Two Kinds of Ellipsis in English Coordinate Structures*

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Abstract

This paper shows that Right-Node Raising and its mirror image, Argument Cluster Coordination, are fundamentally different phenomena, and provides evidence that the range of constructions in which Right-Node Raising may occur is much wider than usually assumed in the literature. We argue that this phenomenon is best captured as ellipsis of prosodic units under semantic and phonological identity. Argument Cluster Coordination on the other hand, is syntactically restricted and does not require phonological identity. Our analysis of the phenomena is couched in Head-driven Phrase Structure Grammar (Pollard and Sag 1994), augmented with linearization domains (Reape (1994, 1996), Kathol 1995). Here, the relevant constraints can be integrated in a natural way given that these various levels of description are incrementally construed, and are locally and simultaneously available.

1 Introduction

Right-Node Raising (henceforth RNR) is traditionally analyzed as an operation on coordination constructions. For example, the analysis proposed in Ross (1967, 99) resorted to a backwards Conjunction Reduction rule which moved elements “out of” conjuncts. Deletion accounts of RNR make a similar assumption about the central role of coordination: Wexler and Culicover (1980, 298) propose a Right Branch

*FN omitted
Reduction Rule that applies to ‘X – A – and – Y – A’ coordinated structures, and van Oirsouw 1987 argues for a rule of coordinate deletion, formulated as ‘Delete under identity in coordinate structures’. Another example of this is Radford 1988, who analyzes RNR as Shared Constituent Coordination. More recently, Wilder (1997, 88) proposes an account of RNR as deletion of phonological items at PF, but makes no attempt to characterize the non-coordinate instances of RNR that he discusses. Similarly, Hartmann (2000, 20) argues that RNR is best captured as deletion of phonological constituents by an operation called Deletion by Focus, targeting conjoined phrases (Hartmann 2000, 141).

Some authors claim that RNR is impossible in non ‘coordinate-like’ constructions. Examples of this are McCawley (1988, 282) and Hendriks (1995, 54). For instance, the latter claims that coordinate and comparative constructions allow RNR, but not subordinate constructions (her judgments):

(1)  
   a. Paula admires, but Peter detests paintings by Picasso.  
   b. More women admire, than men detest paintings by Picasso.  
   c.*Paula admires, although Peter detests paintings by Picasso.

Indeed, RNR can occur in various kinds of comparative constructions:

(2)  
   a. I know more women who admire, than men who *detest* paintings by Picasso.  
   b. We would be better off in a situation with, than in a situation *without* trade regulations.  
   c. I’m more interested in four- than in five-star hotels.

This has prompted many authors to use RNR as a test for coordination structures, for example, in providing evidence that comparatives are in fact coordinates. However, it has been known for some time that RNR does occur in subordinate/suppletive constructions:

(3)  
   a. It seemed likely to me, though it seemed unlikely to everyone else, that he would be impeached. (Bresnan 1974)  
   b. I doesn’t matter to you, though it matters very much to me, whether my theory is correct. (Bresnan 1974)

(4)  
   I’d have said he was sitting on the edge of, rather than in the middle of the puddle. (Hudson 1976)
In fact, the occurrence of RNR in various parenthetical constructions is well attested, as illustrated by documented examples like those in (5):\footnote{1}{See Huddleston et al. (2002, 1344) for more attested data.}

(5) a. The surface play includes, although it is not limited to, allusions and commentary focusing on art and literature.\footnote{2}{http://muse.jhu.edu/journals/modern_fiction_studies/v045/45.1linton.html.}

b. Allow me, if you will, to shift to mundane – though if anything even more important – events.

c. Since there was no information on the type of job the graduate held, the NAICS code provided the only, even though somewhat limited, indication of whether or not the graduate was employed in the field of his/her major.\footnote{3}{http://www.ctdhe.org/info/pdfs/2005/2005EmployersReport.pdf}

It is well known that subordinate and suppletive constructions are not good candidates for coordination constructions because they are known not to obey the Coordinate Structure Constraint (Ross 1967), do not allow for Gapping ellipsis, and can be fronted, unlike what occurs in coordinate structures (see for instance McCawley (1988, Ch.9)).

Hudson 1976 provides further instances of RNR in a number of other syntactic environments which are clearly not ‘coordination-like’:

(6) a. Of the people questioned, those who liked, outnumbered by two to one those who disliked, the way in which the devaluation of the pound had been handled.

b. It’s interesting to compare the people who like with the people who dislike the power of the big unions. (Hudson 1976, 550)

Williams 1990 and Postal 1994 offer some more examples of this:

(7) Anyone who meets, really comes to like any of our sales people.

(8) a. Politicians who fought for, may well snub those who have fought against chimpanzee rights.

b. Spies who learn when, can be more valuable than those able to learn where major troop movements are going to occur.
In order to maintain an ATB movement analysis of RNR, Williams 1990 uses examples like (7) to argue that Subject+VP structures have a coordinate character, and therefore proposes to extend the concept of coordination to these structures. Such a proposal has little to recommend it, since it raises more analytic problems than it solves and has no independent motivation (see Postal 1993 for discussion).

RNR is in sharp contrast with the mirror image ellipsis pattern, Argument Cluster Coordination (ACC).\(^4\) Not only ACC lack the contrastive intonational contour which is a trademark of RNR, it is far more constrained with regard to the syntactic environments in which it may occur. For example, ACC is limited to coordinate and comparative constructions:

(9) a. Chris gave a book to Dona and a rose to Lee.
    b. Two men died in Baghdad on Tuesday, and in Tikrit on Friday night.
    c. We ship more games to Japan than hardware to our clients right here in Europe.
    d. I met more White Sox fans yesterday than Yankee fans last year.

(10) a.*John gave a book to Mary although a rose to Sue.
    b.*I try to not make noise when (to) sneak in late at night.
    c.*The study compared people who support the president, with people who support the separation of church and state.
    d.*If Tom gave a rose to Mary, then a tulip to Sue.

At this point, several points become relevant. First, one must consider in more detail the range of constructions that allow RNR. Second, there are fundamental differences between RNR and ACC which any linguistic theory must capture. For instance, well-known accounts of RNR and ACC such as the ones advocated in Steedman 2001 for Combinatorial Categorial Grammar (CCG) fail to make such a distinction. This is because both phenomena are analyzed as extraction.

Another important point is that different cases of RNR phenomena should ideally be treated in a uniform way, as following from the same operation. However, Steedman 2001 lacks such a unified account of

\(^4\)This phenomenon is often also referred to as Conjunction Reduction, which is the name of a syntactic rule first proposed in Chomsky 1957.
the data. RNRaising an NP out of a VP coordination like ‘Anna met, and might marry, Manny’ requires forward composition $\triangleright B$, but RNRaising an NP in a VP coordination like ‘I shall buy today, and cook tomorrow, the mushrooms you bought’ requires backward crossed composition $\triangleleft B_x$. These two analysis are given in Figure 1 below, taken from Steedman (2001, 41,62).

No independent motivation is provided for the fact that RNRaising an NP should involve a set of such different operations. There are also even more divergent analyses, e.g. when an NP is RNRaised from a clausal coordination like ‘Tom likes, and I adore, beans’. In this case, a CCG analysis requires subject type raising $\triangleright T$ followed by $\triangleright B$, as seen in Steedman 2001, p. 43:

Figure 2: RNRaising in clausal coordination

In our account of the phenomena – which goes well beyond the coordinate cases – the data are obtained as the result of one general operation, given various syntactic, semantic, and morphological conditions. In section 2 we provide further evidence showing that
RNR in English is far less restricted than usually assumed. In section 3 we look into some of the main linguistic properties that condition the occurrence of RNR and ACC, and discuss some of the problems with the Minimalist and CCG accounts. Section 4 moves on to propose two independent analysis of RNR and ACC in the framework of HPSG.

2 RNR Ellipsis

In this section we offer further evidence for RNR in double object constructions and in transitive clauses, in support of Hudson and Postal’s data, as well as a number of other non-coordinate constructions:

RNR between objects

\[ [V [\ldots \text{NP} [\ldots \text{NP}]]_{VP}] \]

(11) a. There was a shift from bigots who liked, to new-born Christians who disliked the power of the government.

b. The institution directed the interns who already had, to companies that didn’t have a great deal experience with micro-industrial management.

c. Tribal families often favor the boys who already had, to the girls who never had a previous childless marriage.

d. The president introduced the appointees who proposed, to the delegates who actually approved the new company directives.

e. Our study compared people who like, with the people who dislike the president’s handling of the war.

RNR between subject and object

\[ [[[\ldots \text{NP}]_{NP} [V [\ldots \text{NP}]]_{VP}]_{S}] \]

(12) a. The people who hate, are in fact not very different from the people who love George W. Bush.

b. The people who support, usually misinterpret the arguments made by the folks who don’t support the separation of church and state.
RNR in causal constructions

\[ \text{[... NP]s [... NP]s } \]

(13)  

a. Tom claimed that he liked, simply because he knows that Dana absolutely hates, the president’s handling of the economy.

b. It’s actually very simple: the power outage would unlock, therefore allowing us to pry open, the steel door that gives access to the vault.

c. Neutrons act as a kind of nuclear glue to bind the positively charged, and therefore mutually repelling, protons together.\(^5\)

RNR in conditional constructions

\[ \text{[ [... NP]s [... NP]s ]} \]

(14)  

a. If Tom says he liked, then I can only assume that you didn’t like the new Victoria Secret catalog.

b. If there are people who oppose, then maybe there are also some people who actually support the hiring of unqualified workers.

c. I would be willing to interview the people who heard, provided that you interview the folks who claim to have actually seen the risen Christ speak during the ceremony.

RNR in adjunction constructions

\[ \text{[[... NP]s [... NP]s ]} \]

(15)  

a. Once we managed to push open, we realized there were two suspects actually trying to close the nightclub’s back door.

b. John throws out, whereas Mary eats, anything that happens to be in the refrigerator. \(\text{ (Goodall 1987, 97) }\)

c. The first experiment involved a positively, while the second involved a negatively charged particle.

d. Many witnesses claimed, at the same time that other individuals seemed to deny that the front gate had been left open that night.

