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### Author

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UNIVERSITY OF CALIFORNIA  
SANTA CRUZ

**DISCONTINUOUS AFFIXATION IN THE SYNTAX**

A thesis submitted in partial satisfaction  
of the requirements for the degree of

MASTER OF ARTS

in

LINGUISTICS

by

**Clara Sherley-Appel**

September 2015

The Thesis of Clara Sherley-Appel  
is approved:

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Professor Jorge Hankamer, Chair

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Professor Jim McCloskey

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Asst. Professor Maziar Toosarvandani

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Tyrus Miller  
Vice Provost and Dean of Graduate Studies

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# Table of Contents

|                                                                  |            |
|------------------------------------------------------------------|------------|
| <b>Abstract</b>                                                  | <b>iv</b>  |
| <b>Acknowledgements</b>                                          | <b>vii</b> |
| <b>1 Introduction</b>                                            | <b>1</b>   |
| <b>2 Distinguishing ellipsis and Right Node Raising</b>          | <b>4</b>   |
| 2.1 Constraints on cataphora . . . . .                           | 6          |
| 2.2 Morphological mismatches . . . . .                           | 8          |
| 2.3 Distributional differences . . . . .                         | 16         |
| 2.4 Right Node Raising is not radical deaccenting . . . . .      | 21         |
| <b>3 The status of discontinuous affixation</b>                  | <b>26</b>  |
| 3.1 Directionality . . . . .                                     | 27         |
| 3.2 Morphological mismatches . . . . .                           | 28         |
| 3.3 Distribution . . . . .                                       | 31         |
| <b>4 Sabbagh (2007)’s analysis of Right Node Raising</b>         | <b>33</b>  |
| <b>5 Adapting Sabbagh’s proposal to discontinuous affixation</b> | <b>43</b>  |
| 5.1 Distributed Morphology . . . . .                             | 44         |
| 5.2 Analysis . . . . .                                           | 47         |
| 5.3 Non-constituent Right Node Raising . . . . .                 | 54         |
| <b>6 Conclusion</b>                                              | <b>58</b>  |

## Abstract

### DISCONTINUOUS AFFIXATION IN THE SYNTAX

by

Clara Sherley-Appel

This thesis begins with the observation that portions of words may be separated out and interpreted across a distance, as illustrated by the following examples:

- (1) These text tiers had boundaries that corresponded with the onset and offset of *pre- and post-boundary syllables* as well as the onset and offset of consonants and vowels that made up these syllables.

COCA, 2011: ACAD: JSpeechLanguage

- (2) My distinction between *the pre- and the post-paradigm periods* in the development of a science is, for example, much too schematic.

Thomas Kuhn, *The Structure of Scientific Revolutions*

This observation plays into a longstanding debate within the community of linguistic researchers concerning the nature of words. Lexicalists argue that words are formed in the lexicon and are opaque to the syntactic component of the grammar. Alternately, non-lexicalist approaches to morphology and syntax contend that both words and larger phrases are generated in a single component of the grammar by the same means. It is therefore fruitful, in seeking to resolve this debate, to examine closely sentences in which elements which are smaller, in some sense, than words appear to undergo syntactic manipulation. Early investigations of examples like (1) have suggested that they might not be as revealing on this point as they look, as it is not obvious that such examples involve syntactic displacement. If we concede that words and larger phrases are superficially very similar, then the fact coordination appears to be present in both

domains may simply be another superficial similarity. It is quite difficult, however, to extend this argument to examples like (2), because the elements on either side of the coordinator *and* are not constituents. Something beyond coordination must be occurring.

Sentences like (2) exhibit what is known in syntactic analysis as *Right Node Raising* (Ross, 1967). There are numerous, highly contentious analyses of Right Node Raising, ranging from coordination plus deletion (ellipsis), to coordination with multiple constituents that share one or more elements (multidominance), to “across-the-board” syntactic displacement (movement). Hankamer (1971), looking at Right Node Raising in Turkish, observes several ways in which Right Node Raising and ellipsis may be distinguished in the data. Turning to English and German, Barros and Vicente (2011) suggests that at least some of these distinctions cannot be upheld for apparent instances of Right Node Raising. At least some of the time, they conclude, Right Node Raising and ellipsis may be two instances of the self-same phenomenon. This matters in part because some analysts, like Hartmann (2000) and Chaves (2008), view ellipsis as a purely phonological (i.e., extra-syntactic) phenomenon. If discontinuous affixation instantiates ellipsis and ellipsis is extra-syntactic, then evidence of Right Node Raising below the word says nothing about the nature of word-formation and its relationship (or lack thereof) to the syntactic component of the grammar.

This thesis begins with a very close look at the phenomena at hand and carefully catalogs and details the various properties of sentences like (1) and (2). The findings of that investigation are then used to evaluate the viability of an analysis of sentences like (2) as ellipsis. I show that while many of the insights from Barros and Vicente (2011) remain intact, the overall conclusion must be false: It is not the case that Right Node Raising and ellipsis overlap analytically, but rather that certain constructions are analytically ambiguous between the two analyses. Turning to the sublexical domain, I

demonstrate that for at least some cases, an analysis in terms of ellipsis is not possible. Separately, I consider non-syntactic approaches to ellipsis like those offered in Hartmann (2000) and Chaves (2008), and conclude that such approaches lack the clarity and definition that might allow them to account for differences in ellipsis above and below the word. We are left with the conclusion that a non-syntactic analysis of examples like (1) is not possible, and consequently, such examples do provide evidence of syntactic manipulation below the word.

## **Acknowledgments**

Many people have helped to shape this paper, most notably my advisor and mentor Jorge Hankamer, and the other members of my committee, Jim McCloskey and Maziar Toosarvandani. I am forever indebted to them for their support. I had the pleasure of presenting various aspects of this research in several venues, including at LSA 2014, at Stanford's Syntax-Morphology Circle, and at the Linguistics at Santa Cruz Conference in 2014. The audiences at those talks helped push my investigation in new and interesting directions, and I am grateful for their commentary. I also want to thank Matt Barros, Bradley Larson, Joey Sabbagh, Anie Thompson, Erik Zyman, and Jesse Zymet for spending countless hours helping me work through various half-baked proposals. Finally, for moral support, my husband Lanier Sammons, and my officemate and partner-in-crime, Anna Greenwood. All errors are my own.

# 1 Introduction

This paper is concerned with the phenomenon of discontinuous affixation in English. It begins with an observation: Portions of words may be separated out and interpreted across a distance. Though discontinuous affixation occurs in numerous syntactic environments, I will primarily be concerned with examples like (3) and (4), in which prefixes appear to combine with a stem across the conjuncts of a coordinate structure:

- (3) These text tiers had boundaries that corresponded with the onset and offset of *pre- and post-boundary syllables* as well as the onset and offset of consonants and vowels that made up these syllables.

COCA, 2011: ACAD: JSpeechLanguage

- (4) My distinction between *the pre- and the post-paradigm periods* in the development of a science is, for example, much too schematic.

Thomas Kuhn, *The Structure of Scientific Revolutions*

Examples like (3) lend themselves to an analysis where affixes themselves are coordinated (Quirk et al., 1985; Huddleston et al., 2002). Adopting such an account, however, has serious consequences for our understanding of morphological structure. Since Chomsky (1970), the variants on the “lexicalist hypothesis”—the contention that words are formed in the lexicon and are syntactically opaque—have emerged as a way of explaining differences in the syntactic behavior of morphemes and words. Though Minimalist syntacticians typically reject this view, other theories in operation today (most notable Head-Driven Phrase Structure Grammar and Lexical-Functional Grammar) still assume that the morphological and syntactic components of the grammar should be kept separate.

Lexicalist accounts are faced with an even more significant problem when they encounter examples like (4). These examples are not amenable to a prefix coordination

account; however, they are analogous to cases of Right Node Raising (hereafter, RNR; for an early discussion of Right Node Raising and related phenomena, see Ross 1967, p. 176), as in (5):

- (5) a. John likes, and Mary dislikes, *Titanic*.
- b. Amy believes, and Sara wants to believe, that Santa Claus is real.

There are two prominent ways that lexicalists have sought to reconcile examples like (4) with their overall theoretical framework. Observing that the set of word-parts which participate in these sorts of constructions, Sciullo and Williams (1987) argues that some derivational morphemes are both prefixes and independent words. This approach is undermined, however, by the fact that such morphemes are always ungrammatical in isolation. Alternately, Chaves (2008) offers an account of Right Node Raising as prosodically-conditioned ellipsis similar to that of Hartmann (2000). In fact, ellipsis accounts of Right Node Raising are quite popular. Variations of this approach are adopted in Wilder (1997); Hartmann (2000); Abels (2004); Chaves (2008) and Barros and Vicente (2011), to name a select few examples.

However, there are numerous issues with this approach. Ellipsis and Right Node Raising exhibit different syntactic and morphosyntactic behavior that is reflected in their distribution. RNR is possible in many environments where ellipsis is prohibited, and ellipsis is possible in environments where RNR is not. Further, even if prosodically-conditioned ellipsis of the sort proposed in Hartmann (2000) and Chaves (2008) is taken to be fundamentally different from more familiar ellipsis operations, an ellipsis account of Right Node Raising cannot account for certain semantic properties of RNR that distinguish it from full coordination. A final critique of such approaches is theoretical. While a prosodically-conditioned ellipsis analysis of RNR might allow us to account for certain of its phonological or prosodic properties, attempts to define the prosodic

domain over which peripheral ellipsis operates face serious difficulties. Ellipsis and RNR ought therefore to be viewed as separate operations.

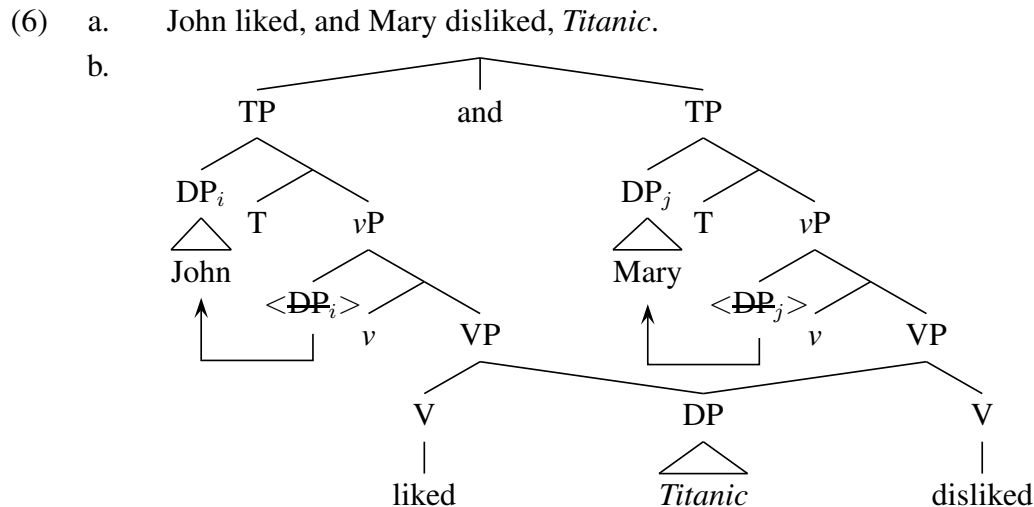
One might wonder, though, whether discontinuous affixation is truly Right Node Raising or whether the apparent similarity of the two constructions is only superficial. I will show in Section 3 that in every respect, discontinuous affixation patterns like RNR and not like ellipsis. The consequences of this investigation are twofold. In demonstrating that ellipsis and Right Node Raising are empirically distinct, I am able to narrow the solution space for RNR so that it no longer includes PF deletion. In the absence of an elliptical account of Right Node Raising, two contender analyses remain—multidomination (McCawley, 1982; Wilder, 1999; Bachrach and Katzir, 2008) and rightward Across-the-Board movement (Hankamer, 1971; Postal, 1974; Sabbagh, 2007, 2008). Section 4 discusses arguments in favor of the latter. The second consequence stems directly from the investigation and discussion of discontinuous affixation. If discontinuous affixation is a type of Right Node Raising and Right Node Raising cannot be analyzed as ellipsis (whether prosodically- or syntactically-conditioned), it must be a product of the syntactic component of the grammar. In other words, the lexicalist hypothesis is untenable.

The paper is structured in the following way. Section 2 seeks to distinguish ellipsis and Right Node Raising, addressing several criticisms of various diagnostics that have been used to distinguish these processes in the past. I demonstrate that these critiques are founded on false assumptions about the diagnostics themselves. Once these are abandoned, RNR and ellipsis come apart. Section 3 then applies these diagnostics to discontinuous affixation, showing that it patterns like RNR and not like ellipsis. In Section 4 I outline the basics of Sabbagh's analysis of Right Node Raising and show how it derives the differences between RNR and other types of movement. Section 5 applies this analysis to discontinuous affixation, adopting assumptions of the theory of

Distributed Morphology (Halle and Marantz, 1993, 1994) along the way. In Section 6, I offer a brief summary and conclude.

## 2 Distinguishing ellipsis and Right Node Raising

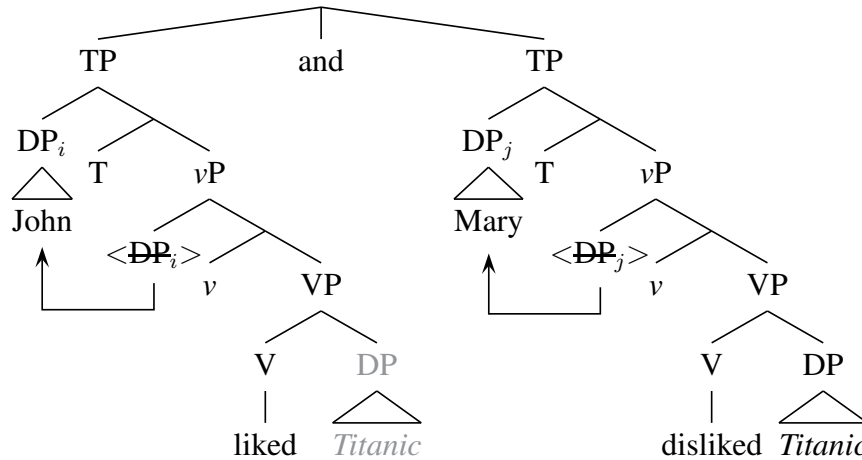
Although the earliest analyses of Right Node Raising (e.g., Ross, 1967; Hankamer, 1971; Postal, 1974) treat it as a type of movement, subsequent work has sought to explain the unique properties of RNR—in particular, its insensitivity to islands—by arguing that the pivot remains *in situ* in its base position. These approaches fall roughly into two categories. The first, which originates with McCawley (1982) and is exemplified in more recent work by Bachrach and Katzir (2007), argues that the pivot in a RNR construction is actually dominated twice, once in each conjunct. The representation of a sentence like (6a) is therefore something like the tree in (6b):



The second approach, found in e.g., Wilder (1997); Hartmann (2000); Chaves (2008), treats Right Node Raising as a type of ellipsis. On this view, the gap in the first conjunct is created by deletion (or non-pronunciation) under identity with material in the second conjunct. The example in (6a), repeated below, has the structure given in (7b):

(7) a. John liked, and Mary disliked, *Titanic*.

b.



