Conjunction Reduction and Right-Node Raising

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Abstract and Keywords

This chapter reviews Conjunction Reduction (CR) phenomena—forward CR (stripping, Phrase Cluster Coordination), and backward CR (Right-Node Raising), and discusses theoretical concerns they raise and approaches to explaining them (ellipsis, across-the-board movement, flexible constituency, multiple dominance/MD). It covers the main empirical generalizations, illustrating mostly with English data but also some from German; and touches on important less well-known phenomena (non-coordinate RNR, Right-Node Wrapping). Striking right–left asymmetries indicate that different mechanisms lie behind forward and backward CR. Similarities between regular ellipsis types and forward CR, and evidence that non-deleted units inside conjuncts targeted by forward CR move to the conjunct periphery, are argued to support the move-and-elide approach. Difficulties afflicting both ellipsis and ATB-movement approaches to RNR are highlighted, and the MD approach is presented as a promising alternative.

Keywords: coordination ellipsis, Conjunction Reduction, Right-Node Raising, move-and-elide, ATB movement, multiple dominance

THIS chapter surveys *ellipsis* or *sharing* phenomena peculiar to coordination structures, known as *Conjunction Reduction* and *Right-Node Raising*, and reviews some leading issues in their theoretical treatment, including their relation to non-coordinate ellipsis phenomena such as verb phrase ellipsis (VPE). While focusing on analyses from mainstream generative grammar, the chapter seeks to highlight empirical patterns and generalizations. No attempt is made at wide cross-linguistic coverage; the data are mostly English, though some German examples are discussed as well.

27.1 Introduction

The term *Conjunction Reduction* (CR), which goes back to generative grammar of the 1960s, is nowadays associated with the idea that conjuncts in a coordinate structure can be reduced by *ellipsis*, in the sense of omission of repeated material. Examples like (1),

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where material in one conjunct is repeated in another, have paraphrases in which the relevant words (underlined) are missing from one conjunct, as shown in (2).

(1)

a. They offer money to the rich but they offer nothing to the poor.
b. We are not responsible for any losses incurred and we will not reimburse you for any losses incurred.

(2)

a. <u>They offer</u> money to the rich but nothing to the poor.
b. We are not responsible for and we will not reimburse you for <u>any losses incurred</u>.

CR phenomena fall into two classes according to directionality. *Forward CR* can be modelled as ellipsis in the *non-initial* conjuncts of a coordination licensed by pronounced material inside the initial conjunct. In an analysis of (2a) that takes the conjuncts to be (p. 682) sentential, the subject and verb in the second conjunct are elided, under (some notion of) identity with corresponding pronounced material in the first conjunct (underlined).[1]

(3)

< [<u>They offer</u> money to the rich] but [~~they offer~~ nothing to the poor] >.

In backward CR, commonly known as *Right-Node Raising (RNR)*, material is missing in *non-final conjuncts*, so the pattern can be modelled as ellipsis under identity with pronounced material in the final conjunct.[2]

(4)

< [We are not responsible for ~~any losses incurred~~] and [we will not reimburse you for <u>any losses incurred</u>] >.

An ellipsis approach cashes out the omission of words from a larger expression in terms of the non-pronunciation, or deletion, of items that are present inside a conjunct at an underlying syntactic level (indicated by strikeouts in (3)–(4)). However, there is no consensus on whether any, and if so which, of the data in question involve an ellipsis mechanism in this sense.

I use *sharing (in coordination)* to describe the phenomenon without prejudging a particular approach. In (2), the underlined elements are shared, while the remainder (excluding the coordinators) is *non-shared* material, belonging solely to one conjunct. What is uncontroversial is that the underlined material in (2) is *semantically* shared by the conjuncts. In (2a), the non-shared NP-PP sequences are semantically arguments of (tokens of) the same shared predicate *offer*, along with the shared subject *they*. In (2b), *any losses incurred*

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likewise figures in the meaning of both conjuncts, supplying an argument to the non-shared predicates.

Contemporary approaches diverge widely on whether and in which cases shared expressions are *structurally (syntactically) shared*, in the sense of being structurally contained in both conjuncts, as in CR analyses like (3)–(4). This variety reflects different assumptions concerning constituent structure, the size of conjuncts and the treatment of movement phenomena (see 27.2).

In (2) and many other cases associated with CR, the shared material (underlined) is *peripheral* to the coordination, being located at the left (2a) or right (2b) periphery of the non-shared material of the conjuncts. This partly explains why these phenomena are susceptible to an alternative claim concerning the structural location of the shared items—namely, that they are *outside* the coordination (5).

(5)

a. They offer < [money to the rich] but [nothing to the poor] >.
b. < [We are not responsible for] and [we will not reimburse you for] > any losses incurred.

(p. 683) Such approaches—including *across-the-board movement* (ATB) analyses (see 27.2.6)—I call *direct analyses*, in contrast with *CR analyses* which locate the shared material *inside* the coordination in surface structure.

Direct approaches are challenged by cases where shared items are not peripheral but sandwiched among non-shared material in one of the conjuncts, as in *gapping* (6). Viewed as forward CR, gapping involves *medial* ellipsis of the verb, auxiliaries, and possibly other elements.[3]

(6)

a. The girls are sleeping here, and Peter, there.
b. < [the girls <u>are sleeping</u> here] and [Peter ~~is sleeping~~ there] >

CR patterns are mostly found in structures with *and*/*or*/*but*, hence the term *coordination ellipsis*. They normally do not occur in clauses linked by subordinators such as *because, while*, or *unless* (7). This sets them apart from types which are not coordination ellipses—*sluicing* (8a), *verb phrase ellipsis* (VPE) (8b), and *noun phrase ellipsis* (NPE) (8c).

(7)

a. *They offer money to the rich, while nothing to the poor.
b. *The girls are sleeping here, because Peter, there.
c. *They will not reimburse you for, unless they are responsible for, any losses incurred.

(8)

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a. I'm sure he met someone, but/while [I don't know who ~~he met~~].
b. She will sleep there and/because [he will ~~sleep there~~, too].
c. He pays ten dollars or/unless [she pays twenty ~~dollars~~].

However, "coordination ellipsis" may be a misnomer—both forward CR and RNR patterns also turn up in configurations not normally viewed as coordinations. Most notably, both figure in comparative constructions (*more-than, as-as*, etc.); cf. Lechner (2004). In addition, examples similar to (7c) with the RNR pattern may, unlike (7a,b), be judged acceptable to various degrees. *Non-coordinate RNR* is taken up in 27.4.5.

The divide between forward and backward CR is deep (Neijt 1979: ch. 2); the directionality difference correlates with distinct clusters of properties, reviewed in 27.3 and 27.4. While backward CR (RNR) is typically considered a unitary phenomenon, individual forward patterns are often treated under different labels, including *gapping, stripping* (see 27.2.4), and what I term *Phrase Cluster Coordination* (PCC), illustrated by (2a) (see 27.2.5). Gapping and stripping are treated in depth in Chapter 23. The present chapter largely ignores medial gapping, but briefly discusses stripping and PCC—firstly, to illustrate the rationale behind CR approaches to coordinations that resist direct analysis; and secondly, to demonstrate the affinity of forward CR to non-coordinate ellipses such as VPE.

The chapter is structured as follows. Section 27.2 introduces assumptions and data that figure in the debate about direct vs CR approaches to sharing. Sections 27.3 and 27.4 look at forward and backward sharing in more depth, highlighting their different empirical profiles, and what appear to be promising theoretical accounts. 27.3 focuses on a CR (p. 684) approach to forward patterns that combines conjunct-internal movement and ellipsis. 27.4 reviews arguments for and against direct (ATB movement) and ellipsis analyses of RNR, and outlines the case for an alternative approach using *Multiple Dominance*. Section 27.5 concludes.

27.2 Coordination syntax and CR

This section begins with the early conception of CR and why it was abandoned, and then sketches the subsequent standard view on coordination syntax, which allows direct analysis of phrasal coordinations. Specific classes of data that resist direct analysis within that frame have motivated more recent CR proposals (27.2.3–27.2.5), which compete with alternative direct analyses utilizing ATB movement, or flexible syntactic constituency (27.2.6–27.2.7). Other kinds of motivation for CR are pointed out in 27.2.8.

27.2.1 Conjunction Reduction vs phrasal coordination

Many an ordinary phrasal coordination is at first blush semantically equivalent to a sentential coordination, as indicated in (9) by the parentheses. Matching the paraphrase re-

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lation is a syntactic equivalence which can be stated as (10), adapted from Chomsky (1957: 36).

(9)

a. *John* (will be there) or *Mary* will be there.
b. They have *a huge mortgage* but (they have) *a tiny house*.
c. He *dries his laundry* (in the attic) and (he) *stores his books* in the attic.

(10)

If $[_{S1}\ \alpha\ X\ \beta\ ]$ is a sentence and $[_{S2}\ \alpha\ Y\ \beta\ ]$ is a sentence, where S1 and S2 are identical except for X and Y, and X and Y are constituents of the same type, then $[_{S3}\ \alpha\ X\ Conj\ Y\ \beta\ ]$ is a sentence.

This characterization prefigures both the early idea that subsentential coordinations are generally derived from sentential coordinations, and two issues (discussed in 27.2.3 and 27.2.5) behind later CR proposals, namely whether the non-shared strings (X and Y) constitute *single constituents* of the *same type*.

Early generative work pursued the idea that phrasal coordinations result from a syntactic rule applying to underlying coordinated sentences. (10) can be reformulated as a "Conjunction Reduction" transformation (11), which takes a coordination of sentences as input, and delivers a reduced structure, a single sentence containing coordinated substrings (cf. Gleitman 1965, Ross 1967, Dougherty 1970/1971, Koutsoudas 1971, Hankamer 1979, Hudson 1976b, and others).

(11)

Input: $< [_S\ \alpha\ X\ \beta\ ]\ Conj\ [_S\ \alpha\ Y\ \beta\ ] >$
Output: $[_S\ \alpha < X\ Conj\ Y > \beta\ ]$

(p. 685) The approach was consistent with the framework of Chomsky (1965): the deep structure of a sentence determines its meaning, transformations derive the surface structure. It captures the paraphrase relation between phrasal and corresponding sentential coordinations, and the intuition that the meaning of *and* and *or* is constant across phrasal and sentential coordinations. It further suggests that their meanings can be equated with logical conjunction and disjunction of classical propositional logic.

However, (11) posits massive restructuring of the input. Two sentences are reduced to one, and X and Y, separate in the input, are assumed to form a constituent [X Conj Y] in the output. Such derivations are incompatible with subsequent developments (e.g. the idea that syntactic operations are structure-preserving) and have long been rejected in mainstream generative grammar.

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The approach was also abandoned on other grounds. Underlying the rule in (11) is the idea that the paraphrase relation between phrasal and sentential coordinations is due to their having the same structure (at the relevant level). Yet by no means do all phrasal coordinations have sentence coordination paraphrases.

One class concerns *and*-coordinations of singular nominals that function as the argument of a collective predicate such as *alike* in (12) (Lakoff and Peters 1967). Since the predicates in question select for a semantically plural argument, the corresponding sentential coordination is simply ill-formed.

(12)

a. John and Mary are alike.
b. *John is alike and Mary is alike.

The paraphrase also fails where the phrasal coordination is interpreted in the scope of a higher negation, attitude predicate, or quantificational expression. The examples in (13) express something different than their full sentential equivalents in (14); cf. also (15).

(13)

a. Sam denied being involved in the crime or knowing the culprit.
b. Everyone voted for Bush or for Clinton.

(14)

a. Sam denied being involved in the crime or Sam denied knowing the culprit.
b. Everyone voted for Bush or everyone voted for Clinton.

With the breakdown in the paraphrase relation, there is no motivation from interpretation for assuming sentential conjuncts. These cases lead naturally to the assumption that phrases of all types (NP, AP, VP, PP, etc.) can form coordinated constituents embedded directly within the larger sentence, where relative semantic scope is reflected in structure.

(15)

a. Nothing is < [$_{AP}$ round] and [$_{AP}$ square] >.
b. $\neg\exists x\ (\textsc{round}(x) \wedge \textsc{square}(x))$
c. < [$_{S}$ Nothing is round] and [$_{S}$ nothing is square] >.
d. $\neg\exists x\ (\textsc{round}(x)) \wedge \neg\exists y\ (\textsc{square}(y))$

To the extent that phrasal conjuncts do not denote propositions, the semantics of *and* and *or* cannot be limited to the logical conjunction/disjunction of propositional logic. A compositional approach requires a different semantics for coordinators that link phrasal (p. 686) conjuncts, such as the “generalised conjunction” of Partee and Rooth (1983). The denota-

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tions of (13a,b) can then be captured straightforwardly on the basis of a phrasal coordination in the scope of a single shared operator. At the same time, the paraphrase relation in cases like (9) falls out as a result of direct semantic interpretation of the phrasal coordination. In addition, a different semantics is needed for the *and* of (12) ("group-forming *and*"). See Zamparelli (2011) for an overview.