\(^5\)http://www.bbc.co.uk/dna/h2g2/A6672963
RNR in not-only constructions

\[
[ \ldots \text{NP} \ldots \text{NP} ]
\]

(16) a. Not only did Mary want to hold, but she also wanted to buy one of the baby pandas.

b. Not only is deforestation a major, it is also probably the main factor for primate extinction.

RNR in relative clauses

\[
[ [ [ [ \ldots \text{NP} \ldots \text{NP} ]_{\text{RelC}} ]_{NP} ]_{NP} ]
\]

(17) a. Welcome to my first, which will probably also be my last freelance production gig.

b. This introduces us directly to the first perspective historically, the technical, which is also sometimes called the traditional, positivist or scientific view of the modern era.\(^6\)

c. The only (which is also a pretty big) problem with flirting online is the lack of face to face communication.\(^7\)

RNR in absolute constructions

\[
[ [ [ [ \ldots \text{NP} \ldots \text{NP} ]_{PP} ]_{NP} ]_{NP} ]
\]

(18) You do realize that with the headquarters being located in, the drop must be made near, the western part of the city?

The above collection of data suggests that RNR can occur in virtually any construction, provided that sufficient semantic contrast is elicited. One must bear in mind that both contrast and ellipsis serve a linguistic purpose. Contrast is there to draw attention to important (usually discourse-new) information while ellipsis saves the speaker the redundancy of stating the same expression several times. The oddness that sometimes arises in RNR can be attributed to various factors. Often there is a kind of ‘garden-path’ interference caused by the existence of alternative, non-RNR parsings (such as null-complement and VP ellipsis analyses). A second source of oddness is the lack of a suitable context in order to pragmatically justify the semantic contrast.

\(^6\)http://www.leeds.ac.uk/educol/documents/00002239.htm.

\(^7\)Adapted from http://www.boston.com/personalads/messageboards/flirting/msg1.shtml.
Keller 2001 reports several off-line acceptability experiments devised to investigate whether the right context could increase the acceptability of sentences with medial Gapping. Experiments showed that PP adjuncts and PP complements were equally acceptable as remnants in Gapping, an issue that has always been controversial in the theoretical literature. Some kinds of Gapped sentences could be made as acceptable as their non-gapped counterparts simply by using a suitable context. Hoeks et al. 2006 also report speech experiments showing that context alone can make the elided counterparts more acceptable than the non-elided sentences.

In order to formulate our account, we must consider in more detail the properties associated with RNR and ACC phenomena.

### 3 Ellipsis: Conditions and Processing

One of the reasons for viewing RNR as an ellipsis process rather than a movement or an extraction process is that it is not inhibited by adjoined relative clauses for example, or other structures that often impose conditions on the displacement of constituents. For example, it is often noted that RNR does not show sensitivity to so called wh-islands, the Complex NP Constraint, or the Right Roof Constraint. The status of island constraints as principles of grammar is somewhat unclear, but the fact remains that RNR can involve relative clauses, as seen in (19):

\[
(19) \quad \begin{align*}
\text{a. } & \quad \{ \text{Mary} \newline
\{ \text{I know a man who} \newline
\text{sells, and you know a man who buys,} \newline
\text{pictures of Elvis Presley.} \}
\end{align*}
\]

b. We visited the companies that make, as well as some of the agents who actually use these kinds of products.

c. How can we forget about the story of these thirteen women who wanted, who dreamed of, and tested for, space travel?

In (20) one can observe that the ‘RNRaised’ element can itself be an extraction site, which is unexpected if RNR is a kind of movement:

\[
(20) \quad \text{Who does [Mary buy], and [Bill sell] [pictures of _]?}
\]

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8 See Neijt 1979 and Wexler and Culicover 1980, pp. 299-300, among others.
Finally, in (21) some examples are given that show that no syntactic parallelism is in general required for RNR to occur:

(21) a. Tracy is on the cover of, and featured in, the July 2001 issue.
    b. John flew, and Tom planned to drive, to Paris on Monday.
    c. John bought, and Mary put in the fridge, two bottles of wine.

This kind of evidence is traditionally taken as an argument in favor of deletion analyses. Further arguments come from the fact that RNR allows P-stranding to occur in languages that do not allow P-stranding, such as Irish, Polish, and various Romance languages (McCloskey 1986). The ellipsis analysis is also consistent with the findings in Abbott 1976, whereby non-constituent elements can also be ‘RNRaised’:

(22) a. Joan offered, and Mary actually gave, a gold Cadillac to Billy Schwartz.
    b. I borrowed, and my sisters stole, large sums of money from the Chase Manhattan Bank.
    c. John flew, and Tom planned to drive, to Paris on Monday.

The general view is thus that RNR is fairly insensitive to syntax. However, in extraction-based accounts like that of Steedman 2001, it is claimed that RNRaised NPs cannot be arbitrarily embedded:

(23) *I hope that I will meet the woman who wrote, and you expect to interview the consortium who published, that novel about the secret life of legumes. (Steedman 2001, 17)

We disagree with this position. The above instance of long-distance RNR can be made more acceptable given a better motivated linguistic and pragmatic context:

(24) a. Let me see if I got this straight: Fred said that I will meet the man who edited, and Susan scheduled me to interview the person who actually wrote, the latest NY Times Bestseller book?

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9 There are however some recalcitrant data for an ellipsis account noted by Vergnaud 1974, Jackendoff 1977, Kayne 1994 and others, which we will address in more detail below sections 4.1 and 4.2.4.

10 Although these may arguably be seen as multiple rightward displacement operations.
b. One police officer said that he liked, and another even boasted
that he defended, vigilante justice.

ACC differs from RNR in many respects, one of them being precisely that only ACC exhibits island sensitivity. For example, subject NPs can only be partially elided in NP coordination, and not in S coordination (see also Dowty 1988):

(25) a. A flight to Venice on Monday or to Crete on Tuesday would be equally expensive.

b. Going to Stockholm by train and then to Amsterdam by car turned out to be very easy.

(26) a.*The best swimmer lost and runner won.

b.*The shop that sells fossils is open and souvenirs is closed.

c.*A portrait of Turing was on the desk, and of Gödel was hanging on the wall.

Note however that ACC is asymmetric with regard to complements, because NP-embedded arguments can be remnants in ACC:

(27) a. I made a trip to Venice in April, and to Crete in mid-August.

b. Asimov gave a talk about relativity on Tuesday, and about natural selection on the day before.

Incidentally, the data in (27) are counterexamples to the ‘major constituent condition’ (Chao 1988), given that the PPs headed by to and about are not immediate daughters of the head projection involved in the elision. In our account, we obtain the above island effects without appeal to unmotivated stipulations like major constituent conditions or non-standard constituency assumptions.

In sum, ACC is restricted to a very small number of constructions. RNR, by contrast, is able to occur in arbitrary phrasal structures. Moreover, there are other finer-grained differences between ACC and RNR with respect to identity conditions, as discussed below.

3.1 Sense and Phonological Identity

Insensitivity to island effects is often taken as evidence for a deletion account of RNR. And deletion seems plausible enough, given that phonological identity is a requirement for RNR.11

11Apparent counterexamples to this can usually be analyzed as some distinct kind of ellipsis or anaphoric relation. For example, Kim will sleep in her house, and Sue already
(28) a. John loves, and Mary hates herself/himself.
   b. I said that the birds, but you claimed that the cat, was ill.
   c. Tom said that I, and Ann claimed that she, is the best swimmer.

However, although RNR is sensitive to phonology, semantics also plays an important role, as illustrated by the following deviant examples:

(29)  a. #Sue had to erase, and Tom was asked to join, the board.
   b. #I put the money, while Roger left the boat, in the bank.
   c. #Kate always wanted to be, but Vega actually is, a big star.
   d. #As Tom blew, the rhino decided to thrust, with the horn.

The oddness of these examples can be seen as the result of a violation of the Anti-Pun Ordinance (Zaenen and Karttunen 1984, 316), in which a phrase cannot be used in two different senses at the same time. For example, in (29b) one verb preferentially selects a financial institution, while the second verb selects a geographical location.

We note however that sense identity is not so strong as to deprive RNR of polysemous word senses. Consider the data in (30):

(30) a. It is rumored that the president himself painted, and that Gandhi actually walked through, this very door.
   b. Beethoven composed, but never listened to, the 9th Symphony.

In (30b) the verb compose can only apply to the information sense of music, not to the physical sense of sound (e.g. #Fred composed a loud song). Conversely, listen can only apply to sound and not to the abstract, symbolic sense of sound representations (cf. #Fred listened to the tablature). RNR thus requires a rather abstract semantic identity, given that systematic polysemy is not relevant. We will view this kind of semantic identity as morphological in nature. In other words, RNR on our view is based on the identity of form (morpheme-identity), rather than semantic identity. This hypothesis is consistent with what is observed in languages with a more prolific agreement system, such as Finnish:

has slept in her house is more likely to be an instance of VP ellipsis rather than RNR, given that it can also occur non-peripherally and backwards: Kim will sleep in her house (if the landlord is not around), and Sue already has.
This example is only possible because the possessive suffix added to the noun obliterates case distinctions. In general it is not possible to RNRaise elements with different overt case markings. By assuming that the relevant semantic identity is morpheme-based, we do not need follow Zaenen and Karttunen 1984 in assuming that reference is assigned to NPs, but not to nouns.\textsuperscript{12}

A similar phenomenon can be observed in German for instance, as shown in the following example:

(32) Er findet Frauen und hilft Frauen.

’he finds women and helps women’ (Ingria 1990)

The verb \textit{findet} requires accusative complements and the verb \textit{hilft} requires dative complements. This structure is only possible because \textit{Frauen} doesn’t overtly show morphological case.

The required semantic identity is also weak in other aspects, given that it is well known that RNR does not force coreference of the elided items. For instance, the ‘RNRaised’ elements in (33) and (34) need not be coreferential:

(33) a. Chris likes, and Bill loves, his best friend.

(sloppy/strict/third-party readings)

b. Fred sent Mary, and Tim actually handed Sue, a love poem.

(34) I read a poem to Ann on Monday to Sandy on Tuesday.

