# Remarks on the Midway Conjunction Analysis of RNR Constructions* 

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#### Abstract

Park $(2009,2010)$ proposes a midway conjunction approach (MCA) to account for right node raising (RNR) constructions where an RNRed constituent is interpreted as the combination of two distinct elements, each associated with one of the conjunct clauses; these constructions pose a serious problem for the most popular RNR analyses such as ellipsis approaches and multiple dominance approaches. The MCA provides a unified analysis for different types of RNR constructions successfully to a certain degree, but it faces some non-trivial theoretical and empirical problems. This paper discusses these problems.


Keywords: right node raising (RNR), midway conjunction approach, multidominance, shared RNR, non-shared RNR

## 1. Introduction

The so-called right node raising (RNR) constructions, where the shared element appears at the right edge of the coordinated structure, have received much attention in the literature over the past thirty years because of their idiosyncratic syntactic and semantic properties. There are three major kinds of approaches for RNR constructions: the movement approach, the ellipsis approach, and the multi-dominance approach. The movement approach analyzes the RNRed element as having moved to the clausal edge in an across-the-board fashion (Wexler and Culicover 1980; Levine 1985; Goodall 1987). The other two approaches, the ellipsis

[^0]approach and the multi-dominance approach, do not assume such a movement in an RNR construction. Under the ellipsis approach, RNR constructions are derived by a phonological form (PF) deletion of constituents in one conjunct under identity with constituents in another conjunct (Hartmann 2000; Abels 2004; Ha 2008, 2009; Ahn \& Cho 2006; An 2007). The multi-dominance approach analyzes the RNRed constituent as being multi-dominated by two or more conjuncts (McCawly 1982, Wilder 1999).

None of the three approaches seems to perfectly account for all the properties of RNR constructions. The movement approach is most criticized due to the island insensitivity that the RNR displays. ${ }^{1}$ It has been pointed out that the latter two (non-movement) approaches also face problems with non-shared RNR constructions as in (1) and (2) (Postal 1998; Park 2005, 2007, 2009, 2010; de Vos \& Vicente 2005).
(1) John loves, and Mary hates, oysters and clams respectively. (Postal 1998: 134)
(2) Greg captured, and Lucile trained, 312 frogs all together. (Postal 1998: 137)

The adverb respectively forces a respective reading for (1), in which oysters is interpreted as the object of the verb loves, and clams is interpreted as the object of the verb hates. However, (2) has a cumulative reading: 312 frogs is the total number of frogs that Greg captured or Lucile trained. In other words, an RNRed constituent can be interpreted as the combination of two distinct elements, each associated with one of the conjunct clauses. The ellipsis approach has difficulty in dealing with these non-shared RNR constructions because the RNRed constituent will be construed as the object of each conjunct in (1) and (2). Under the ellipsis analysis, the RNRed constituent is the object of the second conjunct, and the object of the first conjunct undergoes a PF deletion under identity to the object of the other conjunct. Because multi-dominance approaches do not provide

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specific semantics on how to interpret a multi-dominated element, it is not at all clear how the multi-dominance account can be extended to handle this type of RNR constructions.

In his series of paper, Park $(2005,2007,2009,2010)$ proposes a new version of the multi-dominance approach to account for those non-shared RNR constructions. He claims that RNR involves a midway conjunction formation in terms of external remerge (de Vries 2009). The rightmost element in each conjunct is taken and then remerged respectively into the specifier position and the complement position of a base generated \&P, which itself is adjoined to the VP of the second (or more generally final) conjunct, as schematically represented in (3) below.


Park claims that respective and cumulative readings such as (1) and (2) are derived if $a$ and $b$ are different; otherwise, we can obtain a shared RNR construction where conjunct clauses share the same element, i.e., a whole RNRed phrase.

The midway conjunction approach (MCA, hereafter) seems very attractive because it covers various RNR structures, but it faces its own problems. It will be shown in this paper that the MCA is not adequate in dealing with at least some important semantic and syntactic properties of RNR constructions.