The upshot is that direct phrasal coordination, in which the conjuncts contain exclusively *non-shared* material, can capture not only (13)–(15), but also (9), with no need of CR to capture semantic sharing effects reflected in sentential paraphrases. Such an approach, now more or less universally adopted, underpins a common view on the core of coordination syntax.

Nevertheless, a version of the old CR idea is retained by ellipsis analyses of sharing in coordination for cases in which the core approach breaks down. The structural reduction of (11) is replaced by a conception in which the output retains the structure of the (not necessarily sentential) input, and the reduction itself affects only the pronunciation of words contained in the input. The output in (16) symbolizes the combination of forward and backward CR sketched in (3)–(4).

(16)

Input: $<[\ \alpha\ X\ \beta\ ]\ Conj\ [\ \alpha\ Y\ \beta\ ]>$
Output: $<[\ \alpha\ X\ \cancel{\beta}\ ]\ Conj\ [\ \cancel{\alpha}\ Y\ \beta\ ]>$

27.2.2 Coordination syntax: Constituency, substitutability, and coordination of likes

This section reviews core assumptions concerning coordination syntax that are widely held.[4]

Firstly, a coordination comprises a sequence of two or more adjacent expressions (conjuncts), which are interrupted only by the coordinator which links them, and which are independent of one another in the sense that no conjunct is part of another in the coordination. Secondly, the coordination itself and its individual conjuncts are constituents.

(17)

a. A coordination $<X_1 \ldots . \ \& \ X_n>$ constitutes a single syntactic constituent.
b. Each of the conjuncts X_i constitutes a single syntactic constituent.

Descriptively, possibilities seem to be further constrained by a condition like (18):

(18)

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Substitutability of the conjunct for the coordination:
Each conjunct X_i may occur independently (i.e. replace the coordination) in the larger expression containing the coordination.

(p. 687) For example, (18) rules out an analysis like (19a) on the basis of the ill-formedness of **he a tiny house*, while permitting the correct analysis (19b).[5]

(19)

a. *He < [has a huge mortgage] but [a tiny house] >.
b. He has < [a huge mortgage] but [a tiny house] >.

Examples like (20), where each of the italicized expressions satisfies (17b) and (18), are nevertheless ill-formed. Such cases motivate an additional condition that the conjuncts of a coordination be syntactically and/or semantically similar (cf. (10)), which has come to be known as the *Law of Coordination of Likes* (LCL) following Williams (1981).

(20)

a. *The scene *of the movie* and *that I wrote* was in Chicago. (Chomsky 1957: 36)
b. *He drank *whisky* and *on Sunday*.

(21)

LCL: Coordinated constituents are of the same type or category.

What exactly "same type" means, whether for example, traditional syntactic categories, or semantic types, is subject to debate (and of course depends on what types are defined by one's theory). There is a widespread practice in the syntax literature of assuming that "same type" means "same syntactic category."[6]

The classic phrase structure for coordination is a special configuration type (22), according to which for X = any category, a coordination is a constituent of type X that immediately dominates two or more (signalled by the Kleene star) constituents of the same type X (the conjuncts), plus a coordinator.

(22)

Classic coordination structure: $[_X$ (X*) X & X]

(22) encodes both the LCL and, by identifying the type of the conjuncts with the type of coordination, substitutability. It also straightforwardly accounts for the possibility for coordinations to be nested.

In frameworks that assume phrase structure uniformly conforms to X'-theory, the multiple headed (22) is anomalous, and endocentric alternatives have been proposed that take the coordinator to head the coordination. In one version (23), & forms a phrase with the second conjunct that is right-adjoined to the first conjunct (Munn 1993). In another (24), the

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conjuncts are specifier and complement to & (Larson 1990: 556; Kayne 1994: ch. 6; Johannesen 1998).[7]

(p. 688)

(23)

Adjoined &P structure: $[_{XP}$ XP $[_{\&P}$ & YP $]]$

(24)

Specifier-complement &P structure: $[_{\&P}$ XP $[_{\&'}$ & YP $]]$

It is uncontroversial that phrases of any category can be coordinated, from root clauses down to the smallest individual phrases, whether these be functional categories (CP, TP, DP) or lexical. The broader consensus breaks over whether (in X'-theoretic terms) non-maximal constituents can form conjuncts. While the coordination of heads, for example, is often assumed under (22), the endocentric approaches do not permit the conjuncts to be subphrasal.[8] Cases of apparent coordination of heads, e.g. <V&V> as in (25a), have been argued to involve phrasal coordination with structural sharing of the direct object (backward ellipsis in Kayne 1994: ch. 6).[9] Apparent coordination of *sub-word units* as in (26a) is problematic for either approach, and has been argued to involve backward ellipsis (Booij 1985; Wilder 1997; Chaves 2008).

(25)

a. They will <[arrest] and [interrogate]> him.
b. They will <[arrest ~~him~~] and [interrogate him]>.

(26)

a. in the <pre- and inter>-war periods.
b. in the <[pre-~~war~~] and [inter-war]> periods.

In sum, the consensus picture has it that coordinations whose non-shared strings form *adjacent constituents* of the *same type* (perhaps further restricted to *phrasal* constituents) do not involve structural sharing. That picture is disturbed by three types of cases (in addition to (26)), each of which has been argued to motivate a CR-type analysis. One involves conjuncts that appear not to correspond to a well-formed single constituent, thus threatening (17b) (see 27.2.5). Another concerns apparently non-adjacent conjuncts (see 27.2.4). A third involves *Unlike Category Coordinations* (UCCs), i.e. what appear to be phrasal conjuncts of different categories in violation of the LCL.

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27.2.3 Unlike Category Coordination

Examples like (27a) (Sag et al. 1985), where the non-shared elements are predicates of different categories, illustrate the UCC phenomenon.

(27)

a. John is a Republican and proud of it.
b. John is < [$_{DP}$ a Republican] and [$_{AP}$ proud of it]>.

(p. 689) The direct analysis (27b) requires a modification of LCL or of assumptions concerning categories (the latter pursued by Sag et al. 1985). (28) illustrates another less well-known UCC type, involving focus or focus particles (Grosu 1985, 1987). Related cases involve *wh*-questions (*What and when does he drink?*).

(28)

a. He drinks only WHISKY and only on SUNDAYS. (compare (24b))
b. He drinks < [$_{DP}$ only whisky] and [$_{PP}$ only on Sundays] >.

Most UCCs conform to substitutability.[10] Exploiting this property, a CR approach can offer an account that satisfies LCL while allowing leeway on the category of non-shared constituents within the conjuncts. If α can combine with constituents of different categories X and Y such that both [$_Z$ α X] and [$_Z$ α Y] are independently well-formed, and if α can be structurally shared, then Z-coordination with sharing of α can yield the effect of a UCC. This is outlined in (29), where α = the verb (plus other material).

(29)

a. John < [$_{VP}$ is a Republican] and [$_{VP}$ is proud of it] >. (forward CR)
b. He < [$_{VP}$ drinks only WHISKY and [$_{VP}$ ~~drinks~~ only on SUNDAYS] >. (forward CR)
c. < [$_{CP}$ What ~~does he drink~~] and [$_{CP}$ when does he drink] >? (backward CR)

On (29a), see Beavers and Sag (2004), Chaves (2006) and for critical discussion, Levine (2011).[11] On (29c), see 27.4.4.

27.2.4 Discontinuous coordination and stripping

The phenomenon illustrated by (30) poses a related challenge to the core assumptions.

(30)

He left *his phone* at home, and *his keys*.

Taking the first conjunct to be a phrase left-adjacent to *and* (PP, VP, or TP in (31)) conflicts not only with the LCL but also with the intuition that the first conjunct is the DP *his phone*.

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(31)

[$_{TP}$ He [$_{VP}$ left *his phone* [$_{PP}$ at home]]], and [$_{DP}$ *his keys*].

(p. 690) Some have taken this to indicate that the conjuncts of a coordination need not always be adjacent. Munn (1993: 15) suggests an approach in terms of rightward movement of the second conjunct of a DP-coordination (*and his keys* forms a phrasal unit &P according to (23)), paralleling extraposition of a postnominal modifier (see also Johannesen 1998: 215ff.).

(32)

He left < his phone t_j > at home, [and his keys]$_j$.

However, an indication that (30) does not involve DP-coordination is that the pattern fails with collective predicates like *combine* (cf. Merchant 2003a).[12]

(33)

a. He combined zinc and hydrochloric acid yesterday.
b. *He combined zinc yesterday, and hydrochloric acid.

Forward CR analyses attribute discontinuous coordinations to the data set derived by *stripping*, "a rule that deletes everything in a clause under identity with corresponding parts of a preceding clause, except for one constituent (and sometimes a clause-initial adverb or negative)" (Hankamer and Sag 1976: 409).[13] Under this approach, the non-shared DPs of (31) are contained in larger, adjacent conjuncts conforming with the LCL, and (33b) is straightforwardly accounted for.[14]

(34)

< [$_{TP}$ He left *his phone* at home], and [$_{TP}$ ~~he left~~ [*his keys*] ~~at home~~] >.

Considerations about relative scope of the coordinator and shared negation or quantifiers (cf. 27.2.1) also apply in determining the height of the coordination in stripping. The negation naturally scopes over the coordination in (35a), indicating that the coordination is at VP (or vP) level.

(35)

a. He didn't leave *his phone* at home, or *his keys*.
b. He didn't < [leave *his phone* at home], or [~~leave~~ [*his keys*] ~~at home~~] >.

Interpreting the negation inside both conjuncts, expected if the coordination is at clause level, is virtually impossible in (35). The possibility for larger conjuncts is evidenced by (36), where the negation is interpreted inside both conjuncts, in the scope of *or*.[15]

(36)

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a. Either JOHN didn't switch the light off, or MARY.
b. < [Either JOHN didn't switch the light off], or [MARY ~~didn't switch the light off~~] >.

Stripping is discussed further in 27.3; see also Chapter 23. (p. 691)

27.2.5 Non-constituent conjunct strings

The string of the first conjunct in (37a) does not correspond to a constituent (Chomsky 1957: 35); the same applies to (37b) and (2b).

(37)

a. *John enjoyed* and *my friend liked* the play.
b. *A very tall* and *a very short* child were playing together.

The examples in (37) instantiate what has come to be known as *Right-Node Raising*. Standard assumptions about constituent structure strongly favour a structural sharing approach, such as backward ellipsis (38). While (37a) is a sentential coordination, the plural agreement and collective predicate in (37b) suggest a DP coordination with structural sharing of the N *child* only.

(38)

a. < [$_{TP}$ John [enjoyed ~~the play~~]] and [$_{TP}$ my friend [liked the play]] >.
b. < [$_{DP}$ A [very tall ~~child~~]] and [$_{DP}$ a [very short child]] > were . . .

Two forward patterns are found where the non-shared material in the second conjunct does not form a single constituent (in a traditional structure). One is gapping (see (6)). In the other, (39), *Phrase Cluster Coordination* (PCC) (cf. also (2a)), the non-shared material is a sequence of postverbal phrases, often analysed (following Sag 1980) as VP-coordination with forward ellipsis of the shared verb.

(39)

a. She'll fix *her car today* and *her bike tomorrow*.
b. She'll < [$_{VP}$ fix her car today] and [$_{VP}$ ~~fix~~ her bike tomorrow] >.

The non-constituent status of the non-shared material evident in RNR and PCC (and medial gapping) has provided perhaps the strongest impetus behind recent explorations of CR analyses in the form of ellipsis (see 27.3 and 27.4.3) and/or Multiple Dominance (see 27.4.4).

27.2.6 Conjunction Reduction and movement

Movement delivers an alternative way of reconciling apparent non-constituent conjuncts in the RNR, gapping, and PCC patterns with the core assumptions of 27.2.2. This perspective was opened up by Ross's (1967) discovery of the Coordinate Structure Constraint

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(CSC) and the across-the-board (ATB) movement phenomenon (see de Vries 2017 for recent discussion).

(40)

Coordinate Structure Constraint
"In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct" (Ross 1967: 161)—unless the same element is moved ATB (out of all conjuncts in the coordination).[16]

16

(p. 692) Examples (41) and (42) illustrate the ban on leftward movement of a conjunct and of a constituent out of a conjunct (Ross 1967: 160). (43) exemplifies the possibility for leftward ATB extraction, showing that the constituent must be extracted from *all* conjuncts.[17]

(41)

a. *What sofa will he put the chair between < [some table] and [_] >?
b. *What sofa will he put the chair between < [_] and [some table] >?

(42)

a. *The lute which Henry < [plays _] and [sings madrigals] > is warped.
b. *The madrigals which Henry < [plays the lute] and [sings _] > sound lousy.