Note that the above is also an empirical argument against extraction, movement, or multiple dominance accounts of RNR phenomena, given that semantic identity is not required.\textsuperscript{13} Another problem for

\textsuperscript{12}Moreover, this account also allows us to straightforwardly capture cases like (i), without the need to assume that RNR requires \textit{part-of-speech} or syntactic identity.

(i) *Mary saw, and John has been, flying planes.

\textsuperscript{13}For multiple dominance see McCawley 1982; and for more recent discussions – Johannesen 1998 and Wilder 1999. Although many aspects of this approach are less than clear, the key idea is that the RNRaised elements have more than one mother node.
unbounded rightward extraction is that it is not independently motivated, given that it does not occur in other constructions:  

\[ \text{If Mary said that she wanted to buy, then Fred should not be saying that he preferred to rent, the house on Carrol Street.} \]

\[ \text{If Mary said that she wanted to buy, then she must be serious, the house on Carrol Street.} \]

A final issue pertaining to semantics concerns the nature of the contrasted items. Though there is nothing wrong with RNR with either contrasted raising or control verbs, cases in which a raising verb is contrasted with a control verb are degraded:

\[ \text{Robin often seems, and Leslie seldom appears, to be excessively arrogant.} \]

\[ \text{Robin tried, and Leslie actually managed, to be a successful spy.} \]

\[ \text{Robin seems, and Leslie (has actually) tried, to be a spy.} \]

In our view, whatever oddness inheres in these examples is pragmatic in nature. Just as some coordinations are pragmatically odd rather than grammatically ill-formed (e.g. Fred was early and was British), we suggest that the contextual expectations triggered by the contrast placed on each verb in (37) are incompatible. For example, [Robin seems $\alpha$] and [Leslie sometimes appears $\alpha$] both trigger the same kind of presupposition, namely that the subject of the sentence does not really have the property denoted by the RNRaised expression: $\neg \alpha$. But in the case of [Robin tried $\alpha$], a different presupposition is

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14 This is not to be confused with extrapoision, which is a distinct phenomenon. Extraposition is bounded and does not require prosodic contrast. Still, Postal 1998 argues that RNR need not be peripheral, e.g. Mike may have talked to ti about love and certainly talked to ti about marriage [the tall woman in the black dress]. We agree with Levine (2001, 163) that such examples are ungrammatical. More recently, Sabbagh (2007, 354) also argues that rightward displacement is possible from non-peripheral positions. However, the data offered in support of this (shown below) are inconclusive, because they involve ditransitive constructions in which the two objects do not have a fixed order. Thus there is no reason to assume that they instantiate non-peripheral RNR (Josh will [donate $\underline{\text{to the library}}$, and Maria will [donate $\underline{\text{to the museum}}$, each of these old novels], rather than standard, peripheral RNR: Josh will [donate to the library $\underline{\text{to the library}}$], and Maria will [donate to the museum $\underline{\text{to the museum}}$], each of these old novels. Other data given by Sabbagh 2007 are prone to the same objection, and are thus similarly unconvincing.
triggered: \( \neg \text{capable-of}(\alpha) \). If RNR requires that the focused elements contain parallel expectations created by the contrast, then the oddness (37) can be accounted for in terms of this constructional aspect of meaning.

It is not clear exactly how sense or even presuppositional identity can be enforced in a PF deletion analysis such as those of Chomsky and Lasnik 1995, 125–126, Wilder 1997, and Hartmann 2000, among many others. Wilder 1997 is rather vague about the exact nature of the structures which are deleted at PF, presumably because PF theory is underdeveloped, but the proposal is also hard to understand because Wilder (1997, 88) explicitly backs away from characterizing the domains of application of the deletion rule. However, Hartmann 2000 offers a more explicit account. Here, RNR results from an operation of Deletion by Focus at PF. The argument is that focus insertion licenses the deletion of adjacent material with the “purpose” of achieving optimal alignment of the focus with the edges of the prosodic constituents. For an illustration, consider the (simplified) rule given below, in which the phonological phrases (\( \phi \)) located after the focus are deleted:

\[
(38) \quad \left[ (\ )_{\phi} \cdots (\ )_{\phi} \right] \rightarrow \left[ (\ )_{\phi} \right]
\]

This rule predicts that the focused elements are always edgemost in the non-initial conjunct. However, this is at odds with examples like the one below, in which neither of the focused elements is peripheral:

(39) I find it easy to believe, but Joan finds it hard to believe – that Tom is a dishonest person. (Postal 1974)

This example is important because it shows that RNR is not caused by focus, although it definitely correlates with it. Rather, the locus of ellipsis seems to better correlate with positions in which a prosodic juncture can occur. It is often the case that focus serves to elicit such a juncture, but cases like (39) show that non stressed material can be located between the focused element and the juncture/pause. Hartmann 2000 also makes appeal to syntactic conditions, some of which are empirically wrong. Hartman (p. 141) assumes that conjuncts must exhibit an identical syntactic structure in RNR, a claim which is falsified by examples like (40), for example, or the data in Wexler and Culicover 1980, p. 299 and Goodall 1987, p. 97:

(40) Joan sells, and Fred knows a man who repairs, washing machines made in the former Soviet republics.
Matters are rather different with regard to ACC. In fact, phonological identity is not the relevant identity requirement, given that verbs with different agreement marking do license this kind of phenomenon:

(41)  

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| a | There were two guards when I arrived, and only one guard when I left. 
| b | There was one fatality yesterday, and two others on the day before. 
| c | Is the bridge too tall or the waters too shallow? 
| d | Was the message easy to find, and the instructions easy to follow? 
| e | Why am I so happy, and your friends so sad...? 
| f | Why is the TV on full volume, and all the doors left wide open? 

In (41a) the string *there was* is absent from the second conjunct while the occurrence in the first conjunct bears plural agreement. The example in (41b) illustrates the reverse case, and (41e) shows a mismatch of both number and person. As for agreement insensitivity, ACC bears a striking resemblance to medial Gapping (e.g. *John admires Neil Young, and his friends, Elvis Costello*).

Clearly, a PF account of ACC is rather implausible because of agreement mismatches. Moreover, there are also semantic identity conditions, illustrated in (42) (see also Pullum and Zwicky 1986):

(42)  

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| a | *I [can tuna and be contacted by phone]. 
| b | *George [fired his advisors and a gun in the oval office]. 

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15 ACC agreement mismatches are more visible in languages with richer morphology, such as Italian and Portuguese:

(i)  

Sono arrivate due amiche venerdì ed are arrived two friends Friday and 

un amico lunedì.  

is arrived one friend Monday.  

‘Two female friends arrived Friday, and one male friend arrived Monday’

(ii)  

Chegou um pacote na terça-feira e chegaram duas cartas na sexta. 

arrived one package on Tuesday and arrived two letters on Friday 

‘One package arrived on Tuesday and two letters arrived Friday’
c. *John [grew potatoes and weary of it].

Even though sense identity is required, coreferentiality is not. Beavers and Sag 2004 note that pragmatics and world knowledge can prevent a coreferential interpretation of the subject NPs in examples like the ones seen below:

(43) a. Two men died in Baghdad on Tuesday, and in Tikrit on Friday night.

   b. Several scripts were written by me in 1982, and by my wife in 1993.

If the relevant identity conditions are semantic in nature rather than morphological, then one can explain why verbal agreement mismatches do not hamper ACC, given that verbal agreement typically lacks semantic import. Nominal agreement, on the other hand, always has some form of semantic effect. If this view is correct, then agreement mismatches in nominals should not allow ACC:

(44) #Tom gave the book to Mary on Tuesday, and gave the books to Sue on Friday.

In sum, both ACC and RNR exhibit (different kinds of) sensitivity to semantic information, but only the latter requires phonological identity.

### 3.2 Prosodic Constraints on RNR

Although RNR can occur in many different environments, phonological and semantic factors are not the only properties that govern this phenomenon. Hankamer 1973 and Bresnan 1974 note that unstressed pronouns cannot undergo RNR:

(45) a. *Alice composed, and Tim performed, it.

   b. *He tried to persuade, but he couldn’t convince, them.

This matter appears to be connected with phonology, given that ellipsis becomes much more plausible if the pronoun is stressed:

(46) He tried to persuade, but he couldn’t convince, THEM.
Generally, unstressed pronouns are prosodically weak, and as such are unable to stand in environments that require prosodic independence. They are usually required to \textit{lean} on other elements. In fact, Zwicky 1986 shows that several English argument alternations are disallowed if the unstressed pronominal argument ends up in a position where it cannot lean on its subcategorizing heads: ¹⁶

\begin{align*}
(47) & \quad \text{a. *We took in him right away.} \\
& \quad \text{b. We took in the little mutt right away.}
\end{align*}

\begin{align*}
(48) & \quad \text{a. *Martha told Noel it.} \\
& \quad \text{b. Martha told Noel the good news.}
\end{align*}

\begin{align*}
(49) & \quad \text{a. She destroyed him because of it.} \\
& \quad \text{b. He had taken it from them.}
\end{align*}

The same explanation can be applied to well-known phenomena involving particle shift. The unstressed pronoun must lean on the subcategorizing verbal head:

\begin{align*}
(50) & \quad \text{a. I called up Fred/*him.} \\
& \quad \text{b. I called Fred/him up.}
\end{align*}

Thus, the data in (45) can be explained if only stressed pronouns can behave as an independent unit, and if only prosodically independent elements can be RNRaised. A similar constraint seems to apply to the remnants of RNR. McCawley 1988 points out that cliticized verbs, (unstressed) determiners, and coordination particles cannot be stranded:

\begin{align*}
(51) & \quad \text{a. *I think that I’d, and I know that John’ll, buy one of those portraits of Elvis.} \\
& \quad \text{b. *Tom has always wanted a, so I’ve given him my, coffee grinder.} \\
& \quad \text{c. *Tom is writing an article on Aristotle and Freud, and Elaine has just published a monograph on Mesmer and Freud.}
\end{align*}

¹⁶These data also provide evidence that prosody is sensitive to head-argument syntactic configurations in English. Many authors have argued that prosody is sensitive to syntactic boundaries, category membership, headship, (directionality of) branching, and grammatical relations, in various languages. See for instance Inkelas and Zec 1990b.
McCawley 1988 suggests in effect that both remnants and elided items in RNR must be well-formed Phonological Phrases. Swingle 1995 elaborates on this idea, proposing that the remnants and RNRraised elements are (sequences of) Intonational Phrases. The ungrammatical examples above are – under standard assumptions about prosodic phrasing – ruled out because nonlexical words are required to lean on other elements in their prosodic domain. Unstressed pronouns and determiners must prosodically restructure with their selecting heads, and cliticized verbs must restructure with both the host and the object. The experimental evidence collected in Selkirk 2002 actually provides partial support for both McCawley’s and Swingle’s proposals. Selkirk 2002 reports that in a spoken corpus containing 93 instances of RNR, 90% were found to have very significant phrase breaks in the ellipsis site; in addition, the edge tone was L- (preceded by the expected L+H focus tone) in 89% of the cases. As Selkirk notes, these findings are consistent with either an intermediate/major or an intonational phrase edge.