The central claim of this paper is that the discovery of Right Node Raising below the word is evidence that the lexicalist hypothesis (Anderson, 1982) cannot be correct. On the movement view of RNR, the pivot is separated from its surrounding context by movement. On the multidominance view, the pivot is merged with two parallel (but distinct) structures (Citko, 2005; Bachrach and Katzir, 2007). The key feature of discontinuous affixation is that the pivot must be or must contain part of a word. For word-parts to undergo syntactic Merge, they must be accessible in the syntactic component of the grammar. In other words, they must have internal structure which can be seen and manipulated in the syntax.

Those who have argued that Right Node Raising is a type of ellipsis have sometimes pointed to cases of discontinuous affixation as evidence that their view is correct. They reason that while only part of the word is pronounced, it is nevertheless a word in the sense that its components are assembled prior to the syntax and inserted as a single simplex node (Bresnan and Mchombo, 1995; Chaves, 2008); since at least some ellipsis operations are believed to target non-constituents (namely, Gapping and Stripping, though this is contested, see Johnson 2009 for discussion), the fact that word-parts are not syntactic constituents is immaterial (Hartmann, 2000).

The purpose of this section is therefore to demonstrate that ellipsis and Right Node Raising are empirically distinct. These dissimilarities, I contend, militate against treating Right Node Raising as a type of prosodically-conditioned ellipsis. Though there are numerous differences, I will focus on properties that are empirically testable in the sublexical domain: Constraints on cataphora in coordinate structures and the ability of ellipsis to license morphological mismatches between the gap and the antecedent. Once I have established the rationale for distinguishing Right Node Raising and ellipsis on the basis of these diagnostics, I will turn to this domain in Section 3 and show that cases of discontinuous affixation pattern like Right Node Raising, not like ellipsis.

## 2.1 Constraints on cataphora

A key observation in the study of anaphora is that the direction of the dependency between the anaphor and its antecedent is not free; rather, it is regulated by command and precedence relations which interact. Early observations on the nature of cataphoric dependencies (in which the anaphor precedes its antecedent) come from Ross, who observed that although cataphora is possible when the anaphor is in certain configurations, it is prohibited when the anaphor commands its antecedent (Ross, 1967, p. 358). This is illustrated in (8):

- (8) a. Because he<sub>i</sub> likes dogs, John<sub>i</sub> donated money to the ASPCA.  
 b. \* He<sub>i</sub> knew that John<sub>i</sub> was rich.

Subsequent investigation has revealed an additional component to this constraint. In coordinate structures, where the precise nature of command is often difficult to discern (though see Munn, 1993, for a discussion of potential diagnostics for hierarchical structure in coordination), cataphora is never grammatical (Langacker, 1969, p. 162):

- (9) a. I want to go on a camping trip with John<sub>i</sub> and get to know him<sub>i</sub> better.

- b. \* I'd like to get to know him<sub>i</sub> better and go on a camping trip with John<sub>i</sub>.

Collectively, these observations form the basis of what has come to be known as the Backwards Anaphora Constraint (BAC). I have provided a summary of the BAC in (10).

(10) *Backwards Anaphora Constraint* (BAC)

- a. An anaphor cannot command its antecedent.
- b. In a coordinate structure, an anaphor cannot precede its antecedent.

The origins of both clauses of the BAC lie in observations about overt anaphors (specifically, pronouns); however, Hankamer and Sag (1976) offers evidence that the BAC applies more broadly. The gaps left by ellipsis are “surface anaphors” which, while empirically distinct from “deep anaphors” (e.g., pronouns) which lack internal syntactic structure, are nevertheless governed by many of the same constraints, including the BAC. It is not possible to reverse the position of the gap and the antecedent when the locus of ellipsis is inside a coordinate structure, just as it is not possible for a pronoun in one conjunct to refer to an antecedent in a later conjunct. The following examples illustrate this for three types of ellipsis—Verb Phrase Ellipsis (VPE), Noun Phrase Ellipsis (NPE), and Sluicing:<sup>1</sup>

(11) *VPE*

- a. Mary knows John brought a cake to the office yesterday, and Bill did bring a cake to the office the day before.
- b. \* Mary knows John did bring a cake to the office yesterday, and Bill brought a cake to the office the day before.

(12) *NPE*

---

<sup>1</sup>In this section, I will use grey text to indicate the elided portion of a sentence.

- a. Mary's sandwich was delicious, and John's sandwich was delectable.
- b. \* Mary's sandwich was delicious, and John's sandwich was delectable.

(13) *Sluicing*

- a. Mary likes someone and I know who Mary likes.
- b. \* I know who Mary likes and Mary likes someone.

In each of the sentences just given, the antecedent appears in one conjunct of a coordinate structure and the gap appears in another. When the antecedent precedes the gap, as in the (a) examples, ellipsis is licensed and the sentence is grammatical. When the gap comes first, however, as in the (b) examples, it is impossible to interpret it as anaphoric to the antecedent that follows. Similar evidence is provided below for Gapping which, unlike other types of ellipsis, is only found in coordinate structures.

(14) *Gapping*

- a. Milo baked a cake, and Vera baked cookies.
- b. \* Milo baked a cake, and Vera baked cookies.

Hankamer and Sag conclude that the Backwards Anaphora Constraint is general—it holds for all kinds of anaphora, including ellipsis. Backwards ellipsis should therefore not be possible inside coordinate structures, and backwards Gapping should be theoretically impossible.

## 2.2 Morphological mismatches

In spite of the substantial evidence provided in Hankamer and Sag (1976) that backwards ellipsis is impossible in coordinate structures, the belief that Right Node Raising constructions, which are found both in and out of coordinate structures, are elliptical in nature persists. Right Node Raising, if it is a movement operation, is highly unusual

and appears to follow a different set of constraints than both leftward Across-the-Board movement and rightward movement operations like extraposition and Heavy NP Shift. These facts about RNR make it appealing to look for an alternative analysis in which movement is not necessary. For those who argue in favor of an ellipsis approach to Right Node Raising, the task is to identify ways in which RNR mirrors properties of ellipsis. Various approaches to this task have been made. One of the most recent comes from Barros and Vicente (2011) and concerns morphological identity of the gap and the antecedent.

One of the hallmark features of ellipsis is its ability to license morphosyntactic mismatches between the ellipsis site and the antecedent. In VPE, for example, inflection on the verb in the antecedent may differ from inflection on the elided verb:

- (15) a. If Mary goes to the reunion, that means John is *going to the reunion*, too.
- b. If Mary does *go to the reunion*, that means John is going to the reunion, too.
- (16) a. Although I haven't baked a cake before, I'm going to *bake a cake* now.
- b. Although I haven't *baked a cake* before, I'm going to bake a cake now.
- (17) a. While I feel like I am falling asleep, I know I can't *fall asleep* just yet.
- b. While I feel like I am *falling asleep*, I know I can't fall asleep just yet.

In each of these examples, the first verb differs in form from the second verb. These discrepancies reflect differences in morphosyntactic features from outside the ellipsis site. The (a) examples show that morphosyntactic mismatches are licensed in forwards ellipsis; the (b) examples show that morphosyntactic mismatches are licensed in backwards ellipsis.

Ellipsis also licenses a second type of mismatch which is not purely morphosyntactic. Pronominal elements inside an ellipsis site may be interpreted with either strict or

sloppy identity, modulo pragmatic considerations. Consider the examples below:

- (18) a. Although I haven't done my homework, Julia has done my homework.  
b. Although I haven't done my homework, Julia has done her homework.  
c. Although I haven't done her homework, Julia has done her homework.  
d. Although I haven't done my homework, Julia has done her homework.
- (19) a. While you are waiting for your results, I will be waiting for your results, too.  
b. While you are waiting for your results, I will be waiting for my results, too.  
c. While you are waiting for my results, I will be waiting for my results, too.  
d. While you are waiting for your results, I will be waiting for my results, too.

The mismatches in these examples are not purely morphosyntactic. Although in many cases there are differences in form (e.g., I/her, you/my), these disparities are in some sense less interesting than the variations in interpretation. Modulo pragmatic considerations, pronouns inside ellipsis sites may be interpreted with respect to either a local or a non-local antecedent.

Barros and Vicente (2011) argue on the basis of sentences like (20) that certain cases of Right Node Raising can and should be analyzed as ellipsis. In (20a), the verb in the first clause appears in the bare form while the verb in the second clause is inflected for person and number on the subject. In (20b), the pronoun in the ellipsis site and the pronoun in the antecedent are interpreted as having different antecedents. The sentences in (20) therefore illustrate the availability of both of the characteristic mismatches observed in ellipsis:

- (20) a. I usually don't wake up early every day, but Alice wakes up early every day.
- b. I didn't pass my math exam, but I'm sure that Alice will pass her math exam.

Barros and Vicente draw two conclusions from these data which must be teased apart. First, they surmise that such sentences are instances of Right Node Raising which must be analyzed as ellipsis. In the absence of an uncontroversial analysis of RNR, it is difficult to argue against this proposal. The characteristic properties of Right Node Raising—apparent discontinuity of constituent structure (a gap that precedes its antecedent), insensitivity to islands and constraints on rightward movement, and special contrastive prosody—are not always salient enough to distinguish Right Node Raising from other, similar constructions. On these grounds I cede the general point: It is not unreasonable to group various superficially similar but analytically distinct constructions under the name Right Node Raising. Barros and Vicente's second conclusion is much more troubling, however. Having adduced the availability of morphosyntactic mismatches in support of an elliptical account of the sentences in (20), the authors conclude that backwards ellipsis must be possible in coordinate structures, *contra* the Backwards Anaphora Constraint. Though they set aside the proper reformulation of the BAC, they contend that their examples necessitate reevaluating the utility of the constraint in predicting where ellipsis can and cannot occur.

It is my opinion that the data in (20) do not provide proper support for this second conclusion. The BAC is, in fact, a valid predictor of the environments in which backwards ellipsis is possible: Coordinate structures cannot play host to ellipsis where the gap precedes its antecedent. As evidence for this assertion, I submit that while the lexical item *but* has certain properties characteristic of coordinators, the key intuition

of the BAC for ellipsis—that pronominal cataphora and backwards ellipsis share the same distribution—is not undermined by examples like (20). With respect to the BAC, I argue, *but* is not a coordinator. Consider the examples in (21)-(24):

- (21) a. Because John<sub>i</sub> likes dogs, he<sub>i</sub> donated money to the ASPCA.
- b. Because he<sub>i</sub> likes dogs, John<sub>i</sub> donated money to the ASPCA.
- (22) a. If Eliza<sub>i</sub> wants a cookie, she<sub>i</sub> will ask for one.
- b. If she<sub>i</sub> wants a cookie, Eliza<sub>i</sub> will ask for one
- (23) a. John<sub>i</sub> likes dogs and he<sub>i</sub> donated money to the ASPCA.
- b. \* He<sub>i</sub> likes dogs and John<sub>i</sub> donated money to the ASPCA.
- (24) a. Either Eliza<sub>i</sub> doesn't want a cookie or she<sub>i</sub> will ask for one.
- b. \* Either she<sub>i</sub> doesn't want a cookie or Eliza<sub>i</sub> will ask for one.

The examples in (21) and (22) involve clausal adjuncts headed by *because* and *if*. Because these clauses are merged into the larger structure by adjunction, linear precedence and c-command do not coincide and the BAC correctly predicts that pronouns may either follow or precede their antecedents. In contrast, the examples in (23) and (24) involve coordinate structures, formed with *and* and *or*, respectively. In these pairs, only the (a) examples are good. The (b) examples are ruled out by the second clause of the BAC.

Consider now sentences in which one clause is introduced by the lexical item *but*. To avoid confusion, I will refer to these clauses as *but*-clauses for the duration of this discussion.

- (25) a. I don't think John<sub>i</sub> likes dogs, but he<sub>i</sub> donated money to the ASPCA.
- b. I don't think he<sub>i</sub> likes dogs, but John<sub>i</sub> donated money to the ASPCA.
- (26) a. I don't think Eliza<sub>i</sub> asked for a cookie, but I know she<sub>i</sub> wants one.

- b. I don't think she<sub>i</sub> asked for a cookie, but I know Eliza<sub>i</sub> wants one.
- (27) a. I don't know John<sub>i</sub> very well, but I want to go on a camping trip with him<sub>i</sub>.
- b. I don't know him<sub>i</sub> very well, but I want to go on a camping trip with John<sub>i</sub>.

With respect to the relative position of pronouns and their antecedents, *but*-clauses pattern with the clausal adjunct examples in (21)-(22) and contrast with the coordination examples in (23)-(24). More explicitly, *but*-clauses license backwards pronominal anaphora. The core intuition of Hankamer and Sag (1976) with respect to the BAC is that ellipsis is governed by the same constraints on its distribution that govern the distribution of pronominal anaphors. This intuition should therefore lead us to expect backwards ellipsis in constructions involving *but*-clauses.

Where does this leave us with respect to the examples in (20)? It is true that these examples display characteristic properties of ellipsis, but as the discussion that has just been concluded shows, backwards ellipsis is not unexpected in this environment. Given the behavior of pronominal anaphora in the same environment, the Backwards Anaphora Constraint actually predicts backwards ellipsis to be possible. In other words, these kinds of examples reinforce rather than undermine the importance of the BAC in determining where ellipsis can and cannot apply. It is therefore notable that examples like (20) are impossible when *but* is replaced with a true coordinator like *and* or *or*; however, similar sentences which do not involve such morphological mismatches are fine:

- (28) a. \*I usually do wake up early every day, and Alice always wakes up early every day.
- b. \*I did pass my math exam, and I'm sure that Alice will pass her math

exam.