(43)

These are the grapes which
a. < [Tom picked _], [I washed _], and [Suzie will prepare _] >.
b. *< [Tom picked _], [I washed some turnips], and [Suzie will prepare _] >.

Ross proposed to treat RNR as ATB movement.[18] The missing object in non-final conjuncts, giving the impression of a non-constituent string, is (in more recent terms) analysed as a movement trace; and a corresponding trace is posited for the final conjunct. The shared object is located (after movement) outside of the coordination (44). Like leftward ATB movement, RNR applies in ATB fashion in a coordination of more than two conjuncts (45) (Ross 1967: 176–7).

(44)

[< [Tom picked t_{DP}], [I washed t_{DP}], and [Suzie will prepare t_{DP}] > [$_{DP}$ these grapes]].

(45)

Tom picked, I washed (*some turnips), and Suzie will prepare, these grapes.

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The relative merits of movement and backwards CR approaches to the RNR phenomenon are discussed in 27.4.

The interdependence of assumptions on movement and coordination is illustrated by an early problem with the direct analysis of VP-coordination and its interaction with passivization (i.e. the movement assumed to derive the subject of a passive clause) (Dougherty 1970, 1971). Under the direct analysis (46a), passive movement violates the CSC. A CR-style analysis avoids the CSC problem (46b), but runs into the interpretation problem sketched in 27.2.1. The adoption of the VP-internal subject hypothesis allows a reinterpretation in terms of ATB movement out of small conjuncts (46c) (Burton and Grimshaw 1992; McNally 1992).

(46)

a. Nobody$_j$ will < [$_{VP}$ laugh] and [$_{VP}$ be arrested t_j] >
b. < [Nobody will laugh] and [~~nobody~~$_j$ ~~will~~ be arrested t_j] >
c. Nobody$_j$ will < [$_{VP}$ t_j laugh] and [$_{VP}$ be arrested t_j] >

ATB movement out of a low coordination has also been proposed to account for PCCs like (39) (Larson 1988: 345); and also for medial gapping (Johnson 2004b, 2009), as sketched (p. 693) in (47). Johnson's analysis assumes that the CSC does *not* govern movement of the subject. See Chapter 23.

(47)

The girls$_j$ are sleeping$_k$ < [$_{VP}$ t_j t_k here] and [$_{VP}$ Peter t_k there] >.

27.2.7 Alternative: Flexible constituency

The case for structural sharing approaches to non-constituent conjuncts seen in RNR, PCC, etc. is founded on the assumption that the pronounced non-shared material in the relevant conjunct does not form a constituent on its own; that there is, for instance, no well-formed syntactic constituent containing *Mary praised* in (48) that does not also contain a direct object as sister to the verb, unpronounced in that position, whether as a movement trace or target of ellipsis.

(48)

[*Mary* [*praised* ~~John~~]] and *Cathy criticized* John.

An alternative hypothesis is that such conjoined strings do in fact correspond to single constituents, albeit under a non-standard view of what counts as a constituent. Such an approach is pursued in categorial frameworks, for instance Combinatory Categorial Grammar (CCG) (see Steedman 2000, 2007; Steedman and Baldridge 2011).[19]

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CCG syntax is based on categories defined as functions or arguments, with the possibility for the latter to be shifted to higher functional types. Complex units are formed by combinatory operations such as *function application* or *function composition*, directionally specified; cf. the sample derivations in (49)–(51) (derived categories in bold).[20] While basic categories combine in ways consistent with standard constituency as in (49), typeshifting makes alternative derivations available that generate non-standard constituents as in (50) (based on Steedman 2000: 39ff.).

(49)

Mary	$[_{\mathbf{S\backslash NP}}$	praised	John]	
		(S\NP)/NP	NP	
NP		**S\NP**		*S\NP from forward function application*
		S		*S from backward function application*

(50)

$[_{\mathbf{S/NP}}$	Mary	praised	]John	
	NP			
	S/(S\NP)	(S\NP)/NP		*S/(S\NP) from typeshifting the subject NP*
		S/NP	NP	*S/NP from forward function composition*
		S		*S from forward function application*

(p. 694) Non-standard constituents such as [*Mary praised*] in (50) are then available to be coordinated and subsequently combined with an object NP (51), which forms the basis of semantic composition, to give a direct account of the rightward ATB movement effect.

(51)

[$[_{\mathbf{S/NP}}$ Mary praised]	and	$[_{\mathbf{S/NP}}$ Cathy criticized]]	John	
	S/NP		NP	*S/NP from conjunction*
	S			*S from forward function application*

A similar approach is taken to PCC. A double object VP can be derived as *[[V NP] NP]* by forward function application, or the two NPs can be typeshifted so as to be able to combine by function composition to give a constituent that combines with the ditransitive verb as *[V [NP NP]]*. The latter permits a direct analysis of a PCC (Steedman 2000: 46). For an account of medial gapping, see Steedman 2000: 183ff. In short, the syntax of *all* coordination is given a direct analysis, involving neither movement traces nor ellipsis.

A basic feature of CCG and related approaches is that “everything that can coordinate…is a constituent under the generalized definition of that notion that is afforded by categorial grammars” (Steedman 2000: 198). The same flexible notion of constituency is claimed to capture prosodic (intonation) units (Steedman 2000: ch. 5). On the other hand, the CCG notion of constituency is not constrained by traditional notions of dominance and c-com-

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mand which underlie mainstream approaches. Flexible constituency approaches are not considered further here.[21]

27.2.8 Other kinds of motivation for CR

Motivations for CR are not limited to considerations pertaining to adjacency and constituenthood of conjuncts and the LCL, but extend for instance to assumptions about how meaning relates to structure, and about how agreement works. Two cases which appear at first blush consistent with a direct analysis illustrate the point.[22]

McCawley's (1987) example (53) appears, like (52), to fit a pattern [$_{DP}$ < X Conj Y > α] in which *X and Y* corresponds to a coordination of APs modifying a single head noun. Yet in (p. 695) the case of (53), interpretation (two kinds of knowledge) and number agreement (a plural verb agrees with an *and*-coordination of non-count singular DPs but not with a single such DP) indicate larger conjuncts, two DPs, each with its own head noun, reduced by backward CR.

(52)

a. *Accurate* and *helpful* information is hard to come by.
b. [$_{DP}$ < AP & AP > $N_{NONCOUNT.SG}$] is_{SG} . . .

(53)

a. *Historical* and *scientific* knowledge are completely different from each other.
b. < [$_{DP}$ historical ~~knowledge~~$_{NONCOUNT.SG}$] and [$_{DP}$ scientific $knowledge_{NONCOUNT.SG}$] > are_{PL} . . .

Sentences with corrective *but* provide another example. In (54) with *and*, negation is naturally interpreted as taking scope over the coordination, as reflected in the structure under the direct analysis (55a). With *but*, however, the negation's scope in (54) is restricted to the first conjunct, suggesting that this case must involve larger conjuncts—which in turn suggests forward CR (55b) (Vicente 2010b; Toosarvandani 2013a).

(54)

He hasn't drunk beer {and/but} champagne.

(55)

a. He hasn't drunk < [$_{DP}$ beer] and [$_{DP}$ champagne] >.
b. < [$_{TP}$ He hasn't drunk beer] but [$_{TP}$ ~~he has drunk~~ champagne]] >.

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27.3 Forward CR

If CR is a species of ellipsis, one expects it to share basic properties with canonical (non-coordinate) ellipsis types (verb phrase ellipsis, sluicing, noun phrase ellipsis). This section begins by considering the relation between forward CR (stripping, PCC) and canonical ellipsis, and then discusses the 'move-and-elide' approach.

27.3.1 Forward CR and non-coordinate ellipsis

The canonical non-coordinate ellipsis types involve omission of a single constituent. In the context of a local head of a specific type, shown as X in the configuration (56), YP can be elided (Lobeck 1995; Merchant 2001, 2004a).

(56)

$\ldots[\mathrm{X}\ [_{\mathrm{YP}} \ldots]\ ] \ldots$ where YP = NP in DP (NPE), VP (VPE), or TP (Sluicing)

Approximately, X stands for an interrogative *wh*-complementizer (sluicing), certain auxiliaries (VPE), or certain determiners, including numerals and possessors, but not *the* or *every* (NPE).

The ellipsis site is a "surface anaphor" (Hankamer and Sag 1976), one formed during and interacting with the syntactic derivation (see van Craenenbroeck and Merchant 2013 for an (p. 696) overview). According to the phonological deletion approach championed by Merchant and others, the ellipsis site contains a fully fledged syntactic structure, whose subparts show syntactic interactions with elements external to the ellipsis, including movement out of the ellipsis site (57). The ellipsis itself arises through suppression of the pronunciation of the constituent in question.[23]

(57)

a. John was arrested because MARY$_j$ was [~~arrested~~ t_j].
b. This book, Mary's read, but [that one]$_j$, she HASN'T [~~read~~ t_j].

The forward CR approach to stripping and PCC sketched in 27.2 invokes conjuncts of variable size containing a focused phrase (the pronounced remnant), with the remainder, i.e. shared material, elided by a specific type of ellipsis rule, applying in ATB fashion in non-initial conjuncts (*Forward Deletion / FWD* in Wilder 1997). FWD involves ellipsis of phrases or individual words in the second conjunct, under identity with parallel material in the initial conjunct, leaving solely the focused element(s) as remnants (cf. also Hartmann 2000).

The idea that forward CR is of a kind with ellipsis types such as VPE[24] finds support in patterns of non-identity of forms known as "vehicle change" effects (Fiengo and May 1994). As documented in the literature on VPE and sluicing, an ellipsis target may contain forms that differ from corresponding forms in the antecedent, as long as the seman-

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tic identity condition (Merchant's 2001 *e-GIVENness*) is satisfied. The VP elided in (58a) (italicized) contains a pronoun (as required by Binding Theory) where the antecedent VP contains a name. The antecedent and elided VPs of (58b) contain bound (sloppy) pronouns which take different forms, as required by conditions on pronominal agreement.

(58)

a. They arrested Alex$_j$, though he$_j$ thought they WOULDN'T [*arrest him$_j$/*Alex$_j$*]
b. Mary lost her way, and JOHN$_j$ did [*lose* { *his$_j$/*her$_j$* } *way*], TOO.

The same effects can be observed with stripping and PCC (59)—cf. *inform him$_j$ about* {*his$_j$ /*John$_j$'s*} *results*, and *put the dog out of* {*its/*their*} *misery*.

(59)

a. We should inform MARY about John$_j$'s results and HIM$_j$, too.
b. They'll put the CATS out of their misery TODAY, and the DOG TOMORROW.

Verbal agreement may also diverge in stripping (60a), an effect replicated in VPE (60b) (Fiengo and May 1994: 103).

(60)

a. The GIRLS are happy, and JOHN [*is/*are happy*], too.
b. The girls$_j$ said they$_j$ were happy, but John$_k$ didn't [*say he$_k$ was/*were happy*].

(p. 697) Another vehicle change effect concerns indefinites (*any-some, no-a*, etc.) in polarity-switching VPE (61) (Johnson 2001: 468–9; Merchant 2013b). This effect is not detectable in English stripping (perhaps because the polarity switch that would trigger it depends on the presence of an emphatic finite auxiliary in that language), but it can be observed in German. In (62), the polarity switch is marked by the contrast between negation (in *niemanden* 'nobody') and the particle *schon* (which signals the emphatic affirmative).

(61)

a. John didn't see anyone, but Mary did. (= *see someone*)
b. I could find no solution, but Holly might. (= *find a solution*)

(62)

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a. Wir haben niemanden gesehen, aber ER SCHON.
we have nobody seen but he PRT
'We didn't see anybody, but he did.'

b. ...aber ER hat SCHON ~~jemanden gesehen~~
but he has PRT someone.ACC seen
'...but he did see someone.'

Furthermore, like canonical ellipsis, stripping and PCC show interaction with movement; both ellipsis sites (63) and remnants (64) may contain the trace of an item extracted (ATB) out of the coordination.

(63)

a. the children who$_j$ he either
< [sold CIGARETTES to t_j] or [~~sold~~ ALCOHOL ~~to~~ t_j] >
b. the place where$_j$ Bill
< [left his PHONE t_j on MONDAY] and [~~left~~ his KEYS t_j on TUESDAY] >

(64)

a. We must work to become the place where companies are not moving Headquarters *out of—but into.* (Web example)
b. the room which$_j$ they
< [moved JOHN [OUT of t_j]] and [~~moved~~ MARY [INTO t_j]] >

In sum, forward CR shares much of the empirical profile of canonical ellipses.

27.3.2 Move-and-elide

In the FWD conception, elliptical conjuncts have the same syntax as corresponding non-elliptical expressions, involving no special operations except for the elision of given material. Unlike canonical ellipsis types, what is targeted by FWD evidently need not be a single constituent (e.g. (63a) involves non-adjacent gaps). However, not just any given material may be elided (cf. **He bought the book and READ ~~the book~~*); conversely, not just any part of the second conjunct can surface as a remnant in an elliptical non-initial (p. 698) conjunct, and difficulties arise in accounting for the attested patterns under the FWD approach.[25]

An alternative *move-and-elide* approach, sketched in (65), is proposed for stripping in Merchant (2003a), building on Sag (1980), Depiante (2000), and others.