One problem with the proposals in McCawley 1988 and Swingle 1995 is that they only contemplate instances of RNR involving S-coordination, where it can be expected that remnants and RNRraised elements alike form Intonational Phrases. In other instances of RNR, NP-coordination for example, this is not always the case. Consider the prefixal element (prefixoid) ‘pre-’, which under standard phonological assumptions is generally unable to project its own Intonational Phrase, but which can nonetheless function as a RNR remnant in (52):

(52) Pre- and post-revolutionary France were very different from each other.

In this example there is evidence for an intermediate/minor phrase boundary after each prefixoid: at a normal speech rate a break occurs, and pitch is reset. There is no evidence for the presence of an intonational phrase boundary however, nor would this be allowed under standard rules for construction phonological phrases. The ellipsis in (52) needs only a relatively weak juncture, in contrast to what is observed in clausal instances of RNR.

Booij 1985 shows that word parts with phonological word status allow for the occurrence of ellipsis in Dutch and German. The same is true for English, as the following examples illustrate:

(53) a. Did you order the hard- or the soft-cover edition?

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b. What is the difference between a five- and a ten-minute therapy session?

c. One must learn how to distinguish neuro- from psycholinguistic claims.

d. Explain how a nerve signal moves from a pre- to a postsynaptic neuron.\textsuperscript{17}

(54) a.*He was both a reaction- and a visionary.

b.*The goalkeeper was physical- and mentally prepared.

c.*They were sing- and dancing outside.

One hypothesis which may be general enough to accommodate all the RNR data discussed in this paper, is that both the remnant and the elided items must be able to stand as prosodically independent elements, in the particular domain in which ellipsis occurs. That is, assuming that prosodic phrasing is processed incrementally and locally, and not at an interface stage. In this regard we follow Inkelas and Zec 1990a, who argue for a bidirectional relation between syntax and phonology, articulated in a model in which two grammar components are simultaneously available. The NP-internal ellipsis in (52) would then be obtained as seen in Figure 3:\textsuperscript{18}

(\text{pre}) (\text{and post}) (\text{revolutionary France})

(\text{pre-}) (\text{revolutionary France})

(\text{and post-}) (\text{revolutionary France})

Figure 3: Prosody and Ellipsis

If stressed, an affixoid like \textit{pre-} can project an independent clitic group. This prominence creates a minor juncture and the following material is de-accented. Of course nothing prevents the resulting phonological constituents from being prosodically incorporated into larger phonological domains as the remainder of the utterance is processed:

(55) [(\text{Pre}) (\text{and post}) (\text{revolutionary France})] [(\text{were very different}) (\text{from each other})]

\textsuperscript{17}http://www.msjensen.gen.umn.edu/1135/Worksheets/stems/Test2Topics.html.

\textsuperscript{18}See Chaves 2007 for a more detailed analysis of these lexical ellipsis phenomena couched in the theoretical framework assumed here.
Similarly, the RNRaising of a pronoun can only occur if it is stressed, as seen in (45), because an unstressed pronoun will have to fuse inside the clitic group projected by the head.

Now consider sentences like (56a), in which the only RNRaised element is the noun *inequity* (not the subsequent modifier phrase). In this case, the relevant notion of right periphery is embedded:

(56)  a. [Another important factor is the faith in, or at least the *comprehension* of, inequity], [whether such inequity truly exists or not].

    b. The people [[of whom and to whom] George speaks] are specially selected.

    c. It tells the story of Will Hunting, a troubled prodigy (...) who works as a janitor, despite the fact that [[his knowledge of and facility with, higher mathematics], far outstrips that of anyone in the school, if not the country].

These cases would require non-trivial tree traversals at a PF interface stage in order to identify the possible ellipsis sites. If, on the other hand, ellipsis can occur locally, then processing RNR is rather straightforward. An incremental analysis of prosodic structure is consistent with the fact that RNRaised elements can be embedded.

Crucially, this view also allows us to explain why ellipsis of larger structures and across larger constituents is correlated with stronger breaks and prosodic boundaries. For entirely independent phonological reasons, clauses are associated with sequences of intonational phrases. Prosodic contrast causes a break or a pause and this in turn causes the subsequent elements to be in a separate intonational domain. Since RNR only applies to independent prosodic domains, it follows that if RNR occurs at the clause level then the elided elements must not be intonational phrases. Conversely, if RNR applies at a phrasal or lexical level, then the elided elements are phonological phrases or smaller phonological constituents, simply because of the independent fact that when words combine they yield either phonological phrases, clitic groups, or prosodic words, none of which normally contain major breaks or pauses. Prosodic contrast can promote the formation of various independent prosodic domains where usually only one would arise, thus making way for RNR.

\(^{19}\)http://en.wikipedia.org/wiki/Good_Will_Hunting [22 January 2007]
It should be stressed that nothing in the account we are about to present hinges on assuming a particular flavor of prosodic constituency. Our claim is quite general: RNR is a local ellipsis phenomenon which targets right-peripheral, prosodically independent morphophonological units. Contrastive focus plays an important, albeit independent role, given that it is able to create junctures where usually none can exist. In order to state this proposal more precisely we must adopt some form of prosodic constituency. We could in principle adopt either a boundary-based account (Chomsky and Halle 1968; Selkirk 1972; Rotenberg 1978) – in which strong/weak boundaries alone are assumed to form a constituency only in the weakest sense – or a more elaborate view which argues for a layered hierarchical structure, the *prosodic hierarchy*, advocated by Selkirk (1978, 1980), Nespor and Vogel (1982, 1986), Beckman and Pierrehumbert 1986, and Hayes (1989, 1990), among many others. This is illustrated in Figure 4, taken from Hayes 1990.20

![Figure 4: Phonological Phrasing](image)

20Note that the status of the prosodic hierarchy is not without controversy, but the fact remains that this theory has met a significant crosslinguistic success with regard to a wide range of phenomena – see for instance *Phonology Yearbook 4*, Inkelas and Zec 1990b, and the references therein. Moreover, although the need for a syntax-phonology mapping has empirical basis, it is also widely recognized that many other factors are also relevant, such as rhythm, phrase length, speech rate, speaker differences, style, pragmatics, etc. For example, Scarborough and Jun 2005 experimentally show that the Accentual Phrase is a better predictor for French Liaison than syntactically-based domains, within and across speakers, rates, and syntactically similar dialects, for a given sentence type.
In rhythmical phonology, there are two other levels of representation that mediate syntax and phonology. One is intonated surface structure, on which the second – the metrical grid – is built (Selkirk 1984). The grid is a hierarchical structure without the notion of constituency (Liberman and Prince 1977; Prince 1983). Many authors hold that both prosodic structure and the metrical grid are relevant levels of representation (e.g. Hayes 1984 and Nespor 1990). We cannot address the proper treatment of these levels of representation in this paper, nor can we provide an account here of other relevant properties, such as tone assignment, focus, or information structure.\(^{21}\)

The general principles governing phonological constituency are still not well understood, and so we will restrict ourselves to making the basic standard assumptions about phonological phrasing. The phonological word (\(\omega\)) is the category that immediately dominates the foot. In general, a stem will correspond to an \(\omega\), which may also include other elements that are morphologically associated with the stem. Next, the clitic group (\(C\)), is composed of a sequence of \(\omega\)s that usually contains a content word. This constituent groups elements that are tightly connected, such as (unstressed) clitics and other function words. For English it has been argued that \(C\) is the domain of v-Deletion (cf. \([\text{please}]_C\), \([\text{leave me}]_C\) [alone] \(C\) with \(^*\)[please]_C, \([\text{leave}]_C\) [Mia]_C [alone]_C), as well as of s, z-Palatization.

Next, we have the phonological phrase (\(\phi\)), which groups together one or more \(C\)s. The phonological phrase is a domain for the assignment of stress and intonational patterns. Some authors propose to split this category into other phrases (e.g. intermediate, major and accentual phrases), but we shall simplify here by ignoring such refinements. The \(\phi\) constituent contains a pitch accent and its boundaries are characterized by a H-/L- Phrase tone and a minor juncture. A \(\phi\)-boundary marks the location where parenthetical interruptions can occur, and often coincides with syntactic boundaries. Theories differ as to what kind of syntactic information is relevant for \(\phi\) formation, and as to how this information is to be accessed and encoded. The main theoretical alternatives are relation-based mapping (Nespor and Vogel 1982; Nespor and Vogel 1986; Hayes 1989), end-based mapping (Selkirk 1986; Chen 1987; Selkirk and Shen 1990), and arboreal mapping (Inkelas and Zec 1990a). There are also less syntactically oriented accounts (such as the rather straightforward proposal in Gh-

\(^{21}\)We leave open the possibility of stating our account in terms of approaches based on metrical trees or leaner-trees, e.g. those of Klein 2000 and Haji-Abdalhosseini 2003.
ini 1993) where phonological phrasing is for the most part determined by heuristics on rhythmical balance and symmetry.