## 2. Shortcomings with the MCA

### 2.1. Respective and Cumulative Readings in Non-shared RNR Constructions

In the MCA, the adverbs respectively and all together in (1) and (2) are taken as indicators of how to interpret the conjunction \& within an RNRed element in a sentence. As represented in (4), the MCA conjoins the objects within the clausal conjuncts in the order mentioned so that the two coordinated DPs in the RNRed constituent are individually associated with the two verbs. In this way, we can get a respective reading for (1).


In contrast, the cumulative reading of (2) is derived by summing up the denotations of the objects that are coordinated in the RNRed constituent.
(5)


The invisible conjunction within the RNRed phrase in (5) functions as Link's (1983, 1998) individual sum (i-sum) operator. It is assumed that the object [312 frogs] is obtained by summing up the number of frogs Greg captured and the number of frogs Lucile trained.
(6)


The MCA tries to capture the readings conveyed in non-shared RNR constructions by analyzing an RNRed phrase as the conjunction of right-edge constituents of the conjunct clauses. Different readings are claimed to ensue depending on how the conjunction within an RNRed phrase is interpreted.

The MCA appears to be motivated by cumulative and respective readings of RNR constructions, but the syntactic account for such readings poses some theoretical and empirical problems. First, the MCA increases the complexity of grammar. When the adverb respectively triggers a respective reading, it indicates that a conjoined DP under its scope is construed as the coordination of distinct DPs that are doubly dominated by clausal conjuncts. This approach predicts that a given sentence can have a respective reading only when multi-dominance is involved. Plural NPs or simple conjoined NPs can give rise to respective and cumulative readings in non-RNR sentences as exemplified in (7) and (8).
(7) a. John and Bill love Sue and Mary respectively.
b. Those five men are Polish, Irish, Armenian, Italian, and Chinese, respectively. (McCawley 1968: 164)
(8) The children wrote (total) 312 poems.

Following the MCA, the sentences in (7) and (8) must have a multi-dominance structure and these sentences have to be analyzed as having two or more clauses that are conjoined in syntax, despite the surface structures to the contrary. ${ }^{2}$

The syntactic account of a respective reading such as (4) requires that coordinate structures must contain an equal number of conjuncts to have a respective reading. However, it has been pointed out in the literature that respectively does not always involve such syntactic dependencies (McCawley 1968, 1998; Stockwell et. al, 1973; Gawron and Kehler 2000, 2004). In (7b), for example, a group-denoting NP, i.e., those five men, is associated with five disjoint roots that are associated with Polish, Irish, Armenian, Italian, and Chinese.

The MCA predicts that sentence (10) basically has the same structure as (9), represented in (5).
(9) Greg captured, and Lucile trained, 312 frogs all together.
(10) Greg killed, and Lucile saved, 150 frogs and 162 frogs (respectively).

Note that sentence (10) does not have a cumulative reading, but it only has a respective reading: 'Greg killed 150 frogs, and Lucile saved 162 frogs.' Of course, if we assume that a cumulative reading requires the presence of all together, the semantic difference between (9) and (10) can be captured under the MCA. However, the cumulative reading is still possible in (9) without all together. ${ }^{3}$ The

[^2]cumulative reading is not dependent on the presence of all together. Unfortunately, Park does not mention explicitly when we can apply the sum operation and get a cumulative reading in the RNR construction: thus how to derive respective and cumulative readings remains obscure. 4

Note that Park randomly assigns 150 and 162 frogs to the two objects of the verbs at the beginning of the syntactic derivation and assumes that the two sets denoted by the two objects in conjuncts are combined and spelled out as [312 frogs] in a "post-syntactic morphological component." The relevant operation in the "post-syntactic morphological component" seems to be too powerful. Normally morphology does not perform an action like $150+162=312$. If this action were assumed to occur at morphology, then morphology would have to contain an infinite number of morphological rules.