(65)

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$$\ldots \&[_{XP}\ ZP_j\ [_{YP} \ldots t_j \ldots]\ ] \ldots$$

The key idea is that ZP (the focused remnant) is moved to the periphery of the conjunct (XP). What is elided is a single constituent (YP in (65)), containing the trace of ZP.[26]

(66)

< [I bought A BOOK yesterday], and [a NEWSPAPER$_j$ [~~I bought~~ t_j ~~yesterday~~]] >

Stripping is thereby aligned with a number of other constructions analysed in terms of move-and-elide, including sluicing (Merchant 2001), pseudogapping (Jayaseelan 1990; Lasnik 1999a), and fragment answers (Merchant 2004a).

The movement of ZP correlates with A'-movement to the clausal periphery. As discussed in 27.2.4, the conjuncts in which stripping applies are in many cases smaller than a full clause (a point emphasized by Toosarvandani 2013a). The account thus needs to be formulated in terms of A'-movement of the focused remnant to the *conjunct* periphery, whatever its category (CP, TP, vP, etc.), even if that movement pattern does not surface in non-coordinate environments (67b).

(67)

a. Nobody < [bought a book yesterday],
or [[a NEWSPAPER]$_j$ [~~bought~~ t_j ~~yesterday~~] >.
b. *Nobody a NEWSPAPER$_j$ bought t_j yesterday.

The move-and-elide approach has the twin advantages of predicting what can be a remnant (namely, any constituent within the conjunct which can undergo A'-movement to its periphery), and what can be elided (namely, the constituent YP). A further conceptual attraction is that it brings ellipsis in stripping into line with non-coordinate ellipses; deletion targets a single constituent in each case.

The prediction that the class of stripping remnants should correspond to all and only (focusable) units that are licit targets for A'-movement is borne out widely. For example, a remnant may not correspond to a phrase contained in an island (68b); but the island itself (p. 699) may front, giving (68c).[27] Nor may the remnant be a unit that resists A'-movement, such as one headed by a finite auxiliary (69b), (70b), as opposed to a full CP (compare (69a) and (70a), which allow a direct, non-elliptical coordination parse). Nor may it be the object of a preposition in a language, such as German (71b), that does not have preposition stranding.

(68)

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a. He claimed that there will be a PARTY yesterday, and DANCING, too.
b. *He complained because there will be a PARTY yesterday, and DANCING, too.
c. He complained because there will be a PARTY yesterday, and because there will be DANCING, too.

(69)

a. They recommended that Ed be fired and Kim be promoted in their report.
b. They recommended that Ed be fired in their report, and *(that) Kim be promoted.

(70)

a. I didn't say that he should see a doctor or must visit the dentist.
b. I didn't say that he should see a doctor in my letter or *(that he) must visit the dentist.

(71)

a. I spoke with the mayor yesterday and not (with) the chief of police.

b.

Ich	habe	mit	dem	Bürgermeister	gesprochen
I	have	with	the	mayor	spoken
und	nicht	*(mit)	dem	Polizeipräsidenten.	
and	not	with	the	police-chief	

Cases like **He has bought the book and READ ~~the book~~* also fall into place. The verb cannot raise alone (remnants arise by phrasal A'-movement), and the VP minus its object cannot be an A'-moved remnant either, in English at least (cf. **Read he has the book*). The hypothesis that stripping remnants have moved is strongly supported by such patterns.[28]

Move-and-elide has further been argued to apply in PCCs (Sailor and Thoms 2014). Similar evidence motivates movement of remnants in medial gapping (Neijt 1979; see also Chapter 23).

It seems worth exploring whether the UCC types (27) and (28) (see 27.2.3) can be captured as a kind of stripping under move-and-elide. That approach may also shed new light on UCCs like (72) (see n. 10).

(72)

You can depend on my assistant and that he will be on time. (Sag et al. 1985)

For whatever reason, English does not tolerate a *that*-clause in the complement of a preposition (**You can depend on that my assistant will be on time*)—but the clause may surface if it (p. 700) has moved (*That my assistant will be on time, you can depend on*). A move-and-elide derivation would generate (72) with the *that*-clause as a stripping remnant (73):

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(73)

. . . and [[that he will be on time]$_j$ ~~(you can) depend on~~ t_j]

The movement analysis of stripping and PCC remnants raises issues requiring further study (see also n. 24). For example, ATB extraction is possible from the ellipsis site (cf. (63)); (74) shows the move-and-elide structure. Focus movement of the remnant to the conjunct periphery might be expected to create an intervention configuration, i.e. turn the conjunct into an island for extraction out of the coordination.

(74)

the children who$_j$ he either < [sold CIGARETTES to t_j] or
[[ALCOHOL]$_k$ [~~sold~~ t_k ~~to~~ t_j]] >

Also, remnant movement creates a classic “freezing” configuration (see Corver 2014) in which the remnant itself becomes an island. Yet extraction (ATB) from a remnant is apparently possible; cf. (64).

Whether the move-and-elide approach can extend to other forward CR cases is an open question. Stripping is not confined to clausal or verbal coordinations; (75) illustrates its occurrence in coordinations of nominals, a phenomenon on which the literature is largely silent (but see Neijt 1979: 29).

(75)

a. The sale *of alcohol* on these premises, or *of any tobacco product*, is forbidden.
b. Her reliance on *Bill* and *that he would arrive on time* proved to be her downfall.

Another case involves the sharing of the initial part of a compound word in the pattern (76) (Booij 1985; Chaves 2008). If coordination below the word level is rejected, a direct analysis is not possible; yet at the same time, given that parts of a word are not moveable elements, movement and ellipsis within larger conjuncts is also ruled out.[29]

(76)

a. < [$_{word}$ α . . .] & [$_{word}$ α . . .] >
b. Half-brothers and -sisters are considered the same as full brothers and sisters.

27.4 RNR

According to Ross’s (1967) proposal, RNR is similar to leftward ATB movement. Although the shared element α is introduced inside the conjuncts, it surfaces outside the coordination. A CR approach (77a) thus competes with an ATB movement analysis (77b), according to which α has undergone extraction from each of the conjuncts.

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(77)

a. $\ldots < [\ldots \alpha\ ]\ \&\ [\ldots \alpha\ ] > \ldots$
b. $\ldots < [\ldots t_{\alpha}\ ]\ \&\ [\ldots t_{\alpha}\ ] > \alpha \ldots$

(p. 701) RNR displays properties that differ sharply from those of forward CR cases analysed in terms of ellipsis, and also from leftward movement, including leftward ATB movement. These special RNR properties pose puzzles for both ATB movement and ellipsis approaches (see 27.4.2 and 27.4.3). 27.4.4 discusses a third approach, according to which shared material in the RNR pattern arises through *Multiple Dominance* (MD). Two related and understudied phenomena, *non-coordinate RNR* and the mysterious *Right-Node Wrap* configuration, are addressed in 27.4.5 and 27.4.6.

27.4.1 RNR as rightward ATB movement

The rightward movement approach is what Abels (2004) terms an *ex situ* analysis; it makes the assumption in (78).

(78)

The *RN* (i.e. the shared element α in RNR) is outside the coordination (since it has moved out of the coordination).

The movement analysis is natural in a model which assumes rightward and leftward movement operations, the CSC, and ATB movement. It directly captures the ATB nature of RNR (cf. (44)–(45)); if α moves out of the coordination, it is subject to the CSC.

Another potential advantage is the prediction that RNRed quantifier expressions can scope over the coordination. Sabbagh (2007) cites contrasts such as that in (79), where (79a), unlike (79b), allows the distributive ('different ways') reading (80a) expected if *every patient* takes scope over *or*.

(79)

a. She will either speak to or email every patient.
b. She will either speak to every patient or email every patient.

(80)

a. 'Patients may be contacted in different ways (or all in the same way).' (EVERY > OR)
b. 'All patients will be contacted in the same way (not in different ways).' (OR > EVERY)

Under the movement approach, the wide scope of the RN follows as a direct consequence of its derived position, from which it takes scope over the coordination. A narrow-scope

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interpretation of an RN may be explained via the possibility for reconstruction, similar to what is found with leftward ATB movement (Höhle 1991). See also 27.4.4.1.

27.4.2 Special RNR properties

Various traits of RNR are unexpected from the viewpoint of the ATB movement approach. These relate to (i) general linear properties of the RNR configuration, (ii) possible targets of RNR, and (iii) RNR–ellipsis interaction.

(p. 702) 27.4.2.1 Linear properties: String-vacuous nature, Right-Edge Restriction

A hallmark of movement, rightward and leftward, is that it typically results in a change in the order of constituents. For leftward ATB movement, that includes reordering the shared item α with respect to material X outside of the coordination (81). RNR never reorders α with respect to elements external to the coordination; cf. (82). If RNR is rightward ATB movement, it is *string-vacuous*—unlike its leftward counterpart, and unlike non-ATB rightward displacements (Extraposition, Heavy NP Shift).

(81)

a. α X < [. . . t_α . . .] & [. . . t_α . . .] >
b. Batman$_j$ *he said that* < Sue likes t_j and Mary hates t_j >.

(82)

a. *< [. . . t_α . . .] [. . . t_α . . .] > X α
b. *He said that < Sue likes t_j and Mary hates t_j > *yesterday* Batman and Robin$_j$.

(83)

String-vacuous nature of RNR:
RNR of α never results in α being placed to the right of a conjunct-external element.[30]

30

The *ex situ* assumption (78) may be compatible with (83), but the absence of cases like (82b) means that the order facts are also compatible with the *in situ* assumption that the RN is *inside* (has not moved out of) the final conjunct (Abels 2004).

Unlike leftward ATB movement (and forward CR), RNR is subject to an edge restriction on the placement of RN gaps (Wilder 1999).[31]

(84)

Right-Edge Restriction (RER) on RNR gaps
Gaps corresponding to an RN must be at the right edge of their non-final conjuncts.

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The RER is illustrated by the contrast in (85) (cf. Oehrle 1991). The object of *invite* in (85a) can appear at the right edge of its conjunct following the PP, i.e. it can undergo Heavy NP Shift (cf. *I invited into my house all the winners*). The first object in a double object construction resists Heavy NP Shift (**I gave a present all the winners*); hence the gap in the first conjunct of (85b) cannot satisfy (84).

(85)

a. I [invited into my house _] and congratulated *all the winners*.
b. *I [gave _ a present] and congratulated *all the winners*.

The RN itself also shows a right-edge effect. Under the movement analysis, the contrast in (86) suggests that the rightmost position in the final conjunct must be a licit position for α if it is to undergo RNR.[32]

(86)

a. I congratulated t_j and [invited t_j into my house t_j] all the winners$_j$.
b. *I congratulated t_j and [gave t_j a present (*t_j)] all the winners$_j$.

(p. 703) Properties (83) and (84) govern the RNR pattern across languages. Comparison of VO and OV languages is instructive; (83) and (84) interact with the word order of the language to produce different choices of RN, as illustrated for German in (87). Verb-final contexts permit RNR of V or O+V, but RNR of the object alone is possible only if it is in final position.[33]

(87)

a. Ich werde Wein ~~bestellen~~ und Susi wird Pfefferminztee bestellen.
I will wine order and Susi will mint.tea order
'I will order wine, and Susi will order mint tea.'

b. Ich sollte ~~Pfefferminztee trinken~~ und Susi wird Pfefferminztee trinken.
I should mint.tea drink and Susi will mint.tea drink
'I ought to, and Susi will drink mint tea.'

c. Ich hasse ~~Pfefferminztee~~ und Susi liebt Pfefferminztee.
I hate mint.tea and Susi loves mint.tea
'I hate and Susi loves mint tea.'

An account within the ATB movement approach is developed by Sabbagh (2007). His theory aims to derive both the RER and string vacuity of RNR from the way movement interacts with linearization (see his work for details).

27.4.2.2 RNR targets

Inspection of possible RNs reveals a range of choices that are unexpected if RNR is movement. Units which can be RNs but undergo neither leftward movement (ATB or otherwise) nor simple rightward shift include: TP, stranding complementizers (88a) (Bresnan

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1974); T'/VP (88b,c), with *do*-support not triggered, unlike in leftward movement; nominals, stranding predeterminers like *every* (88d) or adjectives (cf. (37b) and (53)); and parts of words (88e) (cf. also (26)), (Booij 1985; Wilder 1997; Chaves 2008).