φ's can in turn be grouped into an Intonational Phrase (I). This constituent is delimited by either a high boundary tone (H%) or a low boundary tone (L%), in which the initial tone is optional and a final boundary tone is obligatory. Certain constructions systematically project an I of their own, e.g. vocatives, appositives, parentheticals, topicalized constituents, nonrestrictive relative clauses, tag questions, etc. Finally, an Utterance (υ) consists of one or more Is and may extend beyond the sentence.

Ellipsis is possible in the sentences below because intonational prominence allows an adjunct/marker to reside in a prosodic constituent separate from its host:

(57) a. John wrote an interesting, and Elvira wrote a truly brilliant, thesis on nightmares. (McCawley 1988)

b. I've been wondering whether, but wouldn’t positively want to state that, your theory is correct. (Bresnan 1974)

The contrastively stressed adjectives in (57a) are able to project their own prosodic phrases, separate from the ones in which the local head is located. In (57b) we see a case of early prominence at the φ level, given that stress is placed on the verb rather than on the last element before the break. It is at this break that ellipsis may occur. Below we provide a possible realization for one of the conjuncts:

(58) [(I've been) (wondering) (whether)] [(your theory) (is correct)]

The first syllable of wondering is focused and bears a H* pitch accent, followed by a L contour that extends to the phrase boundary. This process allows unstressed pronouns, some determiners, verbs, and prepositions, to restructure into the left constituent, rather than into the right.

This kind of analysis also explains contrasts that arise because of the well-known difficulty that coarguments have in combining into a prosodic constituent of their own. In (59), for example, the NP and S complements of 'persuade' are on the one hand required to merge in a separate prosodic domain because the NP is unstressed, but on the other hand this restructuring is not possible because coarguments cannot be joined in a prosodic domain that is separate from the head.

24
However, with sufficient stress on the NP each complement can yield an independent prosodic domain, and thus the example improves as illustrated in (59):

(59)a. ?[(He tried) (to persuade) [(Mary) (that he was right)] [(but he couldn’t convince) [(Mary) (that he was right)].

b. [(He tried) (to persuade) [(MARRY) [(that he was right)] [(but he couldn’t convince) [(MARRY) [(that he was right)]].

If RNR is a prosody-sensitive phenomenon, then one can resolve other puzzles, such as the one noted by Milward 1994 with regard to (60). His claim was that RN-Raised items must by syntactically identical:

(60) *I saw [a friend of] and [the manufacturer of] Mary’s handbag.

The argument was that the oddness arises because each conjunct requires a different syntactic bracketing for Mary’s handbag (in the first conjunct, [[a friend of Mary’s handbag]]).

But in the present prosody-based account, no appeal to syntactic identity is needed. We know that syntax can have a crucial role on prosodic constituency, and in (60) the prosodic boundaries are somewhat similar to the syntactic boundaries. Crucially, there is no intuitive way in which the syntactic bracketing [[a friend of Mary’s handbag]] can be realized with the prosodic bracketing ‘[[a friend of]] [(Mary’s handbag)]’. The present account therefore rules out (60) for independent reasons, namely that the string Mary’s handbag in the first conjunct cannot yield an independent prosodic constituent. The same explanation can be offered for the oddness of the example in (61), discussed by Dekker 1988 and Houtman (1994, 85–89):

(61) *The brother of, and John believes that, Peter slept.

In the first conjunct the noun Peter is parsed as embedded in the subject phrase while in the other conjunct Peter is the subject. The authors claim that there are syntactic constraints at work in RNR.

Our account rules out (61) because the subject NP the brother of Peter cannot be realized with two independent φ-s: *[(the brother of)] [(Peter)]. It is true that both brother of and Peter can be stressed, but there is little evidence for a φ-boundary after the preposition. For instance, a parenthetical structure cannot be realized at that site: *The brother of, to my complete disbelief, Peter slept. In other words,
independently motivated principles of the phonology-syntax interface, taken together with prosodic constituency conditions, prevent the first conjunct of (61) from yielding an intonational phrase boundary inside the subject NP. Given a present prosody-sensitive account of RNR, cases like (61) are properly ruled out.

4 RNR Formalized

In the present account RNR phenomena boil down to an operation that targets a peripheral string that is identical to another, up to morphophonology. Such a string can be leftward elided if it is prosodically independent, where this notion is determined by the theory of prosodic constituency. Nothing in the current proposal really hinges on any particular details of prosodic structure, but to flesh out the present account of RNR in more precise terms, we will assume the aforementioned prosodic hierarchy and extend the feature geometry accordingly.

Here we assume a constructional version of Head-Driven Phrase Structure Grammar (HPSG). This framework, as outlined in Sag, Wasow and Bender 2003, Chapter 16 and Sag 2007, is referred to as Sign-Based Construction Grammar (SBCG). In this and related frameworks, syntax and semantics are mutually constrained by general constraints, lexical entries and constructions. The psycholinguistic plausibility of this kind of approach, in contrast to that of an approach based on directional mappings (transformations), as discussed at length by numerous authors, including Kaplan and Bresnan 1982, Sag et al. 1986, Fenstad et al. 1987, Jackendoff (1997, 2002), Pullum and Scholz 2005, and Sag and Wasow to appear, includes the possibility of direct embedding within a model of human sentence processing that allows the incremental computation of partial meanings. Several authors like Orgun (1996, 2000), Klein 2000 and Haji-Abdolhosseini 2003, by formulating a sign-based declarative conception of phonology have made similar assumptions for the relation between phonology, syntax and semantics.

We start by assuming that the type phon subsumes various types of phonological units, such as $U$, $I$, $\phi$, $C$, and $\omega$. Each of these introduces a list of units of more basic phonological elements. For example, one can also specify that the description $\text{units list}(C)$ is appropriate for the type $\phi$, depending on the particular version of prosodic layering.
that one chooses to adopt.

\[
\text{phon} \left[ \text{UNITS phon} \right]
\]

\[
\begin{array}{c}
\omega \\
C \\
\phi \\
I \\
U
\end{array}
\]

Figure 5: A type hierarchy of phonological constituents

While phonological descriptions are specified in terms of values for the feature phon (PHONOLOGY), the feature form (from Beavers and Sag 2004; see also Sag 2007) contains the respective morphological forms. For example, there are at least two lexical entries for the verb lie. One specifies a FORM value lie\textsubscript{1}, which inflects as lay, lain, laid, while the other specifies the FORM value lie\textsubscript{2}, which inflects as lied and derives the nouns lie and liar. Both forms are subtypes of a more general type over which other derivational patterns are specified (e.g. both lexical entries give rise to the same present and present participle forms lies, lie, and lying).

A linguistic sign is modelled as a function specifying complex values for the various features of meaning, syntactic category and form. The overall geometry we assume for signs is as shown in (62), where the type of the appropriate values for each figure is as indicated:\textsuperscript{22}

\[
\begin{array}{l}
\text{sign} \\
\text{MP list} \\
\text{SYN} \\
\text{SEM} \\
\text{DOM}
\end{array}
\begin{array}{c}
\left[ \text{morphphon} \right] \\
\left[ \text{phon} \left[ \text{UNITS list(phon)} \right] \right] \\
\left[ \text{CAT category} \right] \\
\left[ \text{INDEX index} \right] \\
\left[ \text{list(sign)} \right]
\end{array}
\]

\[
\left[ \text{FORM list(form)} \right]
\]

\[
\left[ \text{VAL list(sign)} \right]
\]

\[
\left[ \text{RELS list(reln)} \right]
\]

Just as a lexical item imposes constraints on the relationship between a given form, its meaning, and its syntactic category, the sign-based

\textsuperscript{22}We abbreviate as follows: SYN (SYNTAX), SEM (SEMANTICS), CAT (CATEGORY), VAL (VALENCE), DOM (DOMAIN), RELN (RELATION), and RELS (RELATIONS).

27
framework allows constructions, as well as general principles of grammar, to be stated uniformly as constraints of varying grain on feature structures of varying types. In (62), PHON and FORM features are introduced by a new feature called MP (MORPHOPHONOLOGY). Bundling the morpheme and its phonological identity together into a single feature structure will facilitate the formulation of our account of RNR.

The description of the verb like provided in Figure 6 illustrates the various levels of linguistic representation. The value of PHON consists of a single prosodic unit, in this case a prosodic word. This phonological representation is somewhat simplified with regard to stress assignment and syllabic structure, but it will suffice for present purposes. For various proposals within the framework of HPSG that incorporate a much finer-grained representation of phonological content, see Mastroianni and Carpenter 1994, Bird 1995, Coleman 1998, and Klein 2000, among others.

Figure 6: Morphophonology, Syntax, and Semantics of the Verb Like
It is important to consider the role of the feature DOM for phonological realization. This feature was introduced by Reape (1994, 1996) to analyze languages with word order freedom of varying degrees. By incorporating this proposal, HPSG’s linearization theory makes a fundamental distinction between constituency (the mother and its daughters in constructionally licensed local trees, or ‘constructs’) and word order (the lists of forms that ‘realize’ the mother of a construct, determined directly by the order of elements on the mother’s DOM list). This move makes it possible to provide a unified account of word order phenomena in languages with varying degrees of word order freedom. The alternative seems to be to accommodate languages with freer word order such as German, Finnish, Hindi, Russian or Warlpiri in terms of a combinatorial explosion of syntactic constructions or computational operations for which there is no psycholinguistic plausibility. The constraint in (63) embodies the idea that English and Warlpiri, for example, share the same fundamental syntactic and phonological backbone, which is subject to a relatively small set of language-specific constraints.

The feature geometry illustrated in Figure 6, which is discussed in detail in Sag 2007, requires us to reformulate the Constituent Order Principle of Reape (1994, 1996) so that it allows for a theory of phonology to govern the way that linearized elements yield complex prosodic constituents, a revision that is desirable on independent grounds. For this purpose we add a function $F_A$ which is responsible for assembling and aligning phonological representations according to general phonological principles:23

\[
(63)\quad \text{ctx} \Rightarrow \begin{bmatrix}
\text{MP} \\
\text{DOM}
\end{bmatrix} \left( \begin{bmatrix} F_A(\ominus \ldots \oplus \ominus) \\
\ominus \ldots , \ominus \end{bmatrix} \right)
\]

As defined, $F_A$ takes as input MP values only and thus it enforces a rather strong version of phonology-free syntax. Weaker versions can be obtained by allowing each construction in the grammar to impose constraints on MP values (e.g. certain branching constructions yield $\phi$-s, as proposed by Inkelas and Zec 1990a). Alternatively, one

---

23 Cxt here abbreviates construct, the most general type of mother-daughter configuration. The recursion of signs in this constructional version of HPSG is defined via well-formedness of constructs. For further discussion, see Sag 2007 and the motivation provided in Sag in press.
could reformulate $F_A$ to take as input the value of DOM instead, thus permitting access to syntactic and semantic information.