- (29) a. \* John did clean the toilet, or Alice cleaned the toilet.  
b. \* I did pass my math test, or Alice will pass her math test.
- (30) a. I usually do, and Alice always does, wake up early every day.  
b. I did, and I'm sure that Alice will, pass the math exam.
- (31) a. John did, or Alice did, clean the toilet.  
b. I did, or Alice will, pass the math test.

Morphological mismatches are prohibited in exactly the environments where ellipsis is predicted by the BAC to be impossible.

They are also prohibited in cases where neither forward nor backwards ellipsis is licensed, as when the pivot of the Right Node Raising construction is a DP. This is difficult to show in English, so I will turn to German. German verbs typically assign accusative case to direct objects, just as in English. However, there is a class of verbs whose direct objects appear in the dative case. Examples of the first class are given in (32); examples of the second class are given in (33):

- (32) a. Ich grüßte die Gäste.  
I greeted the.ACC.PL guest.ACC.PL  
'I greeted the guests.'
- b. Hans ärgerte die Gäste.  
Hans annoyed the.ACC.PL guest.ACC.PL  
'Hans annoyed the guests.'
- (33) a. Ich dankte den Gästen.  
I thanked the.DAT.PL guest.DAT.PL  
'I thanked the guests.'
- b. Hans schmeichelte den Gästen.  
Hans flattered the.DAT.PL guest.DAT.PL  
'Hans flattered the guests.'

Right Node Raising is possible when the verbs all select DP complements in the same case, regardless of whether that case is accusative or dative. This is evident from the examples in (34):

- (34) a. Ich grüßte, und Hans ärgerte, die Gäste.  
 I greeted and Hans annoyed the.ACC.PL guest.ACC.PL  
 ‘I greeted and Hans annoyed the guests.’
- b. Ich dankte, und Hans schmeichelte, den Gästen.  
 I thanked and Hans flattered the.DAT.PL guest.DAT.PL  
 ‘I thanked, and Hans flattered, the guests.’

However, when the verbs differ with respect to the case of their DP complement, Right Node Raising becomes impossible. This is illustrated by the examples in (35) and (36).

- (35) a. \*Ich grüßte, und Hans schmeichelte, die Gäste.  
 I greeted and Hans flattered the.ACC.PL guest.ACC.PL  
 Intended: ‘I greeted, and Hans flattered, the guests.’
- b. \*Ich grüßte, und Hans schmeichelte, den Gästen.  
 I greeted and Hans flattered the.DAT.PL guest.DAT.PL  
 Intended: ‘I greeted, and Hans flattered, the guests.’
- (36) a. \*Ich dankte, aber Hans ärgerte, die Gäste.  
 I thanked and Hans annoyed the.ACC.PL guest.ACC.PL  
 Intended: ‘I thanked, but Hans annoyed, the guests.’
- b. \*Ich dankte, aber Hans ärgerte, den Gästen.  
 I thanked and Hans annoyed the.DAT.PL guest.DAT.PL  
 Intended: ‘I thanked, but Hans annoyed, the guests.’

In each of the sentences in (35), the verb in the first conjunct is *grüßen* ‘greet,’ whose DP complement receives accusative case, and the verb in the second conjunct is *schmeicheln* ‘flatter,’ whose DP complement receives dative case. Right Node Raising is not possible in these cases, regardless of the case of the DP pivot. The ungrammaticality of RNR in these instances is also independent of the choice of *und* ‘and’ or *aber* ‘but’ as the lexical item that introduces the second clause.

We have discussed two possible diagnostics for ellipsis at this point: The BAC and morphological mismatches. In this section, we have seen that both diagnostics lead us to the same conclusion: Analyzing RNR as ellipsis is a mistake. While RNR and some kinds of ellipsis share certain characteristic properties (RNR and Gapping, for example, are both produced with special prosody that seems to bear a relationship to information structure content), they do not overlap completely. Right Node Raising is possible in environments where backward ellipsis should not be impossible—most notably, in coordinate structures—and ellipsis licenses morphological mismatches which are unavailable in Right Node Raising. I therefore submit an emendation to Barros and Vicente’s eclectic approach to RNR: It is not the case that Right Node Raising can be analyzed as ellipsis; rather, there are sentences which are ambiguous between a Right Node Raising and an ellipsis account (for examples, please see Footnote 3).<sup>2</sup>

## 2.3 Distributional differences

In the last section, I showed that morphological mismatches are robustly attested in ellipsis constructions but unattested in Right Node Raising. This constitutes an important difference between RNR and ellipsis and one which can be diagnosed in a fairly straightforward way. However, there are other meaningful differences between these two constructions that require more detailed investigation. Among these are differences in the distribution of RNR and ellipsis—specifically, what sorts of syntactic elements may undergo RNR or ellipsis and where they are found in a clause. In this section, I

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<sup>2</sup>Some examples are given in (37) for concreteness:

- (37) a. John will, but Mary won’t buy a new car.  
 b. Shannon will, but Laura might not go to the party.

These cases are ambiguous because there are no morphological mismatches, because the second clause is introduced by *but*, which licenses backwards ellipsis, and because the displaced or elided constituent is a VP.

will discuss two ways in which the distribution of Right Node Raising is distinct from the distribution of ellipsis. First, I will show that it is possible to Right Node Raise constituents which cannot be elided, reinforcing the characterization of RNR as a unidirectional backwards dependency. Second, I will discuss the Right Edge Restriction on RNR, which dictates that the pivot of a Right Node Raising sentence must be right-peripheral within its clause. As this discussion will reveal, no such restriction applies to ellipsis, undermining attempts to treat RNR as ellipsis.

First, consider the classic Right Node Raising sentences given in (38):

- (38) a. Julia likes, but Kitty dislikes, *Titanic*.  
 b. Anie heated, and Clara quickly devoured, the leftover risotto.  
 c. Steven owns, and Max bought, a copy of *Aspects*.  
 d. Jim sold, and Jorge bought, some used books.

Each of these sentences involves Right Node Raising, and in each, the pivot is the direct object of an obligatorily transitive verb. The first conjunct does not form a grammatical sentence on its own (39); the pivot must be interpreted as the direct object in order for the sentences in (38) to be licit.

- (39) a. \* Julia likes.  
 b. \* Anie heated.  
 c. \* Steven has.  
 d. \* Jim sold.

Viewing such sentences as backwards ellipsis is potentially problematic, however, because forwards ellipsis is not possible in the same environment. The following sentences are minimally distinct from the ones in (38)—the only difference is in the direction of the dependency:

- (40) a. \* Julia likes *Titanic*, but Kitty dislikes *Titanic*.  
 b. \* Anie heated the leftover risotto, and Clara quickly devoured the leftover risotto.  
 c. \* Steven owns a copy of *Aspects*, and Max bought a copy of *Aspects*.  
 d. \* Jim sold some used books, and Jorge bought some used books.

This does not appear to be a fact about phonology—there does not appear to be any restriction against sentence-final ellipsis more generally. Two pieces of evidence demonstrate this point. First, VP ellipsis is often sentence-final, as illustrated in (41):

- (41) a. Adriana might go to the party, and Jennifer definitely will go to the party.  
 b. Erik has been swimming, but Boris hasn't been swimming.  
 c. Emma has been sleeping all day. She usually doesn't sleep all day.  
 d. Joanna is taking a practice test, but I'm not taking a practice test.

Secondly, adding words to the end of the sentences in (40) does nothing to improve them. The sentences in (42) are just as bad:

- (42) a. \* Julia likes *Titanic*, but Kitty dislikes *Titanic* a lot.  
 b. \* Anie heated the leftover risotto, and Clara quickly devoured the leftover risotto in a hurry.  
 c. \* Steven owns a copy of *Aspects*, and Max bought a copy of *Aspects* on Tuesday.  
 d. \* Jim sold some used books, and Jorge bought some used books.

If Right Node Raising is ellipsis, it appears to be a kind of ellipsis that only operates in one direction. There is no forwards ellipsis operation that corresponds to RNR. The apparent similarity between RNR and ellipsis in sentences involving *but* where both VPE and RNR are possible is purely accidental.

There is a second issue concerning the distribution of ellipsis and RNR. Just as RNR exists where ellipsis is impossible, it is possible for ellipsis to operate in cases where Right Node Raising is impossible. The clearest example of this reveals itself when we consider the Right Edge Restriction (Postal, 1974), which states that the pivot of a Right Node Raising sentence must be final in each conjunct. The Right Edge Restriction is responsible for ruling out sentences like (43), below:<sup>3</sup>

- (43) a. \* Julia likes a lot, but Kitty dislikes, *Titanic*.  
 b. \* Anie heated in the microwave, and Clara quickly devoured, the leftover risotto.  
 c. \* Steven has, and Max bought on Tuesday, a copy of *Aspects*.  
 d. \* Jim sold, and Jorge bought with the money in his wallet, some used books.

There is no evidence that ellipsis is governed by anything like the Right Edge Restriction. In fact, there is a good deal of evidence that the ellipsis is not restricted to peripheral constituents. Gapping, for example, leaves multiple remnants on either side of the elided material:

- (44) a. Clark is going to the dance with Lois, and Tony is going to the dance with Pepper.  
 b. Steve was frozen for sixty years, and Bucky was frozen for only a few years before he was awakened and reprogrammed by Hydra.

Because Gapping only operates in coordinate structures, it is generally believed to be unidirectional. It is possible, however, that the Right Edge Restriction holds for backwards ellipsis, but not forwards ellipsis. This does not appear the case. Though revers-

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<sup>3</sup>Some of these examples are grammatical on an analysis where heavy shift precedes and feeds RNR. For a discussion of interactions between heavy shift and RNR, see Sabbagh (2007, Appendix A).

ing the Gapping sentences in (44) is impossible, it is feasible to generate NPE pairs where part of the subject is elided in which only the direction of ellipsis changes:

- (45) a. Although Amy's sandwich was delicious, Martha's sandwich was truly awful.
- b. Although Amy's sandwich was delicious, Martha's sandwich was truly awful.
- (46) a. If Katie's daughter is smart, then Alice's daughter is even smarter.
- b. If Katie's daughter is smart, then Alice's daughter is even smarter.

In both pairs, the ellipsis site is inside the subject and therefore non-peripheral. The rest of the subject appears to the left of the elided NP and the entire VP appears to the right of the NP. While Right Node Raising is only licensed peripherally, ellipsis is licensed more generally.

To summarize, we have identified two differences in the distributional properties of Right Node Raising and ellipsis. First, I showed that ellipsis cannot delete the object of a transitive verb in English. Such objects can, however, be Right Node Raised. If there is an ellipsis process behind these sorts of constructions, it must be one that does not exist in the forward direction. Second, I provided evidence that Right Node Raising is a purely peripheral operation—it cannot apply unless the pivot is at the right edge of each conjunct. Ellipsis was shown not to obey this restriction, using evidence from Gapping and NPE. If Right Node Raising is ellipsis, it is subject to restrictions that do not apply either to other types of ellipsis in any direction. The ellipsis approach to RNR cannot explain these differences. I therefore conclude that Right Node Raising and ellipsis are analytically distinct.

## 2.4 Right Node Raising is not radical deaccenting

In the last few sections, I have provided evidence that Right Node Raising operates under a different set of syntactic constraints than ellipsis does. While ellipsis and RNR share many distinctive traits, their distributions do not fully overlap. On the basis of these differences, I have argued that RNR and ellipsis ought to be viewed as separate processes. Nevertheless, the ellipsis account to Right Node Raising remains prevalent. For those who take this approach, one tactic is to argue that Right Node Raising is a kind of ellipsis, but one which differs from the types of ellipsis that I have discussed here. The morphosyntactic and distributional differences between RNR and those kinds of ellipsis is rendered irrelevant on this view, because those elliptical operations are distinct from the one invoked in Right Node Raising.

Hartmann (2000) and Chaves (2008) both develop accounts of Right Node Raising as a kind of prosodically-conditioned or prosodically-licensed ellipsis. Hartmann draws her inspiration from observations about Gapping. Unlike VPE, NPE, or Sluicing, Gapping is not obviously licensed by the presence of a particular head. Instead, there appears to be a relationship between Gapping and focus. The remnants in Gapping constructions like (47) contrast with their corollaries in the antecedent, and this is what allows them to survive deletion:

- (47) a. Rory went to Chilton Academy, and Lane *went to* Stars Hollow High School.
- b. Elliot became High King of Fillory, and Janet *became* High Queen of Fillory.

Hartmann argues that Right Node Raising is similar to Gapping in this respect: Right Node Raising constructions also involve contrast across conjuncts, typically in verb phrases. In RNR, however, the locus of that contrast is peripheral within each conjunct.

In Hartmann's account, both RNR and Gapping are ellipsis processes whose operation depends on contrastive focus. Speaking broadly, this type of ellipsis deletes the portion of a sentence that is given (in the sense of not being focused, cf. Schwarzschild, 1999), leaving intact anything that is focus-marked. She calls this operation **deletion by focus**.

In Right Node Raising, deletion by focus works in the following way. First, focus is assigned to some element in each conjunct. This is formalized in the language of F-marking Selkirk (1984); Schwarzschild (1999). Once focus has been assigned, whatever follows the focused constituent can be deleted at PF. For Hartmann, the Right Edge Restriction is derived by stating that everything following the F-marked constituent must be elided. Ellipsis of non-right-peripheral strings is impossible because the focus-marked constituent must be at the right edge of its domain. As Chaves (2008) observes, however, focused elements in Right Node Raising are not always at the right periphery. Consider the example in (48), first discussed in Postal (1974):

- (48) I find it EASY to believe, but Joan finds it HARD to believe, that Tom is a dishonest person.

In this sentence, focus falls on the adjectives *easy* and *hard*, but the pivot, *that Tom is a dishonest person*, is preceded in each clause by material that is not in focus. Clearly, not everything that follows focus in Right Node Raising must be deleted.

