is *not* Special in Ellipsis: A Reply to Rudin 2019." Ms., University of Maryland.

Ranero, Rodrigo. 2021. *Identity Conditions on Ellipsis*. PhD diss., University of Maryland.

Rizzi, Luigi. 1997. "The Fine Structure of the Left Periphery." In Liliane Haegeman (ed.), *Elements of Grammar*, 281-337. Dordrecht: Kluwer.

Ross, John. 1969. "Guess who?" In *Papers from the Fifth Regional Meeting, Chicago Linguistic Society*, 252-286. Chicago: The University of Chicago Press.

Rudin, Deniz. 2019. "Head-Based Syntactic Identity in Sluicing." *Linguistic Inquiry* 50(2): 253-283.

Saab, Andrés. 2003. "Identidad morfológica estricta e inserción tardía." Talk given at the *II Encuentro De Gramática Generativa*, Instituto en Lenguas Vivas "Juan Ramón Fernández", Buenos Aires*.*

Saab, Andrés. 2008. "Hacía una teoría de la identidad parcial en la elipsis." PhD diss., University of Buenos Aires.

Saab, Andrés. 2010. "Silent interactions: Spanish TP-ellipsis and the theory of island repair." *Probus* 22(1): 73-116.

Saab, Andrés. 2017. "Varieties of Verbal Doubling in Romance." *Isogloss* 3(1): 1–42.

Saab, Andrés. 2019. "Nominal Ellipsis." Tanja Temmerman, and Jeroen van Craenenbroeck (eds.), *The Oxford Handbook of Ellipsis*, 526-561. Oxford: Oxford University Press.

Saab, Andrés, and Luis Vicente. 2015. "The Distribution of (Un)acceptable Tense Mismatches under TP ellipsis." Talk given at *Going Romance XXIX*, Nijmegen, The Netherlands.

Saab, Andrés, and Anikó Lipták. 2016. "Movement and Deletion after Syntax. Ellipsis by Inflection Reconsidered." *Studia Linguistica* 70(1): 66-108.

Sag, Ivan, and Jorge Hankamer. 1984. "Toward a Theory of Anaphoric Processing." *Linguistics and Philosophy* 7:325–345.

Sailor, Craig. 2020. "Ellipsis and the Phonological Prespecification of Roots." Ms.

Santos, Ana Lúcia. 2009. *Minimal answers. ellipsis, syntax and discourse in the acquisition of European Portuguese*. Amsterdam/Philadelphia: John Benjamins.

Schoorlemmer, Erik, and Tanja Temmerman. 2012. "Head Movement as a PF-phenomenon: Evidence from Identity under Ellipsis." In Jaehoon Choi, E. Alan Hogue, Jeffrey Punske, Deniz Tat, Jessamyn Schertz, and Alex Trueman (eds.), *Proceedings of the 29th West Coast Conference on Formal Linguistics*, 232–240. Somerville, MA: Cascadilla Press.

Schwarzschild, Roger. 1999. "GIVENness, AvoidF and other Constraints on the Placement of Focus." *Natural Language Semantics* 7(2): 141-177.

Stigliano, Laura. 2020. "P-omission in Ellipsis in Spanish: Evidence for Syntactic Identity." Ms., The University of Chicago.

Tanaka, Hidekazu. 2011. "Syntactic Identity and Ellipsis." *The Linguistic Review* 28: 79–110.

Thoms, Gary. 2015. "Syntactic Identity, Parallelism and Accommodated Antecedents." *Lingua* 166: 172-198.

Travis, Lisa. 1984. "Parameters and Effects of Word Order Variation." PhD diss., MIT.

Vicente, Luis. 2007. "The syntax of Heads and Phrases: A Study of Verb (Phrase) Fronting." PhD diss., Leiden University.

Weir, Andrew. 2014. "Fragments and Clausal Ellipsis." PhD diss., University of Massachusetts Amherst.

Zagona, Karen. 1982. "Government and Proper Government of Verbal Projections." PhD diss., University of Washington.

Zagona, Karen. 1988. "Proper Government of Antecedentless VP in English And Spanish." *Natural Language and Linguistic Theory* 6: 95-128.