This approach entails that certain lexical and syntactic constructions locally license phonological structures. For instance, if one is working in a prosodic hierarchy framework (see below), lexical and phrasal environments trigger the construction of clitic groups ($C$) and of phonological phrases ($\phi$), clauses and extracted phrases trigger the construction of intonational phrases ($I$), and cross-sentential discourse environments trigger the construction of utterances ($\upsilon$).

To illustrate how phonological composition proceeds via the application of $F_A$, consider the analysis of the NP ‘a book’ sketched in Figure 7. Note that morphophonological strings are visible in the sign

$$F_A \left( \left[ \begin{array}{c} \text{PH} \\ \text{FM} \end{array} \left[ \begin{array}{c} \omega \\ \text{UNITS} \langle \lambda \rangle \\ \text{UNITS} \langle \text{buk} \rangle \\ \langle \text{book} \rangle \end{array} \right] \right) = \right.$$ 

$$\left[ \begin{array}{c} \phi \\ \text{PH} \\ \text{FM} \end{array} \left[ \begin{array}{c} C \\ \text{UNITS} \langle \omega \rangle \\ \text{UNITS} \langle \lambda \rangle \\ \langle \text{buk} \rangle \end{array} \right] \right]$$

Figure 7: Phonological Composition

recursion, since the features FORM and PHON are part of the sign. This has independent motivation in many languages, including in English: the indefinite determiner ‘a’ (as opposed to ‘an’) selects nominal phrases which start with consonants (as in ‘a blue animal’ vs. ‘an animal’), consonantal vowels (in ‘a unique animal’ and ‘a European individual’), or h- words with an unstressed syllable like ‘a HIs story bOoK’ (as opposed to ‘an hisTORical moment’).

Figure 8 depicts a possible phrasing for a simple utterance. Consider first the NP at the bottom of the tree. Being a phrasal projection, this (unstressed) NP yields a phonological phrase. Moreover, the standard assumption about the linearization of arguments is that they are compacted. In practice this means that the entire sign becomes
a domain element of the mother, rather than allowing the domains of
the NP to mix with the domains of the verbal head. More formally,
compaction in head-complement and head-subject constructs is cap-
tured with a more general constructional constraint requiring that ar-
arguments (complements and subjects) constitute linearized blocks that
cannot occur discontinuously:

(64)

\[ \text{compacting-cxt} \Rightarrow \left[ \begin{array}{c}
\text{MTR} \\
\text{HEAD-DTR} \\
\text{DTRs}
\end{array} \right] \]

Thus, subject and complement NPs are compacted as they become
sisters of the verbal head, as illustrated in Figure 8:

Figure 8: Possible Realization of \textit{I like my books}
We now move on to propose an analysis of RNR that takes into account the various syntactic, semantic and phonological properties discussed above. HPSG provides a natural setting for such an account because the relevant levels of linguistic description are locally and simultaneously available. We draw from previous accounts of ellipsis phenomena in HPSG such as Crysmann 2003 and Beavers and Sag 2004. Ellipsis in this approach emerges from the local satisfaction of nondeterministic identity constraints between the daughters and the mother of a given construct. Similarly, in the present account, optionality emerges as a consequence of the fact that the grammar is a pure constraint-based system – constraints can be satisfied in more than one way.

Instead of using a coordination-based rule like the one in Beavers and Sag 2004, we propose to analyze RNR ellipsis via a unary branching construction that can in principle apply to any sign licensed by the grammar, provided that the morphophonological constraints specified by this construction are satisfied. This construction mainly operates on phonological units, deleting one under MP identity with the other as informally depicted in 9.

Given a daughter node with four sequences A, B, C, and B' of phonological constituents c (any kind of constituent from the prosodic hierarchy), a partially deleted mother node can be obtained which contains only the sequences A, C and B, provided that B and B' are identical:

![Figure 9: RNR of independent MP constituents (schematic)](image)

This pattern is formalized in HPSG as sharing of MP sublists:
By requiring that $A$, $B$, and $C$ be nonempty lists (i.e. feature structures of type $n_e$-list), the construction in (65) guarantees that the daughter's $MP$ value must contain at least two pairs of independent phonological units. Moreover, a non-empty list $B$ of morphophonological units must occur twice in the daughter phrase but only once, peripherally, in the mother node. Because the entire content of $MP$ is shared in $B$, it follows that phonological identity is obtained. This is because $PHON$ values are also structure-shared, and that word form identity is obtained because $MP|FORM$ values are also structure-shared. Note that this construction compacts the daughter domain, thereby ensuring that ellipsis and phonological structure are persistent throughout the tree structure, as it ‘percolates’ to other nodes via the DOM feature.\footnote{Further constraints may be specified to account for the fact that there are semantically contrasted elements in $A$ and $B$. We cannot presently address this issue here, and refer the reader to various treatments of Information Structure within the HPSG framework such as Kuhn 1996, Gundel 2003, Haji-Abdolhosseini 2003, and Wilcock 2005.}

The $MP$ material in the mother’s DOM list is included in the mother’s $MP$ because of the Constituent Order Principle in (63) (repeated here as (66)), which applies more generally to all constructs licensed by the grammar:

\[(66)\]

In order to illustrate this construction at work, consider the example in (67). This sentence is realized with a relatively neutral contour, and with a single major juncture before the coordination particle:
Such a realization does not license RNR, because the phonological constituency is not compatible with the constraints imposed on the daughter of rnr-constructs by (65). However, if the main verbs of both conjuncts are stressed, a juncture arises and RNR is possible:

\[
\begin{align*}
\text{DOM} \left\langle \begin{array}{c}
\text{MP} \left\langle \begin{array}{c}
\text{PH} \left[ I \left( \text{we, like, books} \right) \right],
\text{FM} \left( \text{but, Pat, hates, books} \right) \right] \right\rangle \oplus \left[ \begin{array}{c}
\text{PH} \left[ I \left( \text{we, like} \right) \right],
\text{FM} \left( \text{but, Pat, hates} \right) \right] \end{array} \right\rangle \right. \\
\text{MP} \left\langle \begin{array}{c}
\text{PH} \left[ I \left( \text{we, like} \right) \right],
\text{FM} \left( \text{but, Pat, hates} \right) \right] \end{array} \right\rangle \end{align*}
\]

Figure 10: RNRaising of books

In this case, the elided material corresponds to a simple NP, but nothing prevents more complex structures from being elided as well. As long as the phonological constituent is independent, RNR can occur.

Since cat identity is not required for RNR this allows us to straightforwardly capture cases which involve different pred specifications (adapted from Whitman 2002):

(68) Would you like to meet a movie star$_{\text{pred}-}$ or to be a movie star$_{\text{pred}+}$?

Similarly for the value of case. In our account there is no problem with RNRaising homophonous elements bearing different case requirements as discussed in (31) for Finnish, and in (32) for German. Note also that nothing in (65) explicitly encodes the optionality of RNR. Rather, optionality follows from the fact that this non-branching construction is independent from the other grammar constructions. Any given sign licensed by the grammar is also eligible for an additional parse in which the RNR construction applies, provided that the constraints in (65) can be satisfied. This approach follows the view that the RNR construction as a speaker-driven strategy used to avoid repeating otherwise redundant phonological elements.
Figure 11 shows where *rnr-construct* fits into the hierarchical organization of constructs in the grammar. This approach to construc-

```
cxt
  headed-cxt
  coord-cxt ... 
  hd-subj-cxt hd-comp-cxt ... rnr-cxt
```

Figure 11: Construct Type Hierarchy Fragment

tional analysis allows general, construction-specific, and intermediate-grain constraints to be stated naturally. In addition, it allows a straightforward account of the fact that many types of construct, not just coordinate constructs, license RNR, as we have seen.

## 4.1 Semantic Integration in RNR

For the most part our ellipsis analysis of RNR does not make any commitment about the semantics of these constructions. In the previous sections, however, the data that we have examined indicates that the construction of meaning can occur independently from ellipsis. Hence, we can adopt a general Semantic Compositionality Principle, which regulates the semantic construction of all constructs licensed by the grammar:25

\[(69)\]

\[
\text{cxt} \Rightarrow \left[\begin{array}{c}
\text{MTR}
\text{DTRS}
\end{array}\right] \\
\left[\begin{array}{c}
\text{SEM}
\text{DTRS}
\end{array}\right] \\
\left[\begin{array}{c}
\text{RELs} \oplus \ldots \oplus \text{RELs} \\
\text{CONS} \oplus \ldots \oplus \text{CONS}
\end{array}\right]
\]

This principle states that the semantic content of every phrasal node licensed by the grammar corresponds to the concatenation of the semantic content of the local daughters.

---

25CONS here abbreviates CONSTRAINTS, and introduces a list of scoping relations that specify how predicate relations interact. For more details see Copestake et al. 2006.
But as observed by Vergnaud 1974, Abbott 1976, n.3, and Jackendoff 1977, RNR in English exhibits a phenomenon in certain constructions that remains recalcitrant for virtually all extant accounts:

(70) a. Peter sings, and Mary whistles, a similar tune.
    b. John defeated, and Mary lost to, very different opponents.
    c. Fred spent, and Mia lost, a total of $10,000.

In these cases the ‘raised’ elements cannot be realized in situ with the same semantic interpretation. For instance, in (70b) John may have lost to a given opponent and Mary to another, while the ‘raised’ NP refers to both individuals. It seems that in these examples there is some kind of semantic integration process at work, such that the right-peripheral elements are either equated as a unique entity, as in (70a), or grouped into a plural description, as in (70b,c). Here we provide examples of the latter in NP and in PP coordination:

(71) a. The relevant passage is between the third and the fifth lines.
    b. The Lease contains a rent provision that increases the annual lease payment in the third and in the fifth years.