Chaves (2008) offers a proposal that is similar but not identical to Hartmann's. In Chaves's view, Gapping and Right Node Raising are two distinct but closely-related peripheral ellipsis operations. Gapping sentences like the ones in (49) are derived by Left Peripheral Ellipsis (LPE) and Right Node Raising sentences as in (50) are derived by Right Peripheral Ellipsis (RPE):

- (49) a. Someone gave a tulip to Mary, and a rose to Susan.  
b. Several clues were discovered by me in 1982, and by Fred in 1993.

- (50) a. Mary buys and Bill sells used books.  
b. Tom tried to open and Fred tried to close the car door.<sup>4</sup>

LPE and RPE are not the same, but there are aspects of LPE and RPE that overlap. In Chaves' view, all ellipsis is the result of mapping identical linearized predicates to a single phonological realization. LPE is licensed when the linearized predicates meet a number of conditions, including semantic and morphophonological identity, membership in a sublist of a mother domain containing only lists which include the predicate,<sup>5</sup> and placement at the left periphery within a linearization domain. I will not discuss Chaves' proposal for LPE in detail here. His proposal for RPE, however, merits additional inquiry.

According to Chaves, RPE is licensed locally and conditioned by prosodic boundaries. If a phonological structure contains several constituents, constituents at the right periphery are eligible for RPE as long as they meet the relevant conditions on syntactic and semantic identity. A significant question for Chaves' proposal is how prosodic constituents are defined. Chaves assumes that phonological structures are built incrementally as a consequence of local relationships between syntactic constituents. The "phonological constituents" of Right Node Raising need not correspond to any particular element of prosodic structure (e.g., intonational phrase, phonological phrase, phonological word); all that is necessary is that the pivot form a prosodic unit that is separate from and independent of the rest of the sentence. Using this approach, Chaves is able to preserve Hartmann's core insight about focus in Right Node Raising without directly relating Right Node Raising and focus. The heavy contrast associated with focus creates a prosodic break; material that follows the focused constituent is part of a separate prosodic constituent which is deaccented.

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<sup>4</sup>Examples from Chaves (2008).

<sup>5</sup>This is formalized using an HPSG coordination rule, see Chaves (2008, p. 285) for full discussion.

Several aspects of Chaves' account are troubling, however. First, lack of clarity on the nature of prosodic phrasing and what is meant by "prosodic constituent" make it difficult to attain clarity with respect to the predictions of this sort of system. Second, the fact that Right Node Raising only operates at the right periphery appears to be stipulated. This is unnerving. If RNR/RPE is simply suppression of repetitive strings as Chaves' suggests (Chaves, p.c.), it is very strange that it should apply in one direction only. Chaves' offers no explanatory account for the contrast in (51):

- (51) a. John likes, and I hate, ice cream.  
 b. \* John likes ice cream, and I hate.

The Right Edge Restriction is also baked in to his definition of the RPE construction. The fact that such basic properties of RNR are stated rather than derived is deeply unsatisfying.

Even setting all of these concerns aside, there are good reasons to believe that Right Node Raising is not ellipsis of any kind. Much of this evidence comes from differences in the availability of various scope configurations in Right Node Raising and full coordination. The crucial data come from Sabbagh (2007) and are presented in (52) and (53):

- (52) Some nurse gave a flu shot to, and administered a blood test for, every patient.

$(\exists > \forall; \forall > \exists)$

- (53) Some nurse gave a flu shot to every patient and administered a blood test for every patient.

$(\exists > \forall; *\forall > \exists)$

The sentence in (52), which involves Right Node Raising, licenses a reading where the universal quantifier outscopes the existential quantifier—i.e., where nurses covary

with patients. This reading is unavailable in the full coordination example in (53). On an ellipsis account of RNR, the difference between these two sentences is mysterious, because structurally, they are identical. Furthermore, Chaves (2008) states that while prosodic factors condition deletion, deletion is only possible when the information encoded by the deleted material is recoverable from surrounding context. The question of what sort of information can be recovered is not trivial (for discussion, see Chung et al., 1995; Merchant, 2001, 2008; Rouveret, 2012); however, it is not unreasonable to imagine that creating ambiguities from previously unambiguous sentences is outside the purview of an operation that does not change meaning.

Notably, since quantifiers are words, it is still possible that discontinuous affixation might be accounted for by a prosodically-conditioned ellipsis account. At this point, however, such an approach offers very little by way of explanation. Both Hartmann (2000) and Chaves (2008) propose a type of ellipsis operation for RNR that is unique among known ellipsis operations. The evidence provided in Sabbagh (2007) makes even this sort of proposal implausible in the majority of Right Node Raising constructions. If we adopt such a proposal for discontinuous affixation, as Chaves does, we are in effect arguing for a special type of (highly stipulative) ellipsis operation that exists only in the sublexical domain, and only operates in one direction.

The alternative is to abandon ellipsis accounts of Right Node Raising entirely. At this point in the investigation, we have seen a great deal of evidence to motivate this move. RNR exhibits none of the typical behaviors of syntactically- or semantically-conditioned ellipsis, either in its distribution or its realization. Even if we assume an alternative, prosodically-conditioned variant of ellipsis to account for Right Node Raising, structural similarities between coordination and RNR remain at odds with disparities in the interpretive possibilities available for the two constructions. I therefore conclude that Right Node Raising cannot be analyzed as a type of ellipsis, but must be

viewed as analytically distinct.

### **3 The status of discontinuous affixation**

In the last section, I discussed several potential diagnostics that distinguish Right Node Raising and ellipsis. The first of these diagnostics concerns the Backwards Anaphora Constraint of Langacker (1969), which states that anaphors must linearly follow their antecedents in coordinate structures. The discussion in Hankamer and Sag (1976) provides ample evidence that the BAC holds for ellipsis in addition to pronominal anaphora. However, proponents of an ellipsis account for Right Node Raising have argued that the BAC is a faulty diagnostic, and that backwards ellipsis is possible in coordinate structures under the right circumstances (Hartmann, 2000; Chaves, 2008; Barros and Vicente, 2011). I showed that the proffered syntactic evidence for this claim in Barros and Vicente (2011) could not appropriately support the conclusion the authors drew from it with respect to the BAC. While RNR and ellipsis have many properties in common, the distribution patterns they yield are distinct. If Right Node Raising is ellipsis, it is an ellipsis operation unlike any other. Both Hartmann (2000) and Chaves (2008) have proposed that Right Node Raising is best understood as prosodically-conditioned deletion of morphophonologically and semantically redundant material. While the intuition at the core of these kinds of radical deaccenting accounts is elegant, the appropriate formulation of the prosodic conditions on deletion remains elusive. I conclude that Right Node Raising and ellipsis are analytically distinct. However, since there are many sentences that are ambiguous between a Right Node Raising and an ellipsis analysis, it is worth investigating whether discontinuous affixation patterns like RNR or like backwards ellipsis.

### 3.1 Directionality

I will begin my investigation with the observation that discontinuous affixation, like Right Node Raising, is possible in coordinate structures. This is unexpected if discontinuous affixation is a kind of ellipsis, because the Backwards Anaphora Constraint prohibits backwards ellipsis in such environments, and the gap must precede its antecedent in discontinuous affixation. Consider the examples in (54)-(56):

- (54) a. Mary loves her ortho- and her periodontist.  
b. \* Mary loves her orthodontist and her perio-.
- (55) a. His theory over- and her theory under-generates.  
b. \* His theory overgenerates and her theory under-.
- (56) a. Milo studies pre- and immediate post-war France.  
b. \* Milo studies pre-war France and immediate post-.

In each of the (a) examples, the stranded affix is in the leftmost conjunct of a coordinate structure. The (b) examples show that reversing the order of the gap and the antecedent is not possible: The direction of the dependency must always be backwards even in coordinate structures. With respect to the BAC, discontinuous affixation patterns like RNR, not ellipsis.

There are some potential exceptions. It is possible, for example, to coordinate portions of words which appear either to the left or to the right of the portion of the word that remains stranded outside the coordinate structure. The following examples come from Chaves (2008):

- (57) a. His company invests heavily in gold- and silver-mining.  
b. His company invests heavily in gold-mining and -refining.

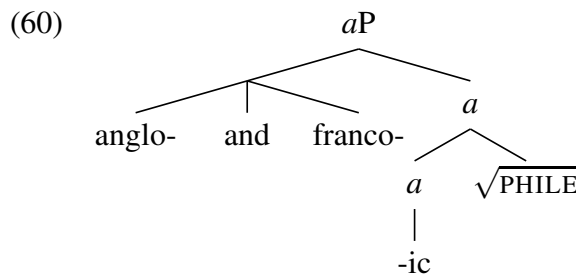
Additional examples are easy to construct, and I provide some in (58):

- (58) a. Sheila isn't a big fan of America, but she sure is anglo- and franco-philic.  
 b. She was so sarcastic that I couldn't tell if she was anglo-philic or -phobic.

However, the (b) examples become ungrammatical if we attempt to add additional material between the coordinator and the second conjunct:

- (59) a. \* His company invests heavily in gold-mining and even -refining.  
 b. \* She was so sarcastic that I couldn't tell if she was anglo-philic or truly -phobic.

Chaves (2008) suggests that a prosodically-conditioned peripheral ellipsis account can readily explain this because the elided material is not at the left periphery. While this is possible, it seems far simpler to assume that examples like (57) and (58) involve coordination of the word-parts themselves, as in (60):



This approach has been suggested before; for good arguments in its favor, I refer the reader to Artstein (2005). If we take examples like (57) and (58) to be analytically distinct from the constructions in (54)-(56), then discontinuous affixation of the type I am discussing here always involves a unidirectional, backwards dependency.

### 3.2 Morphological mismatches

I turn now to the question of morphological mismatches. In Section 2.2, I noted that in environments where backwards ellipsis is unexpected (i.e., in coordinate structures), it becomes clear that Right Node Raising does not license morphological mismatches

like ellipsis does. This is perhaps unsurprising. In ellipsis, a gap is created when a portion of the structure is not pronounced. Not all kinds of morphological mismatches are allowed, even in ellipsis. Only mismatches which are conditioned from outside the ellipsis site are acceptable (Merchant, 2008). Though there is disagreement on precisely why such mismatches are tolerated, a common argument is that externally-conditioned morphosyntactic mismatches are recoverable from the surrounding context; their deletion is therefore allowed. Right Node Raising produces a gap in a different way—either via Across-the-Board movement, which is subject to stricter conditions on identity than ellipsis, or because a single node is dominated twice, in which case morphological mismatches are ruled out by virtue of the fact that they would indicate the presence of incompatible features on a single projection.

If discontinuous affixation is to be analyzed as ellipsis rather than Right Node Raising, then in the right environment, discontinuous affixation should license certain kinds of morphological mismatches, among them differences in tense or agreement morphology. These examples are difficult to construct, but not impossible. Consider the following examples:

- (61) a. His theory over-, and her theory under-generates.
- b. John de-, and Mary re-activates the device every morning.
- c. Anie un-, and Allan re-winds the balls of yarn in the store.

In these sentences, the missing portion of each sentence corresponds to a portion of a predicate and its corresponding complement. The predicate is interpreted with matching tense and agreement morphology in each conjunct. However, it is possible to make changes to the surrounding context that will condition mismatches in tense and agreement. In (62), I show what happens if we change person and number features for one of the subjects for the examples where this is possible:

- (62) a. \* We de-, and Mary re-activates the device every morning.  
 b. \* John de-, and we re-activate the device every morning.  
 c. \* You un-, and Allan re-winds the balls of yarn in the store.  
 d. \* Anie un-, and you re-wind the balls of yarn in the store.

The sentences in (62) are clearly ungrammatical, despite the fact that the mismatches are conditioned by features on T and the gap is a portion of the verb. This is unexpected on an ellipsis account but expected on a Right Node Raising analysis of discontinuous affixation.

The same ungrammaticalities arise when we add a modal or an auxiliary to one of the conjuncts. I will demonstrate this using the sentences in (63):

- (63) a. \* His theory will over-, and her theory under-generates.  
 b. \* His theory over-, and her theory will under-generate.  
 c. \* His theory over-, and her theory is under-generating.  
 d. \* His theory is over-, and her theory under-generates.

It is clear from examples like (64) that it is not the modal or auxiliary itself that makes the sentence ungrammatical, but rather the morphological mismatch that results when that element is present in only one coordinate conjunct.

- (64) a. His theory will over-, and her theory will under-generate.  
 b. His theory is over-, and her theory is under-generating.

It appears that discontinuous affixation does not tolerate morphological mismatches, even when they are clearly conditioned from outside the ellipsis site. In this sense it patterns like Right Node Raising, and not like ellipsis.

### 3.3 Distribution

In Section 2.3, I discussed two ways in which the distribution of ellipsis and the distribution of RNR differ. The first concerned what sorts of syntactic elements can be elided and what sorts of syntactic elements can be Right Node Raised. I observed that it is impossible to elide DP complements of transitive verbs via forward ellipsis, although these same elements may be Right Node Raised. The second concerned where the pivot of a RNR construction must be with respect to the rest of the constituent it is part of. Pivots must obey the Right Edge Restriction, meaning they are always rightmost in the constituent in which they originate. I will address each of these points in turn.

It is unclear what independent evidence for either ellipsis or Right Node Raising would look like in the sublexical domain; this makes the first point somewhat difficult to test. However, there is one point that I believe should be discussed. Certain ellipsis processes appear to target, among other things, lexical heads. We have yet to see evidence that the pivot of a Right Node Raising sentence can be a head. If heads cannot be displaced via RNR, it would be highly surprising to find that morphemes could. It is therefore worth examining the evidence that Right Node Raising can displace heads. To demonstrate this fact, I turn to Peter Eisenberg's work on German.

Eisenberg (1973) observes that certain aspects of the identity condition for deletion appear to hold only when the gap precedes the antecedent. Consider the following:

- (65) a. weil Hans Bier trinkt und Franz Milch trinkt  
because Hans beer drink.3SG and Franz milk drink.3SG  
'because Hans drinks beer and Franz drinks milk'
- b. weil Hans Bier und Franz Milch trinkt
- c. weil Hans Bier trinkt und Franz Milch
- (66) a. weil ich Bier trinke und du Milch trinkst  
because I beer drink.1SG and you milk drink.2SG  
'because I drink beer and you drink milk'
- b. \* weil ich Bier und du Milch trinkst

c. weil ich Bier trinke und du Milch

In each of the examples in (65), the subject of each coordinate conjunct bears the features 3SG; these features are reflected on the verb as agreement. In the examples in (66), the subject of the first conjunct is 1SG and the subject of the second conjunct is 2SG. When the subjects match in person and number, it is possible to omit the verb from the first conjunct, as in (65b); when the subjects do not match, this omission is ungrammatical, as in (66b). No such distinction exists when the gap is in the second conjunct. Similar effects are observed with number and gender features of nouns. If the antecedent and the gap are identical with respect to these features, the gap may precede the antecedent; if they are not, the gap must follow the antecedent.