In addition, the midway conjunction account in (5) ignores what is considered to be a characteristic of a cumulative reading. The only thing that matters in the cumulative reading is the total number of the frogs either Greg captured or Lucile trained. The two objects in (5) should be taken as variables, say $x$ and $y$, which are completely unspecified. There is no syntactic position in (5) where we can put the sum of the frogs Greg captured and Lucile trained, so it seems that the RNRed constituent [312 frogs] comes out of thin air. It is not valid to say that $x+y=312$ without knowing the values of $x$ and $y$. Moreover, the application of the individual sum operator for a cumulative reading cannot capture the fact that 312 frogs may contain frogs that were captured by Greg and then trained by Lucile as illustrated in (11).

[^3](i) Perro y gato andaban suelto-s dog and cat roamed loose-PL. 'The dog and the cat roamed freely.' (Camacho 2003: 24)
(ii) *Perros andaban suelto-s dogs roamed loose-PL 'Dogs roamed freely.'(Camacho 2003: 24)

(11)


One important assumption in the MCA is that the RNRed phrase is asymmetrically adjoined to the second conjunct only, as shown in (4) and (5) above, leading to a parallelism failure in a coordinate structure. This assumption also poses a serious problem for the licensing of adverbial expressions such as respectively in (1) and all together in (2): They cannot be properly connected to (c-commanded by) their licensing plural expressions. Given the structure in (4), respectively is properly related to a plural D-NP in Safir and Stowell's (1987) terms, i.e., oysters and clams, but it cannot be linked to a plural R-NP, i.e., John and Mary. Note that AdvP (or \&P that immediately dominates it) belongs to the second conjunct only. Therefore, it is possible to link respectively to Mary, a part of its intended R-NP, but there is no way to link it to John, another part of its intended R-NP. 5

### 2.1. Shared RNR Constructions: Distributive Readings

Park (2010) further proposes that all RNR constructions basically have the same structure as the non-shared RNR constructions in (4) and (5). In other words, coordination is involved in the RNRed phrase even when the conjunct clauses in the RNR construction share a whole RNRed phrase as in (12). As illustrated in (13), the invisible conjunction is posited, which brings out the same result as when we apply the ellipsis analysis that deletes a constituent in one conjunct under identity to a constituent in another conjunct.
(12) John bought, and Mary broke, an expensive Chinese vase.

[^4]（13）


Under the assumption that the invisible conjunction functions as a union operator，Park proposes that two identical DPs combine in the RNRed constituent by a union operator，yielding［an expensive Chinese vase］as in（14）．
（14）【 an expensive Chinese vase 』 U【 an expensive Chinese vase 』 $=\llbracket$ an expensive Chinese vase $\rrbracket$

However，the union operation in（14）is a semantic process and unless the ＂post－syntactic morphological component＂that determines the overt form in Park＇s system has access to semantics，the spell out of the RNRed coordination as［an expensive Chinese vase］remains unknown．${ }^{6}$

Note that there is a restriction in interpreting a coordinate structure composed of full DPs by applying a union operator：the sets denoted by full DP conjuncts should not overlap（Heycock \＆Zamparelli 1999；Cf．Link＇s 1983，1998）． For example，（15）is not acceptable if only three people，including one person who is both a scholar and a professor，arrived．

[^5](15) The three scholars and the two professors arrived.

The coordination of the full DPs is interpreted as a union of distinct individuals. Hence the union operator is not different from Link's sum operator when it applies to full DPs, but Park's application of union in (14) violates this restriction. We can only obtain the result of the union application in (14) under the condition that the sets denoted by the two DPs overlap fully, that is, a Chinese vase John bought is identical to a Chinese vase Mary broke. As far as the structure in (13) is concerned, there is nothing that requires this semantic identity. Unless the conjunction plays the role of the identity operator as in (16), the structure (13) would be spelled out as 'John bought, and Mary broke, (two) expensive Chinese vases' due to the characteristics of the union operation applying to the full DPs.