This process is semantically somewhat restricted, given the impossibility of RNRaised elements that are not separately compatible with each antecedent:

(72) a. *John loves, and Mary hates, themselves.
    b. *Tom seems, and Mary probably is, neighbours/friends.
    c. *I said that the birds, but you claimed that the cat, were ill.

It is unclear whether these data are the result of a processing effect or part of the grammar. Beavers and Sag 2004 suggest that this is a form of semantic integration, whereby the two ‘shared’ elements are semantically linked during processing.26

For example, consider the sentence in (70c). Suppose that the speaker does not know how much money Fred spent, nor how much money Mia lost, but does know that the total amount is such-and-such. To convey this information, the speaker is thus apparently forced to use a sentence like (73):

(73) Fred spent some money and Mia spent some money

26For an alternative view, see Yatabe in press.
plus some continuation like *and the total of that amount was $10,000.*
Moreover, since the strings *some money* are peripheral, RNR can ‘apply’. The fact that only one occurrence of this string is realized may cause the speaker to substitute a more specific description for a less specific one. In other words, the phonological string that is ‘RNRaised’ is superseded by a more informative one. From the speaker’s point of view, the meaning of the sentence remains the same. It is only that the background information about the total amount of money has become an explicit part of the utterance.

### 4.2 ACC Formalized

We have seen that ACC and RNR phenomena differ in many ways: unlike RNR, ACC is restricted to coordination and comparative constructions, is subject to island effects, and imposes sense identity rather than phonological identity. The present account takes as a point of departure the proposals of Yatabe (2003, 2004), Crysmann 2003 and Beavers and Sag 2004, which impose (morpho)phonological identity on ACC. We revise these accounts so that the criteria discussed above are met.

Following Beavers and Sag 2004, we treat coordination as binary branching. Intuitively, the proposal requires that in order for ACC to occur, the linearized elements in the DOM list are the same up to sense identity. This is depicted in Figure 12 in a simplified form, ignoring domain structures. In case $k > 1$, then each conjunct must have $k$ identical predications. Since the predications are encoded in the signs located in the DOM list, we can easily make sure that they are left-peripheral. Thus, the domains at the left-periphery of the non-initial conjunct need not be present in the mother node, provided they contain identical predications (up to relation name identity, not argument identity):

$$
[\text{DOM } \langle R_0(\ldots) \ldots R_k(\ldots) \rangle \oplus \Box \oplus \Box]$
$$

$$
[\text{DOM } \langle R_0(\ldots) \ldots R_k(\ldots) \rangle \oplus \Box] \ [\text{DOM } \langle R_0(\ldots) \ldots R_k(\ldots) \rangle \oplus \Box]$
$$

Figure 12: Ellipsis of linearized elements under sense identity

On the other hand, if $k = 0$ then no left-peripheral predications are compared and the DOM value of the mother node simply corresponds
to the concatenation of all the domain elements contributed by each conjunct: $A \oplus B$. This captures both ACC and non-ACC coordinations with a unique set of constraints.

In order to formalize this account, we first posit a type of construct for coordinate structures: coordinate-construct ($coord$-ctx; Figure 11). Following Beavers and Sag 2004 one can view this as a phrase structure rule of the form $X \rightarrow X_{\text{crd}}- X_{\text{crd}+}$ where $crd\pm$ signals if the second conjunct contains a coordination marker. When coordination lexemes attach to a constituent, the result is a $crd+$ mother node.

Next, we generalize the identity constraints on predicate-name identity to all the domain elements in each conjunct, and formalize the coordination rule as seen in (74). This imposes various general conditions on coordinate constructs, including the (optional) occurrence of ACC:

\begin{align} (74) \quad coord\text{-ctx} & \Rightarrow \\
\begin{array}{l}
\text{MTR} \\
\text{SYN} 0 \\
\text{DOM } L \oplus A_{\text{ne-list}} \oplus \langle \langle \text{SYN} \mid \text{CAT conj} \rangle \rangle \oplus B_{\text{ne-list}} \\
\text{SEM} \mid \text{RELS}\langle \text{RELN } R_{00}, \ldots, \text{RELN } R_{0n} \rangle \\
\text{DOM } M \oplus \langle \langle \text{SEM} \mid \text{RELS}\langle \text{RELN } R_{m0}, \ldots, \text{RELN } R_{mk} \rangle \rangle \\
\text{SYN} 0 \\
\text{CRD} - \\
\text{DOM } M \oplus \langle \langle \text{SEM} \mid \text{RELS}\langle \text{RELN } R_{m0}, \ldots, \text{RELN } R_{mk} \rangle \rangle \\
\text{SYN} 0 \\
\text{CRD} + \\
\end{array}
\end{align}

for $n, m, k \geq 0$

\footnote{\textit{Conj} abbreviates the category type conjunction.}
Here, the domain list of the two daughters is nondeterministically split into several sublists. The list \( L \) can be resolved either as an empty list \((n, m, k = 0)\) or as a nonempty list. In the latter case, the semantic content in the periphery of both conjuncts is required to be RELN-identical. So if the list adjacent to \( A \) in the daughter domain is resolved as nonempty, then ACC obtains. This is because \( B \) is required to be adjacent to \( M \) in the mother node. Ellipsis is optional because nothing forces the left peripheral sub-lists to be resolved as empty or as nonempty. This optionality is illustrated in Figure 13.

Note that the indefinite determiner cannot be elided along with the verb because it resides in a compacted domain object, and the constraint in (74) does not allow domain objects to be split. This correctly accounts for contrasts like those in (75):

(75) a. The boy [gave a book to Mary] and [gave a rose to Sue].

    b.*The boy [gave a book to Mary] and [gave a rose to Sue].

This analysis of ACC also allows for the fact that coreferentiality is not mandatory for elided NPs. Coreferential readings are obtained in VP coordination as in (76a), while the noncoreferential interpretations can be captured by S coordination, as illustrated in (76b) and (77b):

(76) a. More than six students [donated furniture to the SA and donated food to the shelter]_{VP}.

    (Which donations were made by more than six students?)

    b. [More than six students donated furniture to the SA and more than six students donated food to the shelter]_{S}.

(77) a. Most of the Western states [went to Gore in 2000 and went to Kerry in 2004]_{VP}.

    (Which candidate won most of the Western states in the last two elections?)

    b. [Most of the Western states went to Gore in 2000 and most of the Western states went to Kerry in 2004]_{S}.

Moreover, nothing prevents constructions subject to ACC from subsequently also being targeted by RNR, as in (78) for instance:

(78) a. Fred both confessed to the police that he buys, and to his lawyer that he sometimes even sells, marijuana seeds.
Figure 13: The Optionality of ACC: Two instances of coord-cxt
b. Mark gave, and Mary sold, a record to Paul and a glove to Johnny.

The example in (78a) can be seen as a VP coordination where *marijuana seeds* is elided in the right periphery of the first conjunct and where *confessed* is elided in the left periphery of the second conjunct. In (78b), the RNRaised string *a record to Paul and a glove to Johnny* is not a constituent. Again, our account can obtain these cases as two local ACC operations and one subsequent RNR operation. First, each VP is targeted by ACC, e.g. *Mark gave a record to Paul and gave a glove to Johnny* and then the clausal coordination undergoes RPE: *Mark gave a record to Paul and a glove to Johnny and Mary sold a record to Paul and a glove to Johnny.*

### 4.2.1 On semantic identity

According to the present account, ACC is not licensed by (74) unless the RELN values can be identified. This basically means that ACC requires that the elided elements are semantically identical up to the predicate name. Unlike the FORM feature, RELN values discriminate between polysemous word senses because only the latter encode semantics proper. Thus, our account of ACC predicts that verb sense discrepancies – including those involving different verb senses – should not licence ACC. This prediction is borne out by cases like (79) discussed in Pullum and Zwicky 1986:

(79) *I want another beer and to have a good time.

The following are further examples showing the impossibility of a semantic mismatch in ACC:

(80) a. *Mia went home and to get a bottle-opener.

   b. *Fred tried the shrimp and being humorous about it.

   c. *Tom began the talk and pacing back and forth.

   d. *God loves us and to see us happy.

Recall that ACC and RNR impose different identity constraints. Systematic polysemy does not hamper RNR ellipsis, as discussed in section 3.1 (cf. (30)). The present account captures this difference between the two constructions, because ACC requires identity of the semantic predicate while RNR requires a more abstract identity, defined in terms of the FORM value of lexical items.
Another correct prediction made by the present account is that cases like (81) are ungrammatical, because the NPs that boy and these boys introduce very different semantic information:

(81) #That boy gave a book to Sue and these boys gave a book to Mia.

For perspicuity, we will make certain assumptions about the treatment of plural NPs. The plural determiner these is assumed (1) to quantify over a mereological domain as in Link 1983 and (2) to introduce a cardinality constraint. An approximation of the lexical meaning of this determiner is $\lambda P. \lambda Q. \exists y (|y| \geq 2 \land P(y) \land Q(y))$. The singular determiner, however, lacks the cardinality constraints and attaches only to singular nominal structures. Thus, the NPs that boy and these boys differ in their semantic content, which in turn accounts for the impossibility of (81).

As illustrated in Figure 14, we are assuming that it is up to the plural determiner to introduce cardinality conditions, not the plural noun. In fact, we assume (along with McCawley (1968, 568) and others) that plural nouns denote both atoms and non-atoms from the domain of entities. This is independently motivated by the fact that some determiners do not introduce number or cardinality constraints and therefore the resulting NP can range over any atom or non-atom in the domain. For example, in order for the sentence No/Zero weapons of mass destruction were found in Iraq to be falsified, the discovery of one WMD is sufficient. Thus, even though the NP is pluralized and can yield collective readings as in No weapons of mass destruction were found in Iraq and piled in a warehouse in the desert, it can also range over atoms. If plural nouns are allowed to range over both atoms and non-atoms in the domain then the above can be accounted for by representing No/Zero as something like $\lambda P. \lambda Q. \neg \exists y (P(y) \land Q(y))$ where $y$ ranges over any element in a mereological domain.