Based on the discussion in Section 2, it should be clear that while (65c) and (66c) can be analyzed as ellipsis, (65b) and (66b) cannot, because of the BAC. Such examples must instead be analyzed as Right Node Raising. Under an RNR analysis, the fact that they do not license morphological mismatches is unsurprising—the same is true in English. What is most notable about examples like (65b) is not that they cannot tolerate mismatches in morphological features, but that the pivot corresponds not to a VP containing *trinkt* and its complement, but to the verbal head that contains *trinkt* alone. Right Node Raising can apparently displace heads in addition to maximal projections. This makes it at least as viable a candidate analysis for discontinuous affixation as ellipsis.

There is another way in which the distributions of ellipsis and RNR differ, however. This concerns the Right Edge Restriction of Postal (1974). A characteristic feature of RNR is that the pivot must always be on the right periphery of the constituent in which it appears. In a coordinate structure, that means the pivot must be rightmost in each conjunct. No such restriction constrains ellipsis. When we look below the word at

discontinuous affixation, we find that the Right Edge Restriction applies. We cannot, for example, displace a portion of a word that word is followed by something else:

- (67) a. His theory over- and her theory under-generates with respect to the data.  
 b. \* His theory over- with respect to the data and her theory under-generates with respect to the data.

Various explanations for the Right Edge Restriction exist in both movement and multidominance accounts of RNR; most boil down to questions of linearization and the relationship between linear order and hierarchical structure. I will discuss one such explanation in the next section when I present the analysis of Right Node Raising given in Sabbagh (2007) and adapted, here, to account for discontinuous affixation. For now, I simply observe the data in (67) and note that here, too, discontinuous affixation appears to pattern like Right Node Raising and not like ellipsis.

## 4 Sabbagh (2007)'s analysis of Right Node Raising

The approach to Right Node Raising that I adopt in this paper comes from Sabbagh (2007). Sabbagh argues in favor of a movement account of RNR in English on the basis of differences in available scope configurations for Right Node Raising and full coordination. The key examples are given in (52) and (53) and repeated below:

- (68) Some nurse gave a flu shot to, and administered a blood test for, every patient.

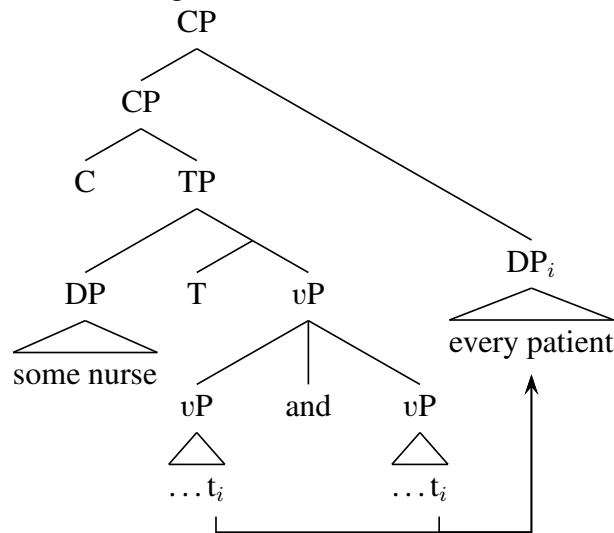
( $\exists > \forall; \forall > \exists$ )

- (69) Some nurse gave a flu shot to every patient and administered a blood test for every patient.

( $\exists > \forall; *\forall > \exists$ )

In (68), the universal quantifier *every* can take scope over the existential, producing a reading where each patient is treated by a different nurse. This interpretation is not available in (69), where the existential obligatorily scopes over the universal. The only reading that is possible is one where a single nurse is responsible for the treatment of every patient in the contextually-specified domain. These data motivate Sabbagh to propose an updated, revised movement analysis of Right Node Raising. Whereas early movement accounts of RNR posited movement to the right edge of the coordinate structure (see Ross, 1967; Hankamer, 1971; Postal, 1974, etc.), on Sabbagh's account, movement may proceed past the coordinate structure as far as the right edge of the matrix CP:

- (70) Some nurse gave a flu shot to, and administered a blood test for, every patient.



In a sentence like (68), the quantified DP *every patient* will end up in a position above the quantified DP in Spec,T *some nurse* as a result of RNR. The universal takes scope over the existential in this configuration because the DP containing the universal quantifier is structurally higher than the DP containing the existential.

This approach to RNR accounts for the scope facts in (68) and (69), as well as related facts concerning the semantics of relational modifiers like *same* and *different*.

However, Right Node Raising is less restricted than both leftward Across-the-Board movement and other types of rightward movement, and these differences must be accounted for. Most notably, Right Node Raising is insensitive both to island effects and to the Right Roof Constraint (RRC), which states that rightward movement cannot move an element beyond the cyclic node (phase) in which it originates. The version of the RRC that appears in Sabbagh (2007) is reproduced in (71).

(71) *Right Roof Constraint* (RRC; Sabbagh, 2007, p. 351)

Rightward movement may move and right-adjoin an element X to the cyclic node in which X is merged, but no further.

Right Node Raising is also distinguished from other varieties of movement by the ways in which it is limited. As I noted earlier, RNR is only possible in cases where the pivot originates at the right edge of the phrase in which it originates. In a coordinate structure, this means that the pivot must originate in the right edge of each conjunct.

(72) *Right Edge Restriction* (RER; adapted from Sabbagh, 2007, p. 356)

In the configuration:

[[A . . . X . . .] Conj. [B . . . X . . .]]

X must be rightmost within A and B before X can be rightward ATB-moved.

The primary challenge for the movement approach to Right Node Raising is to reconcile these facts with the broader theoretical framework. How can RNR be accomplished by movement when it behaves so differently from both leftward ATB movement and other kinds of rightward movement?

The answer, for Sabbagh, lies in the relationship between movement, linearization, and spell-out. Following Fox and Pesetsky (2004), Sabbagh asserts that movement past a phase edge is allowed, but only if it preserves linear order as established at spell-out. In other words, information about linear order is encoded within each spell-out domain

and can never be deleted in the course of a derivation (Fox and Pesetsky, 2004, p. 6). Fox and Pesetsky call this principle **Order Preservation**.

Here's how Order Preservation derives successive-cyclicity for *wh*-movement. In a sentence like (73), spell-out applies cyclically at four places in the derivation: The embedded VP, the embedded CP, the matrix VP, and the matrix CP (the root).

(73) [To whom will he [<sub>vP</sub> \_\_ say [<sub>CP</sub> \_\_ that Mary [<sub>vP</sub> gave the book \_\_ ]]]]?

Spell-out of the embedded VP is triggered when *v* is Merged into the structure. If the *Wh*-expression *to whom* is not moved to Spec,*v* at this point, it will be spelled out with VP, producing the order in (74):

(74) *gave < the book < to whom*

Any future attempts to move *to whom* to the left will therefore create an ordering contradiction; if spell-out applies to the embedded CP subsequent to movement of *to whom* to Spec,C, the result will be the order given in (75):

(75) *to whom < that < Mary < VP*

The orders given in (74) and (75) are clearly in conflict. By (74), *to whom* must be pronounced after the verb *gave*; by (75), it must be pronounced before the VP, which includes the verb. Deriving the sentence in (73) therefore requires movement to proceed successive-cyclicly: The moved *Wh*-phrase must exit each spell-out domain sequentially in order to avoid “[imposing] conflicting requirements on the phonology” (Fox and Pesetsky, 2004, p. 7).

Let us turn now to rightward movement and consider cases of extraposition and heavy NP shift. Sabbagh (2007) notes that the RRC allows movement of a *vP*-internal argument across all other *vP*-internal arguments and modifiers, but not across constituents which are merged above *vP*. This is demonstrated by the contrast between the examples in (76) and (77):

- (76) a. Josh [<sub>vP</sub> returned \_\_ to the library for Jamie], **each of the books she checked out last week.**
- b. Josh will [<sub>vP</sub> eat \_\_ raw], **almost anything you give him.**
- (77) a. \* Max [<sub>vP</sub> described \_\_ for Bill] drunk, **a popular Broadway musical.**
- b. \* Max said that he was going to [<sub>vP</sub> return \_\_ to the library] yesterday, **each of the books that he checked out last week.**

As it is formulated in (71), the RRC appears to be a locality restriction. Movement to the right is possible, but constrained within particular cyclic domains. However, Fox and Pesetsky's Order Preservation principle gives us another way to think about these data. The difference between the good examples and the bad examples is that in the ungrammatical sentences in (77), rightward movement out of vP alters the linear order established when vP is spelled out.

Let's make things a bit more explicit. The VP in an example like (77a) has the order *described a popular Broadway musical for Bill*. In the absence of a specifier (the "escape hatch" of leftward movement), when *v* is Merged into the structure, spell-out is triggered and the entire VP is spelled out. This produces the linearization statement in (78):

(78) *described > a popular Broadway musical > for Bill > drunk*

Subsequent movement of the DP *a popular Broadway musical* out of vP would alter this linear order. Moving the DP to a position adjoined to CP, for example, would produce the linearization statement in (79) on spell-out of CP:

(79) *Max > described > for Bill > drunk > a popular Broadway musical*

The linearization statements in (78) and (79) are in conflict. In the first, *a popular Broadway musical* is linearized before *for Bill* and *drunk*; in the second, *a popular*

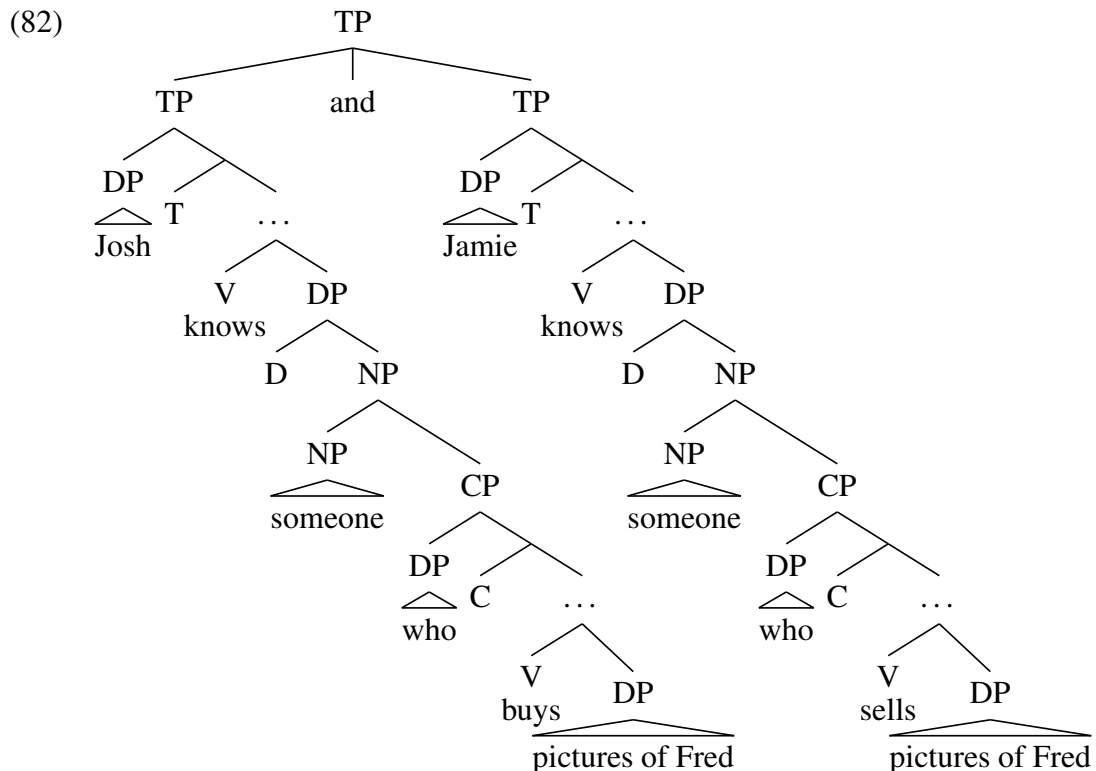
*broadway musical* follows the rest of the VP. By the principle of Order Preservation, the derivation is impossible.

The story is a bit different with Right Node Raising. To begin, let us consider a sentence like (80), which showcases RNR's island insensitivity:

- (80) Josh knows someone who buys, and Jamie knows someone who sells, pictures of Fred.

In this example, the pivot originates inside a relative clause in each of two conjuncts. The analogous full coordination sentence is given in (81) and is assumed to have the structure given in (82):

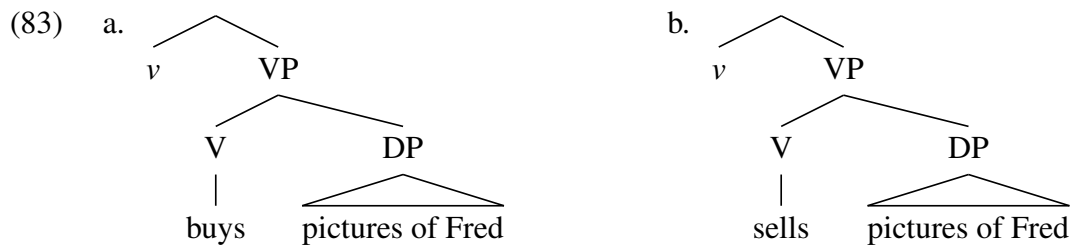
- (81) Josh knows someone who buys pictures of Fred and Jamie knows someone who sells pictures of Fred.



When we consider how cyclic spell-out works, the most important thing to note is that the conjuncts will not be linearized with respect to each other until after (i) the two

conjuncts have been merged together and (ii) a phase head (in this case, C) has been merged above the coordinate structure triggering an additional spell-out cycle. The flat structure of coordination ensures this, because there is no command relationship between the conjuncts. Up until merger of a phase head above the coordinate structure, spell-out will proceed cyclically within each conjunct without reference to anything in the other conjuncts.