If the invisible conjunction semantically functions as an identity operator in a shared RNR construction, it would wrongly predict that (12) is not acceptable when the vase John bought is different from that Mary broke: 'John bought an expensive Chinese vase, and Mary broke another expensive Chinese vase.' In addition, we could not expect to find a sloppy identity reading for the following sentence (Cf. Ha 2008, 2009).
(17) John likes, and Bill hates, his father.

In (17), his father can refer to 'John's father' and 'Bill's father' at the same time: 'John likes his (John's) father, and Bill hates his (Bill's) father.' ${ }^{\text {T }}$

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### 2.3. Relational Adjectives Different and Same

Relational adjectives such as same and different can appear in RNR constituents. These adjectives are considered to express identity and distinction between elements that are implicitly compared. Park assumes that same and different are inserted later as "discourse-appropriate" adjectives in order to mark whether or not two conjoined elements in the RNRed phrase are identical. For example, in (18), same appears in the RNR phrase because the two objects within the clausal conjuncts refer to the same entity.
(18) John bought, and Mary broke, the same expensive Chinese vase.

If same is spelled out because of the identity of the two conjoined elements, which is represented in (19), then it is predicted that same occurs in all shared RNR sentences such as (12) where the conjunction is interpreted as an identity operator.


A similar problem arises in handling the adjective different in an RNRed phrase. Jackendoff (1977) points out that in an RNR construction different can have an internal or reciprocal reading, as in (20), which can mean 'John hummed one tune, and Mary whistled another tune.'
(20) John hummed, and Mary whistled - different tunes.
(Bachrach and Katzir 2009: 5)
The internal reading of (20) indicates that the RNR constituent cannot be construed as a shared constituent of the two conjuncts. Park proposes that the discourse-appropriate adjective different is added in the post-syntax to mark the non-identity of the individuals combined together as illustrated in (21).


Under this approach, it is very puzzling why different does not occur in all RNR constructions that have cumulative or respective readings, in which an RNR constituent is interpreted as the combination of the two distinct elements. In other words, Park's account for same and different in RNR phrases involves an abstract analysis, which does not provide a general explanatory principle.

Another problem with the post-syntactic accounts of same and different is that they are based on circular reasoning. For example, Park claims that different is added in (22) because tune1 and tune2 are different from each other, which amounts to saying that tunes are different because tunes are different. Similarly, following Park's claim, we must assume that elements combined in an RNRed phrase are identical in the first place in order to say that they are the same. However, there is nothing that will guarantee that the objects compared are the
same or different without expressions of (non)-identity as shown in (23) and (24).
(23) John bought, and Mary broke - expensive Chinese vases.
(24) John hummed, and Mary whistled - funny tunes.
(Bachrach and Katzir 2009: 5)
Logically, sentence (20) entails that tune1 and tune2 are different in structure (22) because of the expression different.

According to Carlson (1987), the internal reading of different is licensed by the presence of a distributively-interpreted NP within the same scope domain as the dependent NP containing different. Compare the examples in (25) and (26). (26) is not acceptable in a context where one gorilla saw a woman who fed John, and the other gorilla saw a woman who fed Bill.
(25) The two gorillas saw different men who were fed by a woman.
(26) The two gorillas saw a woman who fed different men. (Carlson 1987)

This syntactic constraint for licensing an internal reading cannot be captured in the MCA that considers the possibility of an internal reading for different and same purely a pragmatic matter. Even if we assume that an internal reading for (26) is ruled out because different is inserted outside the scope domain of the licensing NP the two gorillas in the post-syntax, it would be wrongly predicted that (20) does not have an internal reading because different is placed only in the second conjunct clause where the RNRed phrase is located and does not appear within the same scope domain as John in the first conjunct clause.