With these assumptions in place, notice that nothing in the present account requires that instances of ACC must be clausal. Thus, we can also obtain a number of instances of NP-internal ACC, discussed by Dowty (1988, 173). Here, plural agreement mismatches prevent ACC from being grammatical, as the following examples illustrate:

(82) a. \{This \*These\} man and woman \{\*was \ were\} squatting in a castle.
Or equivalently, in predicate logic: ‘\( \exists x (\text{boy}(x) \land \ldots) \)’

Or equivalently, in predicate logic: ‘\( \exists y (|y| \geq 2 \land \forall x (x \in y \rightarrow \text{boy}(x)) \land \ldots) \)’

Figure 14: The Semantic Analysis of *This boy* and *These boys*
b. This man and \{\text{woman} \atop \ast \text{women}\} were squatting in a castle.

c. These men and \{\text{women} \atop \ast \text{woman}\} were squatting in a castle.

The NP \textit{this man and woman} in (82a) surely denotes a plurality, as the main verb is plural. Our account can capture this by analyzing (82a) as an instance of NP coordination and ACC: [\textit{this man and this woman}]_{NP}$. On the other hand, the NP [\textit{these man and woman}]_{NP}$ is ungrammatical because the coordination of singular N’ phrases does not yield a plurality, e.g. \ast \textit{two boy and girl}. The same explanation is valid for sentences like \textit{Another man and dog came through the gate}. Finally, cases like *[\textit{these men and this woman}]_{NP}$ are ruled out for the same reason that (81) is ruled out: the plural determiner introduces extra semantic relations about cardinality constraints which prevent ellipsis under \textsc{reln} identity from occurring.

4.2.2 Linearization Constraints

The present account of ACC appeals to the notion of domain compaction. In short, only domain elements can be elided by the rule in (74). If this view is correct then island effects on ACC should be obtained via independently motivated domain compaction constraints. We now turn to some of the linearization facts about English, and show how these independently motivated constraints can yield ACC island effects.

It is well-known that certain adverbial modifiers are relatively free with regard to linear order:

(83) a. [We \text{[very quickly]} \text{[went]} \text{[from school]} \text{[to the hospital]}].
    
b. [We \text{[went]} \text{[very quickly]} \text{[from school]} \text{[to the hospital]}].
    
c. [We \text{[went]} \text{[from school]} \text{[very quickly]} \text{[to the hospital]}].
    
d. [We \text{[went]} \text{[from school]} \text{[to the hospital]} \text{[very quickly]}].

In a domain-based account this boils down to compacting adjuncts and allowing these to interleave with the linearization domain of the head they attach to via the shuffle ‘\textcircled{○}’ relation from Reape (1994, 1996) and Kathol 1995.
The constraints that require compaction of modifiers and arguments\textsuperscript{28} work together with Linear Precedence (LP) constraints like those in (84), which are general constraints on word order, not ellipsis:

\begin{enumerate}[a.]
\item $H[\text{word}] \prec X$ (Lexical heads precede everything in their domain.)
\item $NP[\text{foc} -] \prec XP$ (Unfocussed NPs precede all other phrases in their domain.)
\end{enumerate}

But since the ACC rule formulated above is sensitive to domain objects, we also predict without further stipulation that certain cases of ACC are impossible, e.g. those in (85):

\begin{enumerate}[a.]
\item *\{The best swimmer\} [lost] and \{the best runner\} [won].
\item *\{Some of them\} [were] [in favor] [and] \{some of us\} [were] [against].
\item *\{The shop that sells fossils\} [is] [open] [and] \{the shop that sells souvenirs\} [is] [closed].
\end{enumerate}

### 4.2.3 Adverbial Remnants

We now turn to instances of ACC with adverbial remnants, as in (86):

(86) Sandy will offer a record to Chris, and not a book to Lee.

This sentence has two readings, both of which are brought about via ACC. In one of the readings – perhaps the less prominent one – not adjoins to the NP, yielding an interpretation in which Sandy will offer Lee not even a single book. This reading, which cancels the contextual background possibility that Sandy would give books to Lee, can be

\textsuperscript{28}It should be pointed out that there are well-formed examples where an adjunct or complement is interleaved with an NP argument (here square brackets indicate compacted domain elements):

\begin{enumerate}[a.]
\item [I] [met] [a man] [yesterday] [who reminded me of Nixon].
\item [We] [arrested] [two men] [on Monday] [carrying 42lb of hash].
\item [I] [read] [a book] [(during) this Spring] [about Tao philosophy].
\end{enumerate}

These have sometimes been accounted for in domain-based accounts of linearization (following Kathol and Pollard 1995) by allowing certain NP-internal phrases to be \textit{liberated} into the VP domain, so that verbal modifiers can occur discontinuously.
straightforwardly obtained in our ACC account by the ellipsis of *offer* (i.e. *and offer not a book to Lee*).

The second reading is weaker and corresponds to a case in which Lee will not be receiving books from John. This interpretation can be obtained if adverbs are allowed to be left-peripheral remnants of ACC:

(87) Sandy will offer a record to Chris, and not *offer* a book to Jean.

This assumption is consistent with the fact that a prosodic break is more likely to occur after the negation in (86), possibly signaling the ellipsis. Compare this with (88), in which no ellipsis is apparent and the break only arises if *not* is focused contrastively.29

(88) All elected sports leaders and administrators must [respect the democratic election process] and [not offer any material benefits].

Moreover, in cases in which the underlying VP coordination is ungrammatical, this account predicts that the ACC counterpart (in which the verb is omitted) is also impossible:

(89) *Tom handed me a flower, and not (handed) her a postcard.

But the particle *not* isn’t the only element which may be left-peripheral in ACC. Below we provide some non-ambiguous cases in which preverbal modifiers survive ACC:

(90) a. We took a train to Grenoble on Monday and then a bus to the resort on Tuesday.

b. It killed two of his friends last night, and nearly him as well this morning.

c. In the case of fire, always use the stairs and never the elevator.

d. Fred was knocked down in the first round, and almost again in the 11th.

29There are other cases like ’*I’m talking, not YOU’, ’I tried that, but not today’, or ’He gave MY dog a bone yesterday, not YOUR dog*. These are instances of discourse anaphora rather than of ACC, because (1) they require contrastive focus, (2) the elision cannot be reconstructed (cf. *’I’m talking, not you’re talking*), and (3) the target of the anaphora may be embedded and precede the controller: *Not you, but I think that someone here is lying.*
e. I’ve worked for MI6 as an operative, but never for the KGB as a double agent.

f. I am not objecting to his morals, but rather to his manners.

In order for the above examples to receive the intended interpretations, the modifiers must be in a preverbal position. In the case of (90d) and (90e) for instance, this is the only possible syntactic distribution:

(91) a. *I’ve worked never for the CIA as an informant.

b. *Tom was knocked down almost again in the 11th round.

One direct way to capture these cases in the present account is to allow the constraint $M_{\langle [\text{syn}|\text{cat conj}] \rangle}$ in (74) to include adverbs. This can be done straightforwardly by positing a common supertype for these two category types and using that supertype, instead of $\text{conj}$, to state the relevant constraint.

4.2.4 ACC and Weak Prepositions

Sag 1976, Dowty 1988 and others have noted that some prepositional markers can be omitted in ACC constructions. To some speakers these cases are slightly degraded, while others deem it grammatical:

(92) a. John went to Amsterdam on Monday and (to) London on Thursday.

b. I talked with several outreach communities in March, and (with) a few state officials in July.

c. Mary talked about Monet on Wednesday and (about) Renoir on Thursday.

d. Rover jumped through the hoop first and (through) the window second.

It is often argued that prepositions in languages like English possess two distinct semantic functions. In one use, prepositions are semantically vacuous and simply behave as argument markers. For instance, for binding purposes, it is as if the preposition did not exist, since reflexive complements can enter binding relations with other arguments of the main verb:

(93) a. They$_i$ talk [to themselves$_i$].

b. He$_i$ has to live [with himself$_i$].
c. He talked [about himself].

In the other use, the preposition is semantically potent given that a thematic role is assigned. In these uses, the preposition cannot be omitted in ACC constructions:

(94) a. *Tom went fishing without bait on Monday, and a fishing rod on Friday.
    b. *Rex sleeps under the kitchen table in the Summer, and my bed in the Winter.

For the speakers in which weak prepositions can be omitted, we can reformulate the non-headed-ex construction so that left-peripheral weak prepositions can be omitted. More specifically, by allowing the preposition to be omitted from the left peripheral domain element in the list. But in fact this may be the wrong approach to this phenomenon. There are quite a few other constructions and expressions discussed in Quirk et al. (1985, 896–900) for instance, that can similarly be omitted: (Have you) ever heard of a phone?, (Are) you hungry?, or (The) thing is, I’m actually in decent shape. These reductions probably occur for phonological and semantic reasons, rather than for purely syntactic reasons. The data in (92) might therefore be seen as an instance of this, rather then an exotic form of coordination or of prepositional ellipsis in ACC constructions. In fact, this view may also present a solution to a RNR puzzle noted in Kayne 1994, where an NPI is licensed by the second conjunct but not by the first:

(95) a. John has read, but he hasn’t understood any of my books.
    b. *John has read any of my books, but he hasn’t understood any of my books.

One simple explanation for this case is that the actual sentence is John has read them, but he hasn’t understood any of my books and the pronoun is dropped from the clause-peripheral position, as another case of reduction.

In sum, a more general account of reduction encompassing other parts-of-speech and constructions in the grammar is probably called for here, one which would take us beyond the scope of this paper.
Conclusion

This work provides evidence that Argument Cluster Coordination and Right Node Raising are independent ellipsis phenomena in English, with important distinctive properties. ACC applies only in coordination (and comparative) constructions and imposes a semantic identity requirement, rather than one of phonological identity. RNR, can in principle occur in any construction, under morphophonological identity. As a declarative and monostratal theory, HPSG is well suited to express the required constraints blending syntax, phonology, and semantics. The present account can therefore integrate various independently motivated properties of morphophonologic realization that are argued to interact and condition ellipsis.

References


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