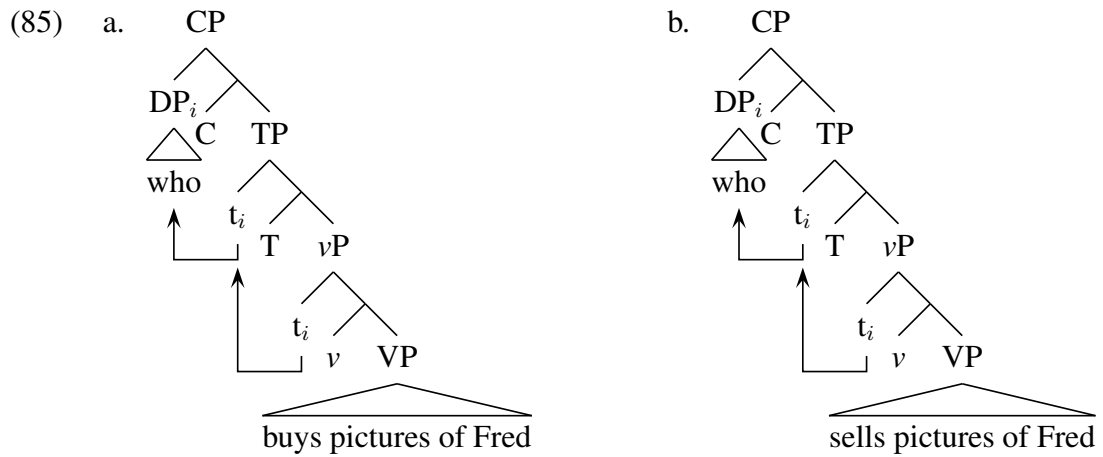
Let's proceed with the derivation step by step. The first stage of spell-out occurs when the lowest *v* head, which is inside the relative clause, is merged above VP in each conjunct, producing the structures in (83):



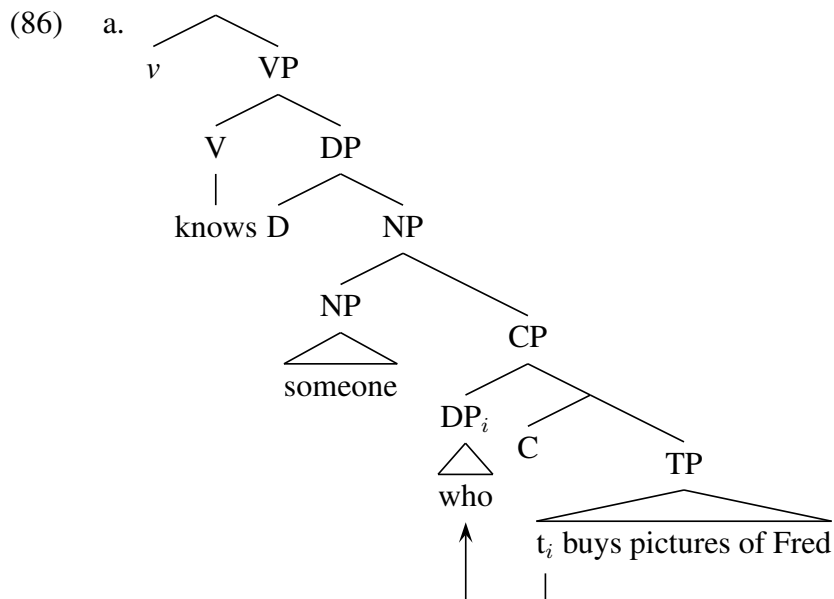
When *v* is Merged into the structure, it triggers spell-out of its VP complement, resulting in the linearization statements given in (84):

- (84) a. *buys* > *pictures of Fred*  
 b. *sells* > *pictures of Fred*

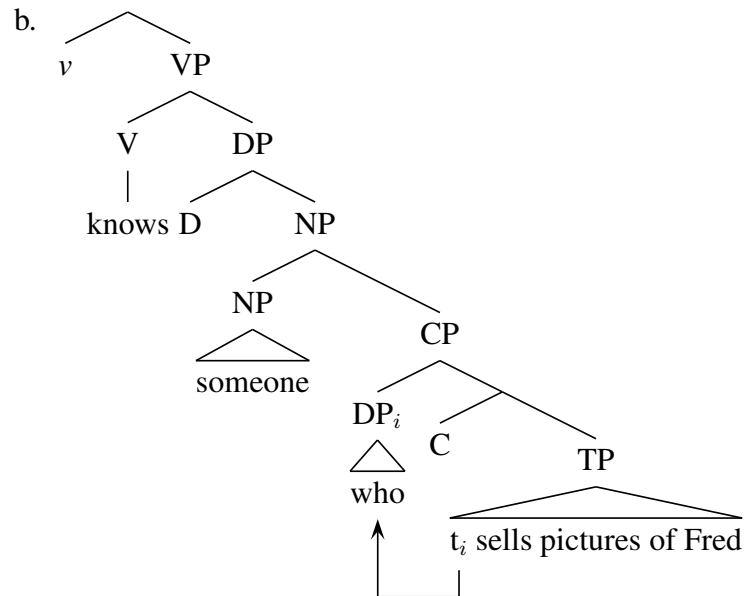
The derivation then proceeds until the phase head C is merged into each conjunct. At this point, the *Wh*-phrase *who* must raise to Spec,C of the relative clause (from Spec,T, where it will have moved to satisfy the [EPP] feature on T). The following structures result:



Because *who* moves to Spec,C, it is not spelled out with TP. As a result, no new information is added to the linearization statements in (84), and the derivation proceeds until the next cyclic node, *v*, is merged in.<sup>6</sup> At this point, we have the structures given in (86):



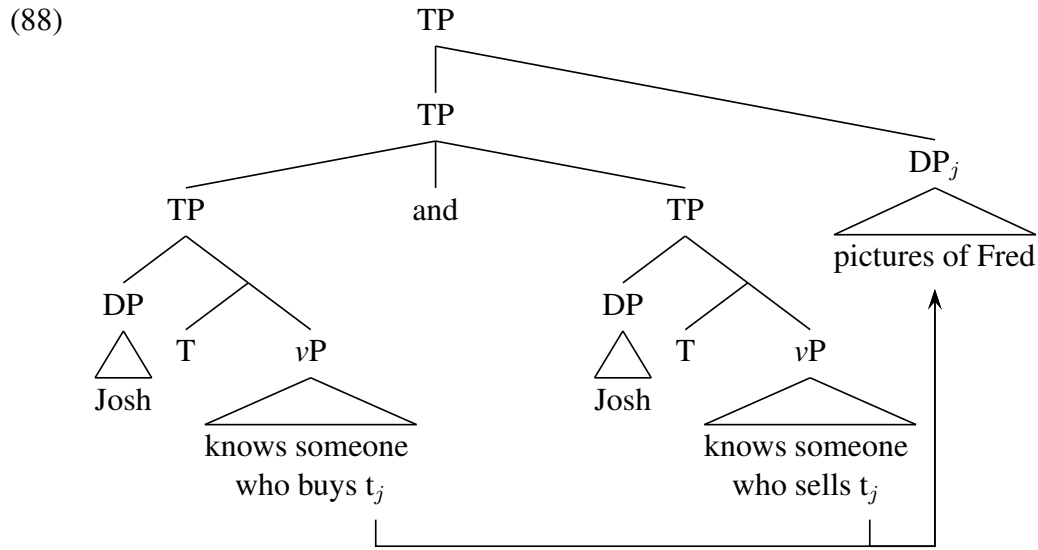
<sup>6</sup>It is common to assume that D is also a phase head; however, Sabbagh does not. Because it is immaterial in these examples, I will formulate the derivation following his algorithm and assume that the relevant phase heads are C, *v*, and P.



Spell-out of matrix VP adds information to the linearization statements in (84) and yields the following:

- (87) a. *knows* > *someone* > *who* > TP (*buys pictures of Fred*)  
 b. *knows* > *someone* > *who* > TP (*sells pictures of Fred*)

Note that none of the linearization statements that have so far been produced say anything about the relative order of conjuncts. This is key—order of conjuncts can only be set once the conjuncts are merged together and another phase head has been merged in above the entire coordinate structure. Crucially, these two steps are ordered. The TPs will be merged together with the coordinator *and* first, and it is at this point that Right Node Raising is invoked:



When C is merged in, the entire coordinate structure is spelled out to produce the linearization statement provided below, in (89):

- (89) *Josh > knows someone who buys > and > Jamie > knows someone who sells > pictures of Fred*

There is no conflict between the linearization statement in (89) and the statements in (88) because *pictures of Fred* follows *buys* in the first conjunct and *sells* in the second in all three statements. Additional movement is possible as far as CP (for a full discussion of why matrix CP is the upper limit of RNR, see Sabbagh, 2007, fn. 31). The same principles that derive island effects in leftward movement and the Right Roof Constraint in heavy NP shift to the right thus also derives the fact that Right Node Raising is sensitive to neither islands nor the RRC. These principles also derive the Right Edge Restriction first observed by Postal (1974). If the pivot were not rightmost in each conjunct, movement across the rightmost element in its conjunct would violate Order Preservation and generate conflicting linearization statements, making the resulting sentence unpronounceable. Non-peripheral RNR is therefore ruled out.

In this way, Sabbagh’s proposal captures the unique properties of Right Node Raising while also deriving the ways in which RNR is different from both leftward movement and other varieties of rightward movement. Order Preservation ensures that Right Node Raising will be freer than both non-peripheral rightward movement and leftward movement. Right Node Raising is rightward movement from a right peripheral position which does not alter linear order; there are therefore no possibilities of generating ordering conflicts which would induce a crash. Other kinds of rightward movement like heavy NP shift involve movement across another constituent. Because there are no rightward specifiers, there is no possibility of “escaping” linearization through the phase edge in rightward movement. As a result, movement may only go as far as the edge of the phase before spell-out is triggered and linear order is set. Nearly unlimited leftward movement is possible as long as it proceeds in a successive-cyclic fashion; as soon as the phase edge is blocked, however, movement must stop because the moved constituent will be unable to further escape linearization. Only two principles are needed to capture key features of all three types of movement: Cyclic spell-out and Order Preservation.

## **5 Adapting Sabbagh’s proposal to discontinuous affixation**

Having established the principles of Sabbagh’s proposal and the rationale behind adopting it, I will now attempt to adapt it to account for cases of discontinuous affixation. Sabbagh suggests in a footnote that this should be possible; however, doing so requires us to assume a theory of morphology in which word-parts are assembled as constituents which may be manipulated by the syntax. I provided ample evidence to support this

move in earlier sections; now, I turn to the precise details of implementation. In order to be maximally explicit, I will now lay out my assumptions. I adopt a version of the theory of Distributed Morphology (DM; Halle and Marantz, 1993, 1994), which provides a platform for understanding how Right Node Raising can apply below the level of the word. The first portion of this section will therefore be devoted to providing the necessary background on DM as well as its applications for the formation of derivationally complex words of English.

## 5.1 Distributed Morphology

The basic, foundational assumption at the heart of DM is that morphemes are bundles of features which correspond to heads in the syntax. There is no separate lexicon or special rules of word-formation; words are formed by grouping these feature bundles together, sometimes via movement. In this way, much of what is traditionally called morphology—putting morphemes together to create words—is accomplished syntactically through the usual syntactic mechanisms of Move and Merge. Because words are simply complex heads, there is no special status assigned to words in the grammar; from a syntactic perspective, words and the individual morphemes from which they are composed are virtually identical.<sup>7</sup>

A crucial component of DM is that the syntax manipulates the bundles of features directly, independent of their phonological representation. Morphemes in the syntax obey usual principles of cyclic spell-out and linearization, and their phonological form

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<sup>7</sup>This is not to say there are no distinctions whatsoever. Embick and Noyer (2001) offers a distinction between individual syntactic terminals and M-words as defined in (90):

- (90) *Morphosyntactic word (M-word)*  
 A (potentially complex) head not dominated by a further head-projection.

This distinction carries some theoretical weight in certain domains of syntax; for our purposes, however, it can be largely ignored.

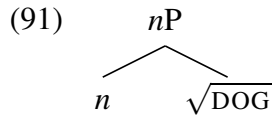
is established only once they are sent to the morphological component of the grammar (in the PF branch). The form of a given morpheme is established during Vocabulary Insertion (VI), when the feature bundles (heads) are replaced with individual vocabulary items. Just prior to VI, morphemes may be undergo various morphological operations in the PF branch which rearrange them and are sensitive to hierarchical structure. These include lowering, fission, and fusion.

The PF operations of morphology are similar to many operations in the syntax, but they are not identical. Fission, for example, removes individual features from a feature bundle and adjoins it to the original feature bundle as a separate node. Fusion performs the reverse operation, combining feature bundles into a single node corresponding to a single vocabulary item. Lowering is perhaps the most like any operation of the syntax—it is virtually identical to head raising, only it involves movement in the other direction. However, because lowering is a PF operation, it is not subject to the same constraints as head raising.

Following VI, a handful of post-linearization operations become available which involve reordering and adjustment of phonological realization on the basis of precedence (rather than command or dominance) relations. After final linear order is established and adjustments are made to account for local, precedence-based changes in pronunciation, prosodic domains are built and the phonological portion of the derivation comes to an end.

Though there is no special status attributed to words in DM, there are nevertheless certain bundles of features that are distinguished theoretically from others. In particular, DM places weight on a distinction between ROOTS, which carry no category information, and AFFIXES, which provide information about how words formed from them will fit into the syntax. Some affixes provide category information, while others contribute to lexical interpretation. As a result, even seemingly morphologically simple words

are believed to have some internal structure. The noun *dog*, for example, is formed by merging the root  $\sqrt{\text{DOG}}$  with a null category-defining head which projects a nominal phrase *nP*:



Other forms are more clearly polymorphemic, as is the case with the adjective *tidal*. While *tidal* has a corresponding nominal form *tide*, in DM there is no need to assume that one is derived from the other. Instead, each is formed by merging a separate category-defining head with the same root. The relevant structures are given in (92):



Because the root and affix are adjacent, the correct phonological realization of *tidal* comes about via local dislocation and readjustment after VI. Most derivationally complex words can be formed in this way.