### 2.4. Linearization

Park argues that a word order restriction in an RNR construction is constrained by parallelism. In other words, a shared constituent should be final in the final conjunct because the RNR construction requires a "match between the linear word order of each conjunct clause and its realization into larger structural context of the RNR construction." Assuming that a multi-dominated element can be realized in any of its positions, Park argues that the structure in (4) cannot be linearized as in (27) due to this parallelism condition. ${ }^{8}$

[^7](27) a. *John loves oysters and clams respectively, and Mary hates.
b. *John loves oysters, and Mary hates, and clams.
c. *John loves, and Mary hates clams, oysters and.

However, the word order parallelism is not a sufficient condition to explain the right-edge condition of an RNR construction. Given that an RNRed constituent is analyzed as a final VP conjunct, it predicts that a high adverb of the final conjunct can be placed at the right-edge position. For example, in the MCA, it would be possible to interpret the adverb yesterday as a modifier of the second VP in (28) as illustrated in (29).
(28) John captured and Mary ate oysters and clams yesterday.
(29)


However, this prediction is not borne out. Sentence (28) does not have a reading

[^8](i) Mary and eat clams

describing a situation in which John captured oysters, and Mary ate clams yesterday.

The remerge theory may also face an overgeneration problem. Park (2010) adopts de Vries' (2009) Root Condition in (30) to restrict the external remerge.
(30) Root Condition (de Vries 2009):

If $\alpha$ and $\beta$ are selected as input for Merge, then $a$ or $\beta$ (or both) must be a root.

Due to (30), de Vries tries to exclude the structures like in (31) below.
(31) a.

b.


He claims that in particular, Merge ( $\mathrm{G},(\mathrm{E}, \mathrm{A})$ ) in (31a) and Merge (J, (C,A)) in (31b) are illegal, as both the elements undergoing Merge are terms of bigger syntactic objects: Neither of them is a root. The root constraint in (30) does not, however, rule out the representations in (31). (31a), for example, can be derived as follows.
(32) a. Merge $D_{R}$ and $E_{R}:(F,(D, E))$
b. Merge $E_{N R}$ and $A_{R}:(G,(E, A))$
c. Merge $A_{N R}$ and $B_{R}:(C,(A, B))$
d. Merge $\mathrm{F}_{\mathrm{R}}$ and $\mathrm{G}_{\mathrm{R}}$ : $(\mathrm{H},(\mathrm{F}, \mathrm{G}))$
e. Merge $H_{R}$ and $C_{R}:(R,(H, C))$
(31b) can be similarly derived. If we merge A and C, both roots, then the rest of the merge operations includes no cases where both the elements are non-roots. Thus, remerge is not appropriately constrained by Root Condition. ${ }^{9}$

## 3. Summary and Conclusions

The MCA is a novel attempt to explain non-shared RNR constructions that pose a serious problem for both ellipsis analyses and multiple-dominance analyses which have been considered the most compelling approaches to RNR constructions. The MCA proposes that an RNRed constituent is formed by conjoining right-edge constituents of the conjunct clauses and adjoining them to the right-most VP as its adjunct. Under this approach, different readings of an RNR construction have to do with the semantics of the conjunction within the RNRed phrase. If the conjunction functions as an identity operator, a given RNR construction is interpreted as a shared RNR construction; if the conjunction functions as a sum operator, an RNR construction has a cumulative reading. It seems that the MCA is not only able to account for non-shared RNR constructions but also provide a unified analysis for different types of RNR constructions.

In this paper, however, we have shown that the MCA faces some theoretical and empirical problems, as enumerated below. As for the non-shared RNR construction, the MCA, which resorts to a syntactic account for respective and cumulative readings, increases the complexity of grammar and has difficulty in explaining semantic and syntactic characteristics of such readings. Since it is not elaborated how and when the sum operator is applied, it is not predictable when a non-shared RNR construction has a cumulative reading. In addition, the MCA requires an unlimited number of morphological rules in order to spell out the sum of the conjoined DPs for an RNR construction with a cumulative reading. The MCA also cannot capture the fact that respectively should be properly linked to a plural licensing NP in the syntax because an RNR phrase is asymmetrically adjoined to