(88)

a. They were discussing whether _, but wouldn't state that, *your theory is correct*.
b. John said that Mary _ and Bill said that Sue *must see a doctor*.
c. John said that Mary _ and Bill said that Sue *occupies this office*.
d. I don't wash my hair every _ but every second *day*. (Web example)
e. His theory over-_ and my theory under-*generates*. (Wilder 1997)

RNR can also target the complement of P, stranding P—a pattern unexpected in English, since rightward DP-shift cannot strand P otherwise; and more so in languages like Irish (McCloskey 1986) or German (89b) which otherwise generally disallow P-stranding.

(89)

a. John spoke to _ but Mary ignored *the new boss*.
b.

Das	Buch	liegt	auf _	und	die	Zeitung	liegt	unter	*dem*	*Sofa*.
the	book	lies	on	and	the	newspaper	lies	under	the	sofa

(p. 704) The fact that RNR can target an element contained in an island inside one or both conjuncts (Wexler and Culicover 1980) also calls into question the idea that RNR involves movement out of the coordination, even if that element is mobile otherwise.

(90)

$$\ldots < [\ldots [_{\text{ISLAND}} \ldots t_{\alpha}\ ]\ ]\ \&\ [\ldots [_{\text{ISLAND}} \ldots t_{\alpha}\ ]\ ] > \alpha$$

(91)

a. I know [the man who buys _] and you know [the man who sells _] *pictures of Elvis Presley*.
b. Politicians win [when they defend _], and lose [when they attack _] *the right of a woman to an abortion*. (Sabbagh 2007)

In (92)–(93), the RNRed string does not correspond to a single constituent. Such cases have been taken to indicate that RNR can target a sequence of constituents at the right edge of the conjuncts. While (92a) involves multiple moveable elements, (92b) and (93) certainly do not.

(92)

a. Mary baked _, and George frosted, *20 cakes in less than an hour*. (Abbott 1976)
b. a positively _ and a negatively *charged electrode* (Wilder 1997)

(93)

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Er	hat	einen	Mann,	der	drei	Hunde,	und	sie	hat
he	has	a	man	who	three	dogs	and	she	has
eine	Frau,	die	drei	Katzen	*besitzt,*	*gekannt.*			
a	woman	who	three	cats	owns	known			

'He knew a man who owns three dogs and she knew a woman who owns three cats.'

(German, Wesche 1995)

In (93), RNR targets the verbs of the main clause and a relative clause, which form a clause-final sequence due to the OV nature of the language (Ha 2008: 13 and Kubota 2015: 4 give similar examples from Korean and Japanese respectively). Such data contribute to the case for considering an *in situ* approach.[34]

27.4.2.3 Interaction of RNR with leftward movement

In (93) (following standard analyses of German V2), the shared verbs are followed by the trace of a non-shared auxiliary *hat* 'has' inside each conjunct, cf. (94).

(94)

[Er hat$_j$ einen Mann, der drei Hunde ~~besitzt, gekannt~~ t_j] und
[sie hat$_k$ eine Frau, die drei Katzen <u>besitzt, gekannt</u> t_k]

(p. 705) This illustrates the fact that *only overt material counts for the RER*. Distinct (non-shared) null elements such as the traces in (94) or (95) do not cause RER violations.

(95)

< [The drugs$_j$ John gave ~~those poor kids~~ t_j] and
[the pictures$_k$ Mary showed <u>those poor kids</u> t_k] > were illegal.

To the extent that silent elements can be said to figure in a linear string, a better formulation of (84) would be that 'no RNR gap may be followed by a *pronounced* non-shared element in its conjunct'. The fact that only overt elements count is a further indicator that linearization principles are what underlie the restriction.

Non-shared material can be extracted from a position inside the shared string, such as the two *wh*-phrases in (96), or the auxiliary belonging to the first conjunct (97).

(96)

I wonder < who$_j$ the POLICE _ and who$_k$ the BANK _> *will accuse* { t_j/t_k } *of the crime.*

(97)

< CAN$_j$ _, and will she MAKE _ > *John* (t_j) *attend the meeting*? (Wilder 1997)

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Such patterns are tricky to accommodate if RNR is treated as ATB movement of a single constituent (Grosz 2015).[35] Under an ellipsis analysis, (96)–(97) are relevant for the question of what counts as 'identical with the antecedent', since there is a mismatch between the RN and the gap with respect to null elements contained within them.

(98)

a. < [who$_j$ the POLICE ~~will accuse~~ t_j ~~of the crime~~] and
[who$_k$ the BANK will accuse t_k of the crime] >
b. < [Can$_j$ ~~John~~ t_j ~~attend the meeting~~] and
[will she make John attend the meeting] > ?

27.4.2.4 Interaction of RNR with ellipsis

Another asymmetry between leftward ATB movement and RNR is pointed out by Abels (2004). In contrast with leftward movement, an RNRed element cannot survive independent ellipsis of the VP containing its original position. In the configuration (99a), the VP of the second conjunct can be elided (100b), while the example corresponding to (99b) is impossible (constructing test examples with P-stranding eliminates a potential pseudo-gapping source).

(99)

a. $\alpha \ldots < [\ldots [_{VP} \ldots t_\alpha \ldots]] \ \& \ [\ldots [_{VP(elided)} \ldots t_\alpha \ldots]] >$ (leftward ATB movement)
b. $* \ldots < [\ldots [_{VP} \ldots t_\alpha \ldots]] \ \& \ [\ldots [_{VP(elided)} \ldots t_\alpha \ldots]] > \alpha$ (RNR)

(100)

a. *Their achievements*, Jane talked about *t* and Frank didn't talk about *t*.
b. *Their achievements*, Jane talked about *t* and Frank didn't [~~talk about *t*~~].

(101)

a. < Jane talked about *t* and Frank didn't talk about *t* > *their achievements*.
b. *< Jane talked about *t* and Frank didn't [~~talk about *t*~~] > *their achievements*.

(p. 706) If the RN in (101a) is outside the coordination, ellipsis ought to be possible just as it is in (100). That this is not so suggests that in fact the RN remains inside its conjunct.[36]

27.4.3 RNR as ellipsis

The facts reviewed above are taken by many to indicate that (78) is mistaken, and that an *in situ* analysis of RNR is more likely to be correct. One possible *in situ* approach is an ellipsis analysis (77a), whereby each conjunct contains a (syntactically independent) token of α, with all but the final token undergoing phonological deletion, under identity with the

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pronounced token. As such, RNR shows a directionality opposite to that of both forward CR and of canonical ellipsis.

There are other significant differences between RNR and canonical ellipsis phenomena (NPE, VPE, sluicing). One concerns the grammatical type of the gap, which in each of NPE, VPE, and sluicing is a specific category (NP, VP, TP). RNR is promiscuous—there is quite possibly no category type that *cannot* undergo RNR, once independent factors such as prosody are controlled for.[37]

Another concerns identity. Forward CR shows form identity mismatches largely in line with those found in canonical ellipsis; RNR does not (see 27.4.3.1). In addition, certain types of RN are at odds with the assumption of two independent syntactic tokens (see 27.4.3.2 and 27.4.3.3).

Focus is seen by some to play a crucial role in RNR. Certainly, RNR involves semantic contrast between the non-shared parts of the conjuncts, which typically leads to material preceding the gap and the RN being focused. Hartmann (2000) proposes that focus conditions the phonological deletion of the RNRed material in non-final conjuncts. Ha (2008) suggests that the RNR is syntactically conditioned ellipsis, and that the context for RNR is identified by a syntactically encoded contrastive focus which immediately precedes the gap in each non-final conjunct. Chaves (2014) presents arguments against taking (contrastive) focus to play a defining grammatical role in RNR. (102) illustrates that RNR gaps need not be directly preceded by contrastively focused elements.

(102)

My mother blushed at this small lie because SHE knew and WE knew *that the roosters had already been paid for*. (Chaves 2014: 843)

27.4.3.1 Form identity

(p. 707) RNR generally does not tolerate form mismatches (vehicle change) of the type observed in forward CR and VPE etc., discussed in 27.3.1. It appears that the form of the RN must satisfy form requirements imposed by both conjuncts (Wilder 1997) (exceptions are discussed below).

Firstly, an R-expression contained in the RN cannot corefer with a pronoun c-commanding the RNR gap in the first conjunct (Levine 1985):

(103)

*She$_j$ said _ and I happen to agree that Mary$_j$ needs a new car.

Secondly, while an RN can contain bound (sloppy) pronouns (Höhle 1991; Jacobson 1999), mismatch of forms leads to ill-formedness (Chaves 2014), unlike in VPE and forward CR.

(104)

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a. Chris$_j$ likes ~~his$_j$ bike~~ and Bill$_k$ loves *his$_k$ bike*.
b. *Chris$_j$ likes ~~his$_j$ bike~~ and Sue$_k$ loves *her$_k$ bike*.

Thirdly, mismatching verb agreement forms cause ill-formedness, though morphosyntactic feature mismatches are tolerated in the case of syncretism, i.e. if the form is compatible with requirements in both conjuncts (Eisenberg 1973; Wilder 1997).

(105)

a. *John said that I, and Mary said that she, is the best swimmer.
b. John said that I, and Mary said that she, was the best swimmer.

Similar examples involving other verb forms in English, and case forms in German and other languages are discussed in Pullum and Zwicky (1986) and Chaves (2014).

These facts indicate that, if RNR is a kind of ellipsis, then it is subject to a different kind of identity requirement than forward ellipsis. Wilder (1997) suggests that RNR involves deletion at a level (in terms of the Minimalist model, following Spell-Out and operations of inflectional morphology) at which grammatical categories are no longer relevant. Chaves proposes an operation of 'backward peripheral deletion' which 'imposes morph form identity conditions' (Chaves 2014: 868).

A puzzling counterexample to the identity generalization is seen in (106) (Kayne 1994: 146).

(106)

a. Mary bought but John didn't buy *any books about linguistics*.
b. *Mary didn't buy but John did buy *any books about linguistics*.

The pattern resembles the *some-any* vehicle change found in VPE, yet the shared constituent is a DP, not a regular ellipsis target in English. Chaves (2014: 875–6) suggests that the RN in (106a) is not the whole DP but the bare plural *books about linguistics* following *any*. However, natural-sounding instances of the pattern can be found which lack a suitable RN following *any* (examples from the Web).

(107)

a. [He] went into the library where he shot at but didn't hit *anybody*.
b. I asked for, but didn't receive *any refund* [. . .]
c. 'What? There is no Thomas Haden Church page?' That's what I thought when I searched for and didn't find *any*.

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27.4.3.2 A total of, same, different

(p. 708) Ellipsis accounts break down in the face of examples like (108a), involving relational adjectives like *same, different* (Jackendoff 1977), and what Chaves (2014) calls the *additive reading* of (108b).

(108)

a. John hummed, and Mary whistled, different tunes.
b. I borrowed, and my sisters stole, a total of $3000. (Abbott 1976)

(109)

a. John hummed different tunes, and Mary whistled different tunes.
b. I borrowed a total of $3000, and my sisters stole a total of $3000.

In the reading in which John's tune was different from Mary's tune (Carlson's 1987 internal reading of *different*), (108a) is not equivalent to its undeleted counterpart (109a). Likewise, (109b) lacks the prominent reading of (108b) according to which the sum of the money borrowed and stolen was $3000. An analogous difference was described in 27.4.1 with respect to quantifier scope.

The source of the problem these examples pose is that the RN takes scope over the remainder of the coordination. This in and of itself does not force the conclusion that the RN is syntactically outside the coordination (Abels 2004). But ellipsis approaches suppose that each conjunct contains a syntactically independent token of the RNRed phrase; an RNR example is syntactically the same as its counterpart without deletion. It is unclear what syntactic or semantic mechanism could be responsible for the wide scope of the RN, and why such a mechanism should not be available in the absence of the deletion. These cases, in short, are highly problematic for *in situ* deletion theories such as Wilder (1997) or Hartmann (2000b).

27.4.3.3 Summative agreement

The phenomenon of *summative agreement* (Yatabe 2003), illustrated in (110), was observed in English by Postal (1998: 173) and in German by Schwabe and Heusinger (2001). The RNRed string includes a plural verb which agrees with non-shared singular subjects that are not themselves coordinated but each in a separate larger conjunct.

(110)

The pilot claimed that the first nurse, and the sailor proved that the second nurse, *were spies.*

The pattern appears to exist in some but not all languages/varieties and for some but not all speakers (Grosz 2015). It clearly presents a problem for a deletion account, in which each subject would be in a syntactic agreement relation with a separate token of the plural verb. Postal (1998), Yatabe (2003), and Chaves (2014) conclude that the pattern is to

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be handled (p. 709) via an *ex situ* analysis of the RNRed string in which some special mechanism provides a plurality for the verb agreement.

Other phenomena involving a plural form in the RN related to singular non-shared elements, illustrated by (111), cause similar problems for *in situ* deletion accounts:

(111)

The Czech$_j$ and the Slovak$_k$ *republics*$_{j+k}$ are very similar.