Inflectional morphology is handled in a somewhat different way in DM. Exponents of certain syntactic processes like agreement and concord are said to be inserted post-syntactically as a reflex of language-specific morphosyntactic well-formedness requirements (Halle and Marantz, 1993). Although the features implicated in these processes (e.g.,  $\varphi$ -features like person, number, gender, and animacy) are often meaningful, we find morphological realizations of these features in places where their meaning is obscured. For example, plurality on a NP picks out more than one of the entity denoted by the noun. Plurality on a verb, however, tells us nothing new—in fact, this ‘redundancy’ is often implicated in explanations of pro-drop and related phenomena (cf. Jaeggli, 1984; Ouhalla, 1993; Ackema and Neeleman, 2003). Among DM analysts, it is there-

fore common to conclude that the exponents of these sorts of syntactic relationships are not interpreted at LF, but added late in the derivation, somewhere in the PF branch.

It should be clear from this discussion that in DM, there is no single morphological component of the grammar. Words are formed not by word-formation rules in the lexicon, but by a combination of syntactic and morphophonological processes. In other words, morphology is distributed throughout the grammar, and operations invoked in creating words are sensitive to hierarchical structure, linear precedence, or prosodic constituency depending on their source and the timing of their operation. This should be kept in mind as we turn to the analysis of discontinuous affixation in the next section. Adopting DM makes several predictions, some of which are quite obvious (it should only be possible to coordinate morphemes which appear in the syntax) and others which will require further explanation (leftward extraction from words should not be possible).

## 5.2 Analysis

Sabbagh (2007) addresses the issue of discontinuous affixation briefly in a footnote. He writes that words may be conceived of as spell-out domains, in which case the fact that Right Node Raising of word-parts is possible but non-peripheral rightward movement is not derives straightforwardly from his approach. With the tools of Distributed Morphology at our disposal, we can now investigate this claim in greater depth. I will begin with the derivation of the example Sabbagh furnishes in his footnote, which is repeated below:

(93) His theory over- and her theory under generates.

I assume that the verbs *overgenerate* and *undergenerate* have the structures provided in (94):



Each verb consists of the root  $\sqrt{\text{GENERATE}}$  and a phonologically null verbal category-defining head  $v$  (not to be confused with the voice head, which I will represent without italics in the section in order to avoid confusion). I assume that  $\sqrt{\text{GENERATE}}$  directly combines with  $v$  because English also has a morphologically simplex verb *generate* made from the same root. The status of the affixes *over-* and *under-* is somewhat trickier to discern. They, too, are syntactic heads, but if they encode a category like noun, adjective, or verb, it is not possible to determine what that category is. This is because *over-* and *under-* combine with other morphemes to create words of all lexical categories:

- (95) a. Nouns: *overtone*, *overlord*, *overbridge*...  
 b. Adjectives: *overprecise*, *overweight*, *overfull*...  
 c. Verbs: *overindulge*, *overexert*, *overeate*...

While some of these words have a different category than we might expect if they contained only *over-* and a morphologically simplex ‘word’ containing only a root and a single category-defining head (e.g., *overweight*, which appears to consist of the affix *over-* and the noun *weight*, but is realized as an adjective), the majority lend themselves to a simpler analysis. Whether or not *over-* and *under-* encode lexical category information of their own, it seems safe to assume that it is the verbal category-defining head  $v$  which projects category information for the whole phrase. The structures provided in (94) should therefore be viewed as complex heads which project the category verb and consist internally of heads of varying categories as well as the root.

Myriad views abound concerning the nature of spell-out below the word. Marantz

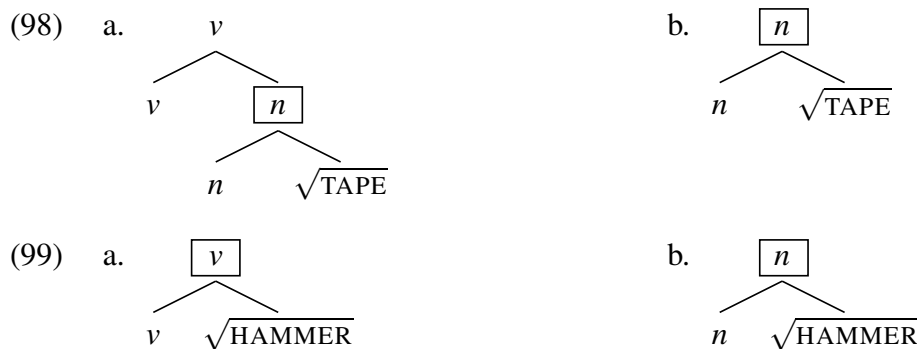
(1997, 2008) and Arad (2003) have suggested that merger of a category-defining head directly with a root defines a phase and triggers spell-out of the root. This sort of approach is intended to explain the difference between verbs like *tape* and *hammer*, which seem related (at least superficially) to nouns of the same form. As Arad observes, verbs like *tape* can only combine with adjuncts expressing a similar function (e.g., instrument) when the adjunct's meaning overlaps with that of the noun:<sup>8</sup>

- (96) a. She taped the poster to the wall with a strip of adhesive.  
 b. # She taped the poster to the wall with strips of wet dough.

Other verbs, like *hammer*, allow greater freedom with respect to adjunction:

- (97) a. He hammered the nail into the wall with a hammer.  
 b. He hammered the nail into the wall with a shoe.

This is explicable if we say that *tape* is merged with a nominal category-defining head prior to being merged with a verbal category-defining head, but *hammer* combines freely with heads of either category. This is illustrated in (98) and (99). Phase boundaries are marked with a box around the phase-defining node:



The syntax of *tape* is more restrictive because the root  $\sqrt{\text{TAPE}}$  always combines with a nominal head first. As a result, *tape* is interpreted at LF as a noun before it is endowed

<sup>8</sup>Examples adapted from Chung (2012).

with additional verbal functional semantics. *Hammer*, in contrast, combines with *n* and with *v* directly to form either a noun or a verb. Unlike *tape*, *hammer* is not truly denominal: The verb *hammer* is interpreted without any reference to the noun *hammer*.

If Arad and Marantz are correct, then the structures given in (94) consist of at least one spell-out domain. These structures are provided again in (100), this time with the phases marked:



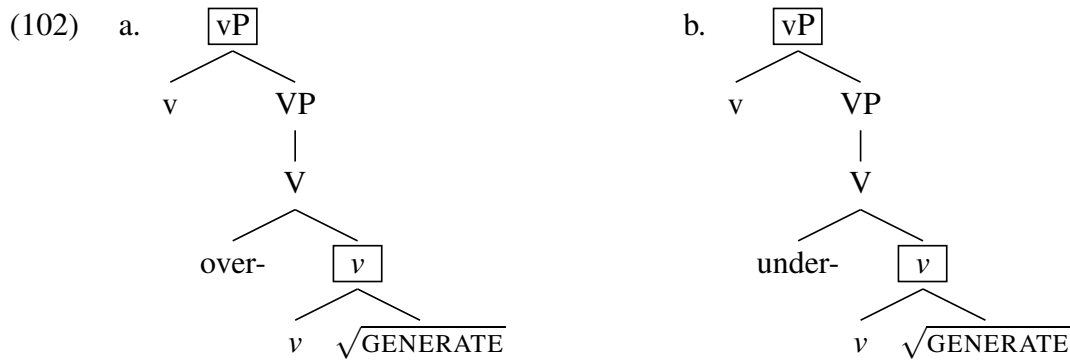
Linearization within these spell-out domains is trivial; however, this kind of proposal may help account for a property of discontinuous affixation which has been observed before. Chaves (2008) notes that discontinuous affixation is not possible unless interpretation of the displaced word-part is consistent across all conjuncts. Examples like (101) are uniformly ungrammatical:

- (101) a. \* Did you find a fire- or a mousetrap?  
 b. \* The black- and the floorboards need replacing.

On the proposal just sketched, the differences in the interpretation of *board* in the words *blackboard* and *floorboard* follows from differences in structure. The fact that a floorboard is a type of board suggests that in that word, the root  $\sqrt{\text{BOARD}}$  combines with a nominal category-defining head early in the derivation; that a blackboard is not necessarily a board suggests its derivation is different. Since as Hankamer (1971) observes, RNR is only possible when the pivot is structurally identical (rather than string-identical) across conjuncts, the Right Node Raising constructions in (101) are correctly ruled out.

Continuing with the derivation of (93), the complex verb heads in (100) must now

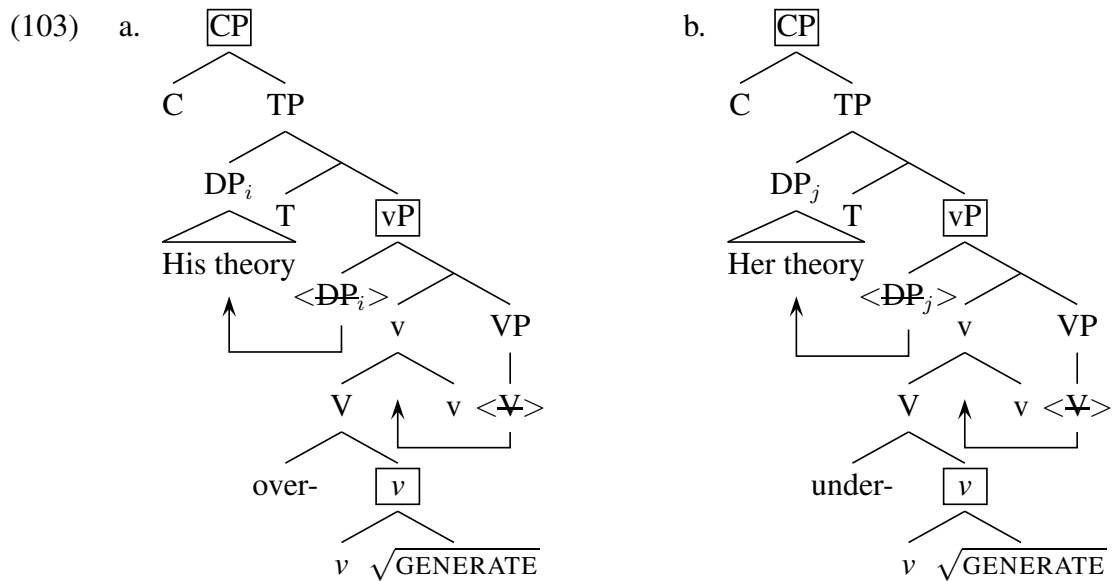
be merged into the larger syntactic structure. Despite their complexity, the structures in (100) do correspond to the individual words *overgenerate* and *undergenerate*. I will therefore assume, following Marantz (1997) and others, that they correspond to V in the larger syntactic structure. In this domain, the next phase head is the voice head *v*. The derivation therefore proceeds until *v* is merged with VP, producing the structures in (102). Phases are again marked.



On the standard view of verb-formation, *V* moves to *v*. Head-movement cannot result in the separation of elements of a complex head—it is not possible to move either of the smaller structures containing the root  $\sqrt{\text{GENERATE}}$  independently of the rest of the complex head. This follows from a more general ban on excorporation discussed in Roberts (1991). Therefore, while the complex head *V* has yet to be spelled out or linearized in its entirety, independent constraints on head movement prevent internal reordering.

The derivation now proceeds until *C* is merged into the structure.<sup>9</sup> The result is illustrated by the trees in (103) below:

<sup>9</sup>I am ignoring the derivation of the subjects *his theory* and *her theory*, as they are not relevant to the issue of Right Node Raising. I will include them as fully-formed DPs in the structure.

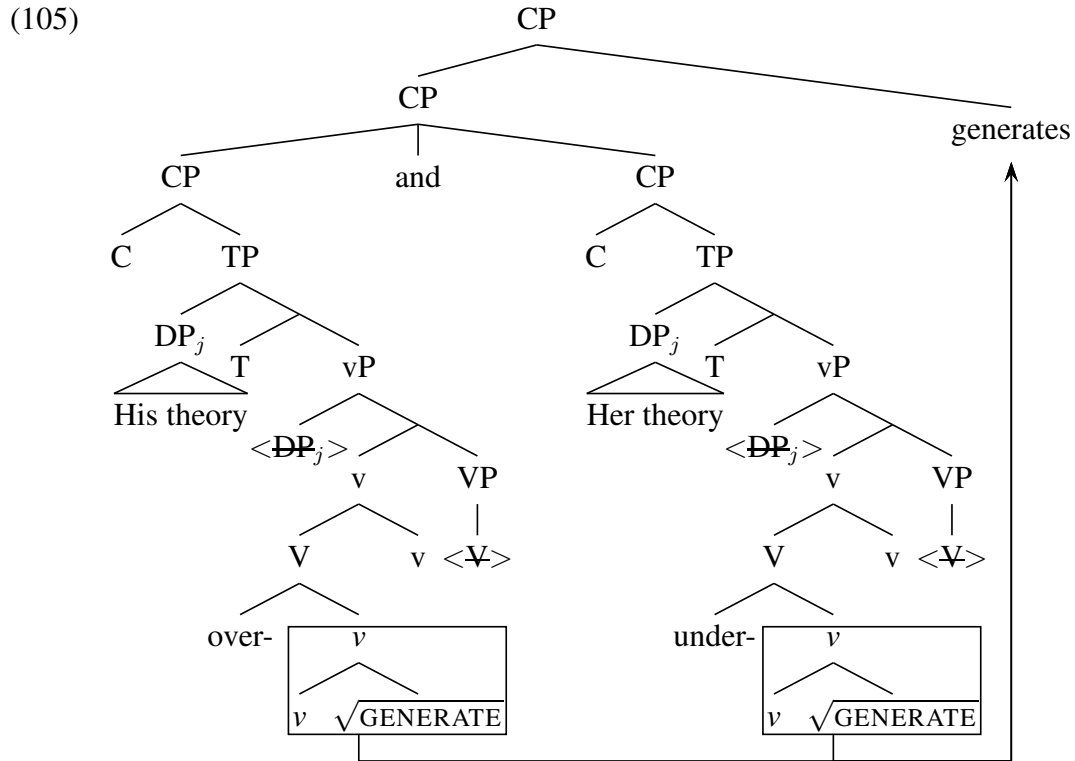


At this point, all of TP must be spelled out, setting linear order (i) between pieces of the complex verb head and (ii) between the subject and the verb for each conjunct. There is one additional issue we have so far ignored—that of agreement. DM has many possible options for dealing with agreement. In the most common of these, morphemes realizing agreement are not present in the initial syntactic structure but are added in where they appear as part of a post-syntactic operation like lowering (Halle and Marantz, 1993). For our purposes, all that must be said is that agreement occurs within each conjunct at some point prior to coordination of the two conjuncts. When C is merged into the structures in (103), TP is therefore spelled out and the linearization statements in (104) are generated:

- (104) a. *his theory* > *over* > *generates*  
 b. *her theory* > *under* > *generates*

These statements establish linear order within each conjunct completely, ensuring that subsequent movement will only be possible if it preserves that order. Notably, though, the order of the conjuncts has not yet been set. As a final step, the conjuncts are merged

together with the coordinator *and* and Right Node Raising applies, moving *generates* to the right edge of the coordinate structure. This yields the structure in (105):



There is one final issue to resolve. How is the entire sentence spelled out and pronounced? There are several possibilities. First, keen observers will have noticed that in the absence of overt material in the projection of C, it is possible to say that the conjuncts are TPs, not CPs. In this example, C is merged above the coordinate structure and spells out the TP coordinate structure which it takes as its complements. This is, in fact, what Sabbagh says of sentential coordination with Right Node Raising of maximal projections. However, this way of proceeding offers us no way of accounting for agreement on the verb. Either agreement cannot proceed at all in this view prior to Right Node Raising (because it is a post-syntactic operation and TP has not been spelled out at the point when the coordinate conjuncts are merged together and Right Node Raising applies) or it has proceeded, but cannot be spelled out until later. Alternatively,

one might posit that a sentence goes through an additional spell-out cycle after the entire structure has been built (i.e., there is an extra spell-out cycle for the root node). Ross (1970) offers one way of formalizing this intuition, introducing an additional projection expressing the illocutionary force of the sentence which is merged above CP. If ForceP defines a phase, its complement will be spelled out. At this point, it seems sufficient to observe that the problem is not restricted to these data, or even to coordinate structures. If phases define spell-out domains as is so often assumed, there must be some additional spell-out domain that includes a root CP to account for root questions like the ones in (106) as well as other, related phenomena.

- (106) a. Who did you kiss?  
       b. Did you see Alice?

Though this is an important issue, its resolution falls outside the scope of this paper. I therefore leave it as a question for future research.

### **5.3 Non-constituent Right Node Raising**

Not all cases of discontinuous affixation are quite as well-behaved as the example in (93). Each of the examples below involves discontinuous affixation where the portion of the sentence that is displaced does not correspond to a single constituent:

- (107) a. John de- and Mary re-activated the device.  
       b. Mary bought the pre- and the post-natal vitamins from the pharmacy.

For many, including Hartmann (2000), Chaves (2008), and Larson (to appear), these cases undermine the movement account of Right Node Raising. Only constituents can move, so the reasoning goes, and since Right Node Raising constructions involve displacement of non-constituents, RNR cannot be analyzed as movement. However, there

is an alternative solution. Sentences like (107) might be formed via multiple applications of Right Node Raising.

Sabbagh (2007) proposes just this to account for non-constituent RNR above the word. He is concerned with the examples in (108) and (109) and others like them:

- (108) a. John has sliced, and Mary also seems to have sliced, a large piece of cake with a shining new knife.
- b. I borrowed, and my sister stole, large sums of money from the Chase Manhattan Bank.
- c. John offered, and Mary actually gave, a solid gold Cadillac to Billy Schwartz.
- (109) a. Ich habe einen Mann, der drei und sie hat eine Frau, die vier  
 I have a man who three and she has a woman who four  
 Katzen besitzt, gekannt.  
 cats owns knows  
 ‘I have known a man who owns tree cats, and she has known a woman who owns four cats.’

The English examples in (108) are actually fairly easy to account for without recourse to non-constituent RNR if we assume that both the direct and indirect object are located in VP. On this view, the verb moves out to raise to the voice head and RNR applies to VP as a whole. However, the German example in (109) is more troublesome. The pivot in these examples includes a noun that originates inside the relative clause, the verb from the relative clause, and the main verb of the main clause.

Sabbagh suggests that such examples might be accounted for if we assume that Right Node Raising can apply more than once within a derivation. In this case, the rightmost constituent in each conjunct raises first, followed by the next rightmost constituent, until the entire pivot has raised. However, movement is only possible when it does not affect linear order. As a result, the various movement operations involved in

producing a string like (109) (or the discontinuous affixation examples in (107)) cannot extend the tree as most types of movement do. Rather, each successively displaced constituent must “tuck in” (in the sense of Richards, 1999) beneath the constituent that has moved before it.

While this might appear troubling at first blush, there are at least two reasons to take the tucking-in proposal seriously. First, RNR is not the only type of rightward movement in which multiple constituents must move separately. Sabbagh provides an example of heavy shift in which multiple constituents are forced to move separately:

(110) I gave today to a policeman an extremely pretty flower.

In (110), the theme *an extremely pretty flower* and the goal *to a policeman* are both displaced from their original position left of the temporal adverb *today* to the right edge of the sentence. The difference between an example like (110) and the Right Node Raising examples in (108) and (109) is that in the latter but not the former, movement obligatorily violates extension.

However, violation of extension is not unheard of. First, there are the Bulgarian examples that motivates Richards’ original tucking-in analysis, in which multiple *Wh*-phrases all move to the left edge of CP, where they remain. Two examples from Richards (1999) are given in (111):

- (111) a. Kogo kakvo e pital Ivan  
           whom what AUX asked Ivan  
           ‘Who did Ivan ask what?’  
       b. Koj kogo kakvo e pital  
           who whom what AUX asked  
           ‘Who asked whom what?’

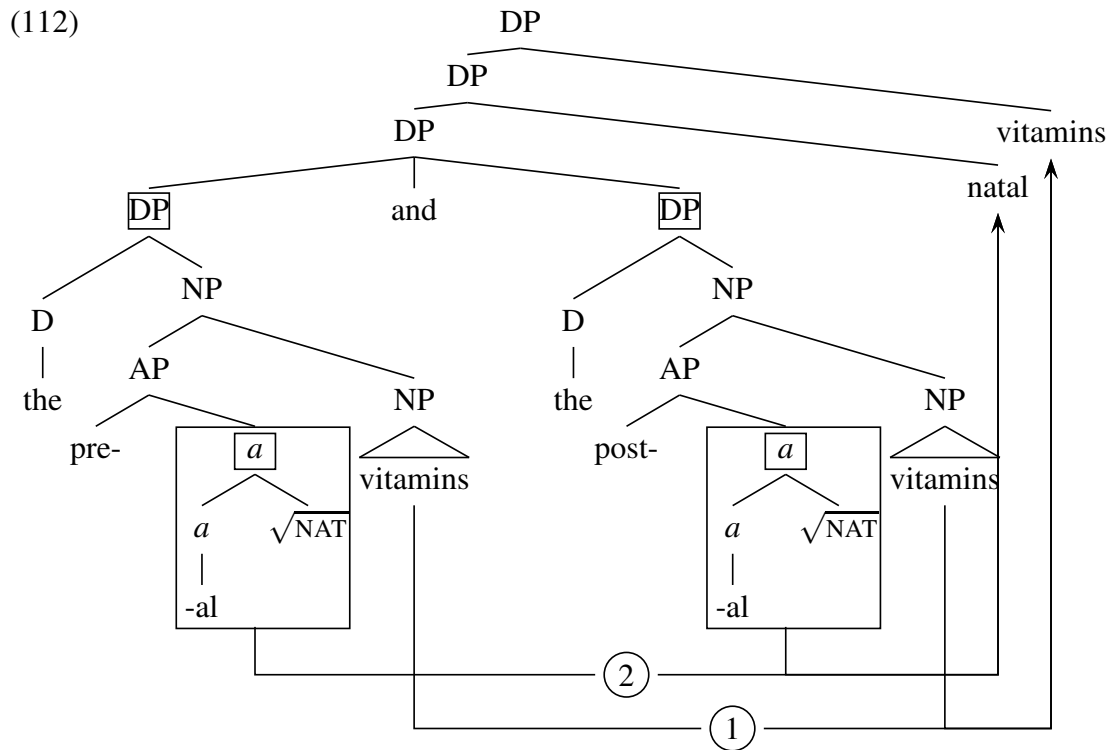
Secondly, head-movement almost never extends the tree. Heads move in highly local configurations, from their original position to the next head up. Although there is plenty

of debate over the correct analysis of head movement, it is quite common to assume that the result of head-movement is an adjunction structure.

Given the frequency with which extension-violating movement occurs, it seems reasonable to wonder whether there is any reality to the extension condition at all. It is certainly true that most phrasal movement extends the tree. It also seems to be true that in the narrow syntax, only upward movement is possible. From a theoretical perspective, the extension condition also makes intuitive sense: Since trees are built from the bottom up and movement is feature-driven, it is sensible to assume that movement occurs only when new nodes are introduced which trigger such movement. However, extension does not necessarily follow from these preconditions. It is possible—even plausible—that phrasal movement typically extends the tree precisely because phrasal movement so often involves movement across phase boundaries, which entails movement to a phase edge. Since phase edges are built when phase heads are merged into the structure, phrasal movement through a phase edge will typically extend the tree. If, however, movement does not proceed through a phase edge (e.g., movement to adjoin) or if a language is parameterized so as to allow the phase edge to expand, there is no *a priori* reason to believe that it will extend the tree.

If we accept this line of reasoning, then the existence of Right Node Raising constructions which require RNR to apply more than once is no longer troubling. Furthermore, if multiple RNR can account for cases like (108) and (109), there is no reason to believe it cannot account for discontinuous affixation. I will now illustrate multiple RNR in discontinuous affixation for the example in (107b). In this example, the coordinate structure is formed from two DP conjuncts. The relevant phases are defined as *a* and DP. As the structure is built, linearization is set. When *a* is merged in, *a* is linearized as *natal*; when *D* is merged in, NP is linearized as *pre-natal vitamins*. When it comes time to coordinate the two conjuncts and apply Right Node Raising, the right-

most edge of each conjunct contains the NP *vitamins*. This moves first, to the right edge of the coordinate structure. Once *vitamins* has been evacuated, the next rightmost constituent is *natal*. Right Node Raising applies again, and *natal* moves to the edge of the coordinate structure and tucks in below *vitamins*. The entire process is summarized and schematized by the tree in (112).



While Right Node Raising cannot move non-constituents, it can move multiple constituents. The result is the same both above and below the word.

## 6 Conclusion

This paper began with the observation, made many times before, that Right Node Raising appears to operate in multiple domains. This claim is contentious for two reasons. The first is empirical: Sublexical constituents never appear to move to the left. This empirical observation is at the center of a controversial theoretical claim—that words

do not have internal syntactic structure and cannot be put together or pulled apart by operations of the narrow syntax. This claim is at the heart of lexicalist morphological proposals.

In deference to a particular version of the lexicalist proposal, Chomsky's principle of Lexical Integrity (Chomsky, 1970), many analysts have argued that cases of discontinuous affixation do not involve movement, but rather some kind of ellipsis or deletion. A major component of the discussion in this paper has therefore centered on teasing apart properties of ellipsis and Right Node Raising. If Right Node Raising is a type of ellipsis, it should share properties with other types of ellipsis which we have seen. I have shown that although RNR and ellipsis have many features in common, their morphosyntactic and distributional properties are not identical. If Right Node Raising is a type of ellipsis, it must be distinct from any other kind of ellipsis.

In fact, both Hartmann (2000) and Chaves (2008) have developed an alternative theory of ellipsis in which the special properties of Right Node Raising are derived from the fact that RNR is conditioned by prosodic phrasing and information structure contributions of the material that immediately precedes it. While this sort of approach does not suffer from the problems of a traditional ellipsis account of RNR, it is nevertheless unable to derive many key facts about Right Node Raising. Most notably, RNR generates new scope configurations which are not available in full coordination. If RNR and full coordination share the same syntactic structure, this is inexplicable.

We are thus left with a quandary: Either Right Node Raising is analyzed as ellipsis only in cases of discontinuous affixation (where scope considerations are irrelevant), or Right Node Raising is not ellipsis of any kind whatsoever. This quandary is resolved, to my mind, by the introduction of a theory of movement in terms of cyclic spell-out. Fox and Pesetsky (2004) use principles of cyclic spell-out, linearization, and order preservation to derive island effects and successive-cyclicity in leftward movement. Sabbagh

(2007) shows that the same principles can be used to explain why Right Node Raising lacks many hallmark properties of movement—notably, sensitivity to islands and the Right Roof Constraint. The result is a coherent theory of movement that accounts for leftward movement, constrained rightward movement operations (e.g., heavy NP shift), and Right Node Raising.

The second half of this paper is devoted to investigating this proposal in detail and exploring how a non-lexicalist theory of morphology like Distributed Morphology (Halle and Marantz, 1993, 1994) can account for discontinuous affixation. I find that the very same principles that account for Right Node Raising above the word can explain why discontinuous affixation operates in the way that it does. In other words, whereas an ellipsis account of RNR requires three distinct ellipsis operations, each with its own special properties, a movement account of RNR in terms of cyclic spell-out, linearization, and order preservation can account for discontinuous affixation without additional stipulation.

Adopting a DM view of word-formation has some additional advantages when it comes to discontinuous affixation. In Distributed Morphology, inflectional morphology (e.g., reflexes of agreement and concord) are not present in the narrow syntax. Syntactic operations like Right Node Raising are therefore predicted not to operate on agreement morphemes. This prediction turns out to be correct: Inflectional morphemes can never be stranded by RNR. More crucially, because DM assumes that morphemes combine to form constituents below the word, it predicts that only such constituents can be Right Node Raised. This, too, turns out to be correct. Discontinuous affixation affects morphemes, not strings (Hartmann, 2000; Artstein, 2005; Chaves, 2008). This is difficult to explain if words are inserted as strings whose internal structure is invisible.

The insights provided by this investigation are twofold. First, in demonstrating the many failings of the various elliptical accounts of Right Node Raising, I have elimi-

nated one of the potential analyses of RNR, narrowing the solution space from three possible options to two. Second, by showing that discontinuous affixation is equivalent to Right Node Raising, I have also provided strong evidence against the lexicalist hypothesis. Right Node Raising can only operate over syntactic constituents; this is true whether it is analyzed as movement or as multidomination. In other words, the fact that discontinuous affixation is a type of RNR demonstrates that the syntax can see and manipulate the internal structure of words.

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