Relative clauses with split antecedents (Perlmutter and Ross 1970), insofar as it is correct to suppose that they instantiate RNR, pose a similar problem.

(112)

Mary met a man$_j$ and John met a woman$_k$ *who*$_{j+k}$ *know each other well.*

27.4.3.4 Backwards ellipsis vs RNR

Canonical ellipses (sluicing, VPE, NPE) usually follow their antecedents, but backward ellipsis is also possible. That raises the question of whether some apparent RNR gaps (specifically, RNR of TP, VP, or NP) might have an ellipsis source in addition to or instead of an RNR source. The configuration of interest is (113), where YP = TP, VP, or NP, the gap is final in its conjunct, and the content of the gap is identical with overt final YP in the second conjunct.

(113)

$< [\ldots [_{YP}\ gap\ ]]\ \&\ [\ldots YP\ ] >$

Barros and Vicente (2011) propose that some cases of (113) are derived by backward ellipsis, discussing YP=VP in English. Chaves (2014) makes a similar claim, discussing examples where YP= NP and YP=TP as well.

Sluicing, NPE, and VPE are all licensed by specific choices of X in the left-hand context (114).

(114)

$\ldots [\ X\ [_{YP}\ elided\ constituent\ ]\ ] \ldots$

Certain choices of X only occur where YP undergoes ellipsis, i.e. do not permit a non-elliptical YP. These can be deployed to probe for genuine backward ellipsis, and to distinguish ellipsis from RNR gaps. Given the form identity condition on RNR (see 27.4.3.1), an RNR gap should behave like overt YP in this respect.

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In English, the inversion of a preposition and *wh*-word (swiping) is an instance of X that only occurs in sluicing; swiping does not occur when the TP is not elided (Merchant 2002).[38]

(115)

a. He opened it somehow, but I don't know what with (*he opened it).
b. What with (*did he open it)?

(p. 710) Gračanin-Yüksek (2007) analyses *wh&wh* constructions (*What and when did he eat*?, cf. (29c)) as a form of RNR. Chaves (2014) suggests similar examples are derived by ellipsis (backwards sluicing) rather than RNR. However, as Gračanin-Yüksek notes (pp. 156–7), swiping is degraded in this construction, implying that it does not have a sluicing source.

(116)

{ How and when / ??What with and when } did he open it?

The same contrast is seen in cases involving larger conjuncts; the deviance of (117b) suggests that (117a) does not have a sluicing source:

(117)

a. Sue knows how _ and Bill knows when he opened it.
b. ??Sue knows what with _ and Bill knows when he opened it.

English NPE is licensed in the complement of prenominal possessors (118), but in the case of possessor pronouns, a special ellipsis form (*mine, yours, theirs*) replaces the regular *my, your, their*.

(118)

a. Fred got Judy's signature, but not { John's/mine/yours/*my/*your } _.
b. *Fred got {mine/yours} signature.

This alternation directly distinguishes RNR gaps from NPE. (119a) (from the Web) illustrates a possessed NP in the RNR configuration where the gap follows the regular pronoun. The ellipsis form is degraded (119b).

(119)

a. The most frequent mistake in creating a website is creating it from your _ rather than from your customer's perspective.
b. ?? . . . from yours _ rather than from your customer's perspective.

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German allows NPE in the complement of quantifiers like *ein* 'one/a', *kein* 'no', and pronominal possessors (*mein* 'my', *sein* 'his', etc.). These also have a special ellipsis form: the regular form *ein* (or *mein, kein*, etc.), as in e*in Wagen* 'one car' (MASC.SG.NOM) or *ein Buch* 'one book' (NEUT.SG.NOM/ACC), is replaced by *einer* (MASC.SG.NOM) or *eins* (NEUT.SG.NOM/ACC) if the NP is elided (120) (Lobeck 1995: ch. 4). A contrast similar to (119) shows up in German RNR (121); again, the ellipsis form is degraded.

(120)

Sie	hat	mein	Buch (*meins Buch)	und	du	hast	seins _ (*sein _).
she	has	my	book	and	you	have	his

(121)

a.	Du	hast	sein __,	und	er	hat	mein	Buch.
	you	have	his	and	he	has	my	book

b. ??Du hast seins__, und er hat mein Buch.

(p. 711) The licensing contexts for English VPE and RNR of VP differ in four cases. Firstly, VPE cannot target the complement of progressive *being* (passive or copular); cf. (122) (Akmajian and Wasow 1975; Sag 1980; Harwood 2014). RNR of a passive VP or other predicate, stranding *being*, is perfectly possible (123):

(122)

John was being spied on/too careful, and Bill was/might be (*being), too.

(123)

a. Judy WAS being, and Jack OUGHT to be, as quiet as a mouse.
b. Selected sites are being, and will continue to be, monitored . . . (Web example)

Secondly, RNR can take out non-finite perfect *have*. VPE normally cannot (Sag 1980; Harwood 2014).

(124)

a. They want to know who must and who may have witnessed it.
b. They want to know who must have witnessed it and who may *(have).

Thirdly, RNR (unlike VPE) can take out a finite lexical verb without triggering *do* support:

(125)

a. We asked whether Judy ~~owns a car~~ and not whether John owns a car.
b. We asked whether John owns a car and not whether Judy *(does).

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Fourthly, RNR (unlike VPE) cannot trigger *do*-support except in emphatic *do* contexts. *Do*-support in affirmative declaratives is restricted to cases of emphatic *do*, with *do* focused (*John DID leave*, but **John did LEAVE* / **JOHN did leave*)—except in VPE contexts, where *do*-support is mandatory even if *do* is not focused (*Who left? – JOHN did*). Where VP is RNRed, *do*-support only occurs when focused (emphatic *do*, (126c)).[39]

(126)

a. Sue said that John, and Bill said that Mary left first. (RNR only)
b. ??Sue said that John did and Bill said that Mary left first. (VPE only)
c. Sue said that John did and that Mary didn't leave.

The first three contrasts indicate that RNR can elide English VPs which VPE cannot, whereas the contrast in (126) suggests that VPE is unable to create an RNR-like configuration where the VP gap in the first conjunct depends on the VP in the second conjunct. This matches what (116) and (117) suggest for sluicing, and (119) and (121) for NPE.[40]

(p. 712) On the other hand, Bošković (2004b), Barros and Vicente (2011), and others have documented that apparent RNR of English VPs allows identity mismatches that are unexpected from the viewpoint of the form identity condition on RNR discussed in 27.4.3.1, and that mirror those permitted in VPE. This is illustrated by the elision of the bare form *write* licensed by the participle *written* in both examples in (127).

(127)

a. John will _, and Mary already has written to Bill.
b. Mary already has written to Bill, and John will _ tomorrow.

Barros and Vicente argue that this pattern and the way it interacts with phenomena discussed in 27.4.3.2 and 27.4.3.3 show that RNR is not a unitary phenomenon (they propose a hybrid ellipsis/MD approach).[41]

In sum, although there is evidence to suggest that the configuration (113) generally only arises via RNR (and not regular ellipsis), there are still unresolved issues in this domain, notably relating to facts like (127a).

27.4.4 RNR as Multiple Dominance

27.4.4.1 Sharing as MD

Multiple Dominance has been explored as an alternative *in situ* approach to RNR (McCawley 1982; Wilder 1999; Gračanin-Yüksek 2007; Kluck and de Vries 2013, and others). It differs from ellipsis/deletion accounts in that there is assumed to be only one token of the shared constituent in the structure. Thus instead of two copies of the shared element α with one deleted, there is a single element α, dominated by two different mother nodes, one in each conjunct.

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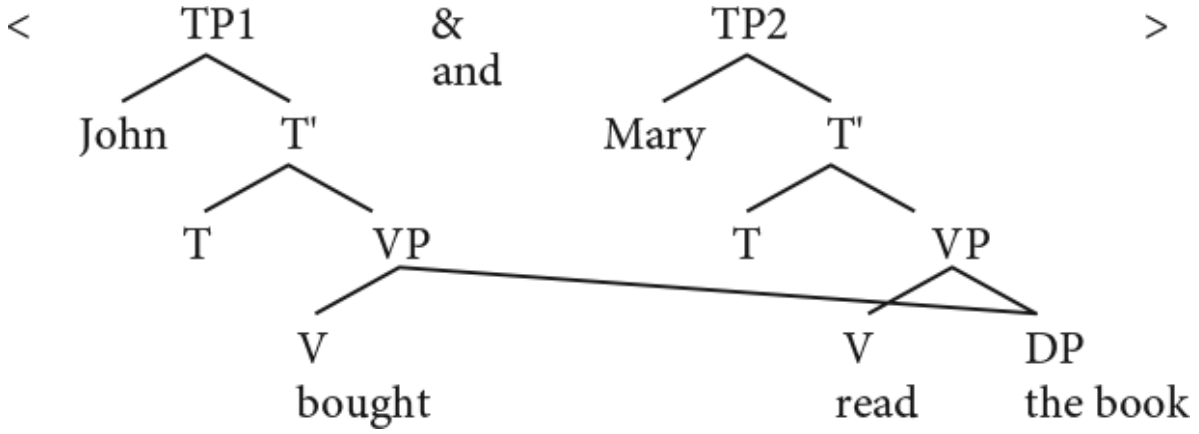
(128)



This approach is claimed to enable an account of *in situ* effects while avoiding some (at least) of the drawbacks of ellipsis approaches. If it is on the right track, then RNR is a phenomenon very different in nature from regular ellipsis, one that does not involve a relation between an anaphor (or rather, cataphor) and an independent antecedent. Rather, RNR is more akin to movement (even if it is not movement), involving a single item (p. 713) occupying multiple positions in a structure. There have also been proposals to treat movement in terms of MD (see de Vries 2009 for a review), an idea extended to ATB movement by Citko (2005) (see also Wilder 2008).

The placement of α in the string needs to be accounted for by independent linearization assumptions, such that a gap appears in the string in α's position in non-initial conjuncts. Wilder (1999, 2008), Bachrach and Katzir (2009), and others explore ways of deriving linear properties of RNR, including the RER, from a general linearization algorithm applying to structures with or without MD. More generally, extending ideas of Kayne (1994), the idea is pursued that the extra structural possibilities admitted by MD are severely constrained by a linearizability requirement.

By invoking a basic option of structural combination ('parallel merge', to use Citko's term), the MD approach fits well with the facts reviewed above showing that just about any type of constituent can be shared in the RNR pattern (modulo linear constraints). Even subword deletion can be captured in terms of MD, assuming complex words have internal structure (Wilder 2008). By not invoking movement, the MD approach avoids questions facing the ATB movement approach about RNs that do not otherwise move.

The MD approach forms a reasonable basis for understanding the form identity effects reviewed in 27.4.3.1 (cf. also Citko 2005 on similar effects in leftward ATB movement). Mismatches such as those concerning *any* ((106)–(107)) remain unexplained, though.

The MD structure also offers a basis for accounting for the interpretation of shared quantificational elements within the scope of the coordinator (the 'different ducks' reading of (129a)).

(129)

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a. This afternoon, John RESCUED but Peter SHOT *a duck*.
b. $(\exists x\ (\text{DUCK}(x) \wedge \text{RESCUED}(john,x)) \wedge (\exists y\ (\text{DUCK}(y) \wedge \text{SHOT}(peter,y))$

While there is only one token of the indefinite *a duck* in the structure, it occupies two separate positions in the scope of the coordinator (one in each conjunct). Depending on one's theory of indefinites, *a duck* may undergo local Quantifier Raising within each conjunct or be interpreted *in situ* as a variable; regardless, it will be interpreted in both conjuncts.

At the same time, the MD approach does not suffer the defect of the ellipsis approach outlined above with respect to (130a), the wide-scope ('same song') reading of the shared object in (130b), or the quantifier in (79).

(130)

a. John hummed and Mary whistled *the same tune*.
b. John always hums and Mary always whistles *a Portuguese love song*.

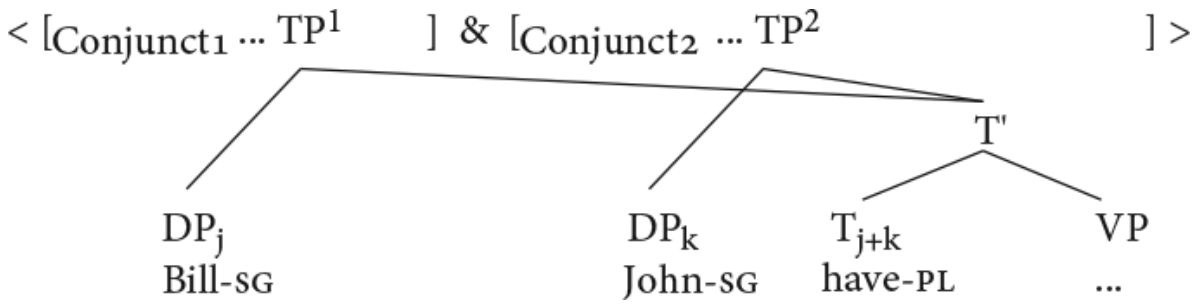
Assuming MD for sharing in RNR does not in principle exclude that an RNRed element may undergo rightward ATB movement. Equally, it is not incompatible with the possibility that an RN may undergo covert ATB movement (e.g. ATB Quantifier Raising).[42]

(p. 714) Grosz (2015) presents an argument concerning the *summative agreement* pattern (27.4.3.3) favouring MD. While agreement in (131) cannot be handled as a regular syntactic relation under a deletion approach or an *ex situ* treatment, this is possible within an MD account. This is because in the structure (132), the shared auxiliary, by virtue of being dominated by both TP^1 and TP^2, enters an independent structural relation (represented in (132) by coindexing) with each of the non-shared singular subjects.

(131)

Sue's proud that Bill_j __, and Mary's glad that John_k $\textit{have}_{j+k}$ travelled to Cameroon.

(132)



The subjects in (132) do not form a single unit (a DP coordination). It is thus correctly predicted that group readings of the DPs are impossible (133) (Grosz reports that such examples are uniformly rejected by speakers who accept summative agreement in the pattern (131)).

(133)

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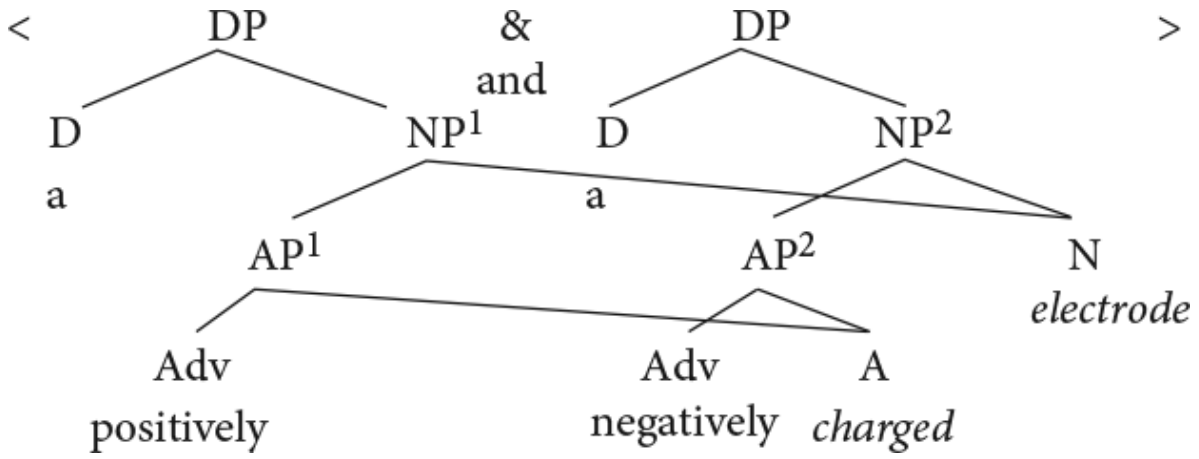
*Sue's proud that Bill, and Mary's glad that John, have finally met.

27.4.4.2 Non-bulk sharing

The MD approach permits sharing of a sequence of more than one constituent. The facts noted in 27.4.2.2 and 27.4.2.3 concerning multiple constituent sequences and the interaction of RNR with leftward movement are both captured in terms of multiple constituent sharing.

In (128), what is shared is a single complex unit, viz. [$_{DP}$ *the book*]. There is one node in each conjunct which is a mother of the shared unit. In (134) (cf. (92b)), *two* units are shared, A and N, each of which has a mother in each conjunct—AP^1 and AP^2, NP^1 and NP^2 (Wilder 2008).

(134)



(p. 715) Gračanin-Yüksek (2007) distinguishes *bulk sharing* from *non-bulk sharing*. In (128), a single shared constituent, formed from smaller shared units, is shared as a 'bulk' unit. In (134), two smaller units (A and N) are shared separately ('non-bulk').

RNR cases like (135) have non-shared constituents (*which book* and *which film*) extracted from a position within the shared string, posing tricky questions for an ATB movement account (cf. 27.4.2.3).

(135)

Bill asked which book _ and Celia asked which film *they chose*.

In an MD approach, RNRed strings containing distinct null elements involve non-bulk sharing—one trace belongs to one conjunct and the other trace belongs to the other. The shared items of the RNRed string are shared individually, a sequence of MDed constituents. Any constituent XP1 that dominates a non-shared trace within a conjunct is itself non-shared (i.e. distinct from its counterpart XP2 in the other conjunct by virtue of

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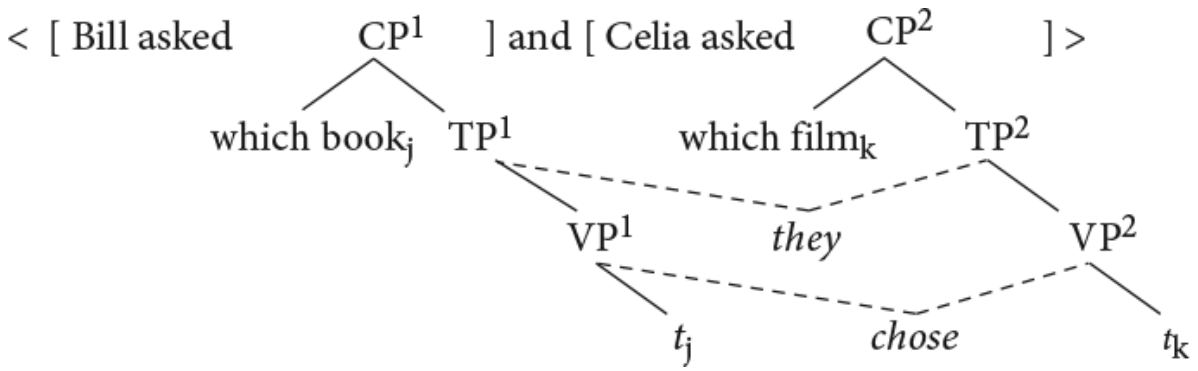
dominating an element not dominated by XP2), even where the constituent in question (e.g. the TPs and VPs in (136)) dominates no *pronounced* non-shared elements.

(136)



The same account is applied to *wh&wh* questions like (137) by Gračanin-Yüksek (2007) (see also Citko and Gračanin-Yüksek 2013). In (137b), the positions of the individually shared elements (*did, he, eat*) in the first conjunct are indicated with underscores.

(137)

a. What and when did he eat?
b. < [$_{CP1}$ what$_j$ _ [$_{TP1}$ _ [$_{VP1}$ _ t_j]]] and [$_{CP2}$ when$_k$ *did* [$_{TP2}$ *he* [$_{VP2}$ *eat* t_k]]] >

The non-bulk sharing approach resolves the issue of RNRed strings containing distinct (non-shared) null elements by denying that the RNRed string corresponds to a single constituent.[43] Any such RNRed string will be analysed as non-bulk sharing, including examples involving A-movement (138a). For the same reason, though, this approach is unable to derive (138b) as ATB VP-fronting; the structure will not contain a single shared VP to input ATB fronting.

(138)

a. John$_j$ was and Mary$_k$ wasn't *caught* { t_j/t_k } *stealing*.
b. *Caught* { t_j/t_k } *stealing*, John$_j$ was _ and Mary$_k$ wasn't _.

27.4.5 Non-coordinate RNR

The RNR configuration (139), with a gap at the right edge of a constituent A corresponding to a string within its sister B, is also found where A and B do *not* form a classic coordination. One case involves comparatives (140a), where B is the *than*-clause. Various authors argue that comparatives can be structured as coordinate constructions (e.g. Lechner 2001, 2004; Phillips 2003; Osborne 2009). Comparatives also license forward CR; cf. (140b).

(139)

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. . . [$_A$ abc ~~xyz~~] [$_B$ . . . def xyz . . .] . . .

(140)

a. More people [$_A$ talked to _] than ignored *the new colleague*.
b. *Peter has sent* FLOWERS to SUE more often than [_ a CARD to MARY].

RNR also turns up in environments which are *non-coordinate* in the sense that they bar forward CR. Some involve arguments of predicates of comparison (141a,b) or motion (141c), or subordinators like *whereas* or *without* (141d,e), while in other cases, material is shared by a subject and its predicate (141f). Many such examples have a marginal flavour.

(141)

a. It's interesting to compare [$_A$ the people who like _] with the people who dislike *the power of the unions*. (Hudson 1976b: 550)
b. How to distinguish [$_A$ neuro-__] from psycho*linguistic claims*. (Chaves 2008: 266)
c. a journey [$_A$ from the southern _] to the northern *tip of the island*
d. [$_A$ John throws out _], whereas Mary eats *anything that happens to be in the refrigerator*. (Goodall 1987: 96)
e. [$_A$ I talked to _] without actually meeting *all the members who voted against Hinkly*. (Williams 1990: 267)
f. [$_A$ Anyone who talks to _] really gets to like *our new colleague from Sunderland*.

That such examples belong to RNR is supported by several characteristics. Subword deletion as in (141b) is only otherwise found in coordinate RNR. The possibility for P-stranding precludes an analysis of (141e) as parasitic gap construction licensed by rightward shift of *all the members* across the *without* phrase (Williams 1990; Postal 1994). Like coordinate RNR, these dependencies are not constrained by islands; cf. (141a) and many examples in Postal (1994). In German, non-coordinate RNR in subordinate clauses can yield the sharing of verbs in the predicate and a relative clause in the subject (142a), a possibility bled in main clauses by V2 (Wilder 1997; Lechner 2001: 705).

(142)

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a. ?weil [viele Leute, die ein Buch ~~gekauft haben~~]
since many people who a book bought have
auch eine Zeitung *gekauft haben*
also a newspaper bought have
'since many people who bought a book also bought a newspaper'

b. *Gestern *haben* [viele Leute, die ein Buch ~~gekauft haben~~]
yesterday have many people who a book bought have
auch eine Zeitung *gekauft.*
also a newspaper bought

(p. 717) A general characterization of the environments permitting non-coordinate RNR is lacking, as is a systematic study of other factors impacting on its occurrence.

27.4.6 Right-Node Wrapping

The VP coordinations in (143) involve a shared object that surfaces in a non-final position in the final conjunct (Wilder 1999, 2008; Whitman 2009), a pattern which Whitman calls *Right-Node Wrap*. RNW shows a characteristic intonation pattern: the shared element is deaccented (cf. the pronoun in (143c)) and the non-shared material that follows it is accented.

(143)

a. Mary congratulated _ and gave *the boy* the prize.
b. The blast upended_ and nearly sliced *an armored Chevrolet Suburban* in half. (Whitman 2009)
c. After using dishes, please wash, dry, and put *them* away in the proper place. (Whitman 2009).

Object-sharing in the RNW pattern is attested for German by Hartmann and Schmitt (2013) and for French by Mouret and Abeillé (2011); it is also found in Norwegian (144).

(144)

Torsdag kunngjør hovedstyret i Norges Bank
Thursday announces executive.board.DEF in Norge Bank
om det vil kutte _ eller holde *styringsrenten* uendret på 1,5 prosent.
whether it will cut or hold control.rate.DEF unchanged at 1.5 percent
'On Thursday, the Bank of Norway's executive board announces whether it will cut or keep the key policy rate at 1.5%.' (Web example)

The phenomenon itself and its implications for theories of RNR have only recently begun to be explored.

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One reason for treating RNW as part of RNR is that non-initial conjuncts show the RER (145).

(145)

*John gave _ a prize and recommended *Mary* for promotion.

The non-final placement of α in the final conjunct makes it difficult to pursue an ATB movement analysis—if α has raised out of the coordination, then the non-shared phrase following it presumably has, too, in violation of the CSC.

Another RNW pattern is found in German nominals, illustrated by (146b) (from the Web). Coordinated possession nominals with shared possession can take the form (146a), whereby the possessor pronoun (*mein*) has the bare form used in RNR but not NPE (cf. 27.4.3.4).

(146)

a. < [Possessor pronoun] & [Det Noun NP_{GEN}] >
b. Dieser Tag hat < mein _ und auch das *Leben* vieler
this day has my.N.SG.ACC and also the.N.SG.ACC life many.GEN
anderen Menschen > verändert.
other people changed
'This day changed my life and also the life of many others.'

(p. 718) Sabbagh (2012) notices that a quantifier phrase in the RNW configuration does not scope over the coordination, unlike a regular RNRed QP. Unlike (147a), (147b) cannot describe a prediction that some will be fired and others promoted.

(147)

a. They will either promote or fire EVERYONE. (EVERY > OR)
b. They will either promote or give everyone the SACK. (OR > EVERY / *EVERY > OR)
c. They will either PROMOTE or FIRE everyone. (OR > EVERY / * EVERY > OR)
d. ??They will either promote or give EVERYONE the sack.

Taking wide scope to be a reflex of overt movement of the RN out of the coordination (Sabbagh 2007), the narrow scope of the RN in (147b) indicates an *in situ* analysis for that case (as the word order independently suggests). However, the wide-scope reading of *everyone* also correlates with accenting; unstressed *everyone*, whether non-final or final (147c), does not have the distributive (wide-scope) reading.

27.5 Conclusion

Viewed as a whole, CR is characterized by striking right–left asymmetries, suggesting that different mechanisms lie behind forward and backward gaps in coordination ellipsis.

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Forward CR shows affinities with canonical ellipsis with respect to vehicle change etc. This, together with indications that non-elided remnants in conjuncts affected by forward CR have undergone conjunct-internal movement, renders the move-and-elide approach particularly promising, though important questions remain. If move-and-elide is correct, then forward sharing arises from an ellipsis mechanism like that involved in VPE, NPE, and sluicing.

RNR is different. An ellipsis approach falters in the face of identity patterns (absence of vehicle change) and wide-scope effects found with quantifiers, relational adjectives, etc. The major alternative has been Ross's original rightward ATB movement proposal; however, doubt is cast on that approach by a range of considerations, including the RNR ability of sharing otherwise unmoveable elements. The third possibility, an *in situ* MD approach, appears to offer ways out of the dilemma, though much remains to be explored in this domain. If the MD hypothesis is correct, then RNR gaps are due to a basically different mechanism than forward CR and regular ellipsis.

Notes:

([1]) Throughout the chapter, angled brackets <…> mark the *coordination*, i.e., the constituent comprising the conjuncts plus the coordinator.

([2]) The pattern in (4) was attributed by Ross (1967) to a rightward across-the-board extraction rule which he called *Conjunction Reduction* (see 27.2.6); it has been known as *Right-Node Raising* (*RNR*) at least since Postal (1974). The term RNR is commonly applied to the phenomenon itself without implying a particular analysis of it.

([3]) Another case of medial sharing is discussed in 27.4.6 (*Right-Node Wrap*).

([4]) To facilitate the presentation, the remainder of the chapter assumes (except where otherwise stated) a standard X'-theoretic analysis of non-conjoined expressions, in terms of a CP-TP(-vP)-VP clause structure, and a DP-NP structure for nominals.

([5]) Counterexamples to substitutability arise where an external item depends on the presence of the coordination—*either, respectively*, and plural agreement in (i)–(iii):

((i))

He either met *John* *(*or Mary*).

((ii))

John *(*and Mary*) are happy.

((iii))

They drank *wine* *(*and beer*) respectively.

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([6]) For early discussion, see Schachter (1977a). Whitman (2004) has insightful discussion of semantic and pragmatic factors influencing judgements on coordinations of different types of phrases.

([7]) The LCL is not an inbuilt feature of (23) or (24); the type equality of XP and YP needs to be ensured independently. See Progovac (2003) and Borsley (2005) for critical discussion of endocentric approaches.

([8]) Examples like (i) suggest coordination of an intermediate projection (C’) (likewise for conjoined finite verb-initial constituents with shared initial specifier phrase in Germanic V2 languages); but under alternative assumptions (e.g., multiple heads in the C-domain, following Rizzi 1997), they may be analysed as phrasal coordination.

((i))

Why < [has the teacher left] and [are the pupils still here]>?

([9]) For a defence of head coordination, see Abeillé (2006a).

([10]) On (i) (from Sag et al. 1985), which contradicts substitutability as well as the LCL, see 27.3.2.

((i))

You can depend on [$_{DP}$ Bill] and [$_{CP}$ that he will be on time].

([11]) Constructions where a predicative UCC is isolated from the verb, such as fronting (i), raise questions for (29a). Beavers and Sag (2004) consider the analysis (ii) involving larger conjuncts with backward CR, but Levine (2011) points out problems. For instance, (iii) indicates a smaller coordination, since *both* cannot modify conjoined root clauses.

((i))

Tired and in a foul mood, he certainly was.

((ii))

<[tired ~~he certainly was~~] and [in a foul mood , he certainly was].>

((iii))

Both tired and in a foul mood, he certainly was.

Chaves (2006) discusses related adjunct UCCs (*Both tired and in a foul mood, Bob packed his gear*).

([12]) Neijt (1979: 62–6) gives further arguments against ‘conjunct extraposition’.

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([13]) The construction is sometimes termed *Bare Argument Ellipsis*, yet it is also found with predicates (*He seemed angry yesterday, and rather drunk*). A different approach to stripping, according to which the correlate in the first conjunct raises covertly to attach to the second conjunct, is argued for by Reinhart (1991); see also Fiengo and May (1994: 111–12).

([14]) Prinzhorn and Schmitt (2010) discuss German data problematic for this account.

([15]) On the interaction of *either* and ellipsis, see Den Dikken (2006) and Hofmeister (2010).

([16]) The ATB exception to the CSC applies only to movement of an element contained *within* a conjunct. Conjuncts themselves appear to be immobile (Grosu 1973); granted, that is, that there is no conjunct extraposition.

([17]) Cases of (apparent) coordination that do not obey CSC, such as *What did he turn round and say to you?*, already noted by Ross (1967) and later discussed by Goldsmith (1985), Lakoff (1986), Postal (1998), and others, are not considered here.

([18]) Ross's (1967: 174) rule ("Conjunction Reduction") was responsible for both RNR and leftward ATB movement.

([19]) Proposals for direct coordination accounts of PCC in terms of flexible constituency also include Pesetsky's (1995) "layers and cascades" and Phillips' (1996, 2003) constituency-altering derivational merge approach, which also extends to RNR.

([20]) X/Y signals a function that combines with Y to its *right* to give X; while X\Y is one that combines with Y to its *left* to give X, where X and Y can both be function types. (S\NP)/NP is the category for a finite verb in an SVO language.

([21]) The CCG approach outlined by Steedman suggests a basic right–left symmetry for ATB constructions. RNR is claimed to be island-constrained like leftward movement (Steedman 2000: 17), contra Wexler and Culicover (1980) and many since (see 27.4.2).

([22]) A case which does *not* motivate a CR approach is the phenomenon of *respectively* readings in coordination, whereby (i) is paraphrased by (ii).

((i))

Alex and Bill met Yvonne and Zoe (respectively).

((ii))

Alex met Yvonne and Bill met Zoe.

These readings have been described as fundamentally problematic for the syntax of coordination (Postal 1998: 135). In the logic of early Transformational Grammar, the paraphrases suggest a clausal coordination source, and syntactic solutions that assign sen-

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tences like (i) (in the relevant reading) a biclausal syntax have been suggested, e.g. by Goodall (1987). However, the fact that such readings also arise with non-conjoined plurals, as in *The first two boys met the last two girls (respectively)*, indicates that their source is not to be found in coordination syntax (via some kind of CR), but in semantics (e.g., a covert distributive operator). See Gawron and Kehler (2004) and Chaves (2012).

([23]) In Merchant's (2001) proposal, phonological deletion is triggered by an "E-feature" introduced by X in (56), which simultaneously imposes the requirement for the elided YP to stand in a suitable semantic relation ("e-GIVENNESS") with an antecedent.

([24]) A central (and hitherto unanswered) question facing attempts to assimilate forward CR to regular ellipsis is why with forward CR, unlike the canonical ellipsis types, the antecedent–ellipsis relation is coordination-bound. See Johnson (2009) for relevant discussion with regard to gapping.

([25]) Attempts at characterizing the possibilities are Hankamer's (1979) Major Constituent Condition on remnants, combined with a Head Condition prohibiting deletion of material c-commanded by an overt head (Wilder 1997).

([26]) The idea can be implemented in the Minimalist framework by assuming an abstract head X which attracts ZP, and carries the E-feature which simultaneously imposes the e-GIVENNESS requirement on YP and triggers its phonological deletion. If the LCL is interpreted in terms of syntactic categories, this kind of solution would require the initial conjunct also to be an XP, even though the correlate to the focused remnant typically remains *in situ*.

((i))

$$\ldots < [_{XP} \ldots] \ \& \ [_{XP} \ ZP \ X \ [_{YP} \ldots t_{ZP} \ldots] \ ] > \ldots$$

([27]) Sluicing can in certain cases remedy island violations (cf. Merchant 2001), and the question arises of why the effect is found with some kinds of ellipsis but not others. See Griffiths and Liptak (2014) for discussion.

([28]) A case that deserves closer scrutiny is Reinhart's (1991) examples involving a remnant extracted from a subject, as in (i):

((i))

Jokes about FRED were told, and FELIX, TOO.

((ii))

*Felix$_j$, jokes about t_j were told.

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([29]) This pattern appears to be restricted to coordinations, unlike its mirror image RNR counterpart (cf. Chaves 2008: 271); compare *?distinguishing neuro~~linguistics~~ from psycholinguistics* and **distinguishing half-brothers from ~~half-~~sisters*. A similar pattern in Japanese is discussed under the rubric of Left-Node Raising by Yatabe (2001).

([30]) Kluck and de Vries (2013) argue that RNR can feed non-string-vacuous rightward processes such as extraposition of nominal modifiers.

([31]) Postal (1998: 178 and 195, n. 18) presents examples as grammatical that do not conform to RER. His judgements are contested by Levine (2001: 163) and others.

([32]) Cases where the shared element surfaces in a *non-final* position in the final conjunct are discussed in 27.4.6.

([33]) This suggests that backwards V-gapping, famously restricted to SOV languages (SO&SOV vs *SO&SVO; Ross 1970), is RNR.

([34]) Sabbagh (2007) offers an account for why (91) should be possible, i.e., why RNR does not respect islands. His approach does not, however, afford insight into other surprising RNR targets, including sublexical units and multiple constituent sequences.

([35]) A similar problem arises in leftward ATB cases like (i), with a single fronted constituent apparently containing the traces of the non-shared subjects *John* and *Mary*. See 27.4.4.2.

((i))

How likely $\{t_j/t_k\}$ to abscond was John_j _ and is Mary_k _?

([36]) This argument is not addressed in Sabbagh (2007). The failure of RNR to interact with sluicing points in the same direction:

((i))

I know why we talked about _ but I don't remember when we talked about *their achievements*.

((ii))

*I know why we talked about _ but I don't remember when _ *their achievements*.

([37]) Postal (1998: 106–7) and others have proposed that certain types of expression cannot undergo RNR, whether for syntactic or prosodic reasons. Chaves (2014: sections 2.1–2.2) gives some counterarguments.

([38]) Giannakidou and Merchant (1998) analysed examples like (i) as "reverse sluicing" (i.e., backward ellipsis). However, *if* does not license regular (forward) sluicing (ii), and (i) is better analysed as RNR.

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((i))

It's not clear if __ and when the police arrested the demonstrators.

((ii))

*She said they arrested the demonstrators but it's not clear if __.

The following exemplifies backward sluicing, evidenced by wiping (Merchant 2002: 294):

((iii))

Although we don't yet know who from, we know she received a package last Monday.

([39]) In a context like (i), (126b) improves considerably, presumably because the VP gap is parsed as an ellipsis whose antecedent is provided by the preceding question, rather than the following conjunct.

((i))

A: Who left first? B: Sue said that John did and Bill said that Mary left first.

A contextual antecedent can also render (117b), (119b), and (121b) acceptable.

([40]) However, natural-sounding examples with *but* can be found that appear to involve backward ellipsis:

((i))

We don't yet know who from, but we do know she received a package last Monday. (cf. n. 38, ex. (iii)).

((ii))

I don't know if John did, but Mary passed the exam.

((iii))

I don't know about yours, but my wetsuit fits perfectly.

([41]) Responding to Barros and Vicente, Larson (2012) argues that there are data paradoxes that a hybrid approach cannot resolve. Larson (2013) further claims that no approach which attributes internal structure to RNR gaps is able to avoid paradoxes, and that a better theory is one that simply denies that there is any structure in RNR gaps.

([42]) Bošković and Franks (2000) argue that covert ATB movement does not exist. However, their arguments relate to examples which contain two pronounced copies of the relevant expression inside the conjuncts. Under an account in which both RNR and ATB

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movement involve MD (Citko 2005), covert ATB movement would target a shared constituent inside the conjuncts, i.e. one that surfaces in the RNR pattern. The possibility for a wide scope of an RNRed QNP pointed out by Sabbagh (2007) is consistent with that possibility, as is the possibility for a multiple *wh*-question such as (ii).

((i))

*Who said [that John bought what] and [that Peter sold what]. (Bošković and Franks 2000: 110)

((ii))

Who said that John hates and Peter likes what?
'For which person *x* and which thing *y* did *x* say that John hates *y* and Peter likes *y*?'

([43]) An ATB movement approach to RNR could in principle avoid the non-shared trace problem by denying that the shared string forms a single constituent, and assuming that the examples involve movement of multiple constituents. This is suggested by Sabbagh (2007: 395–7) for cases like (134). The same would apply in the leftward movement case (138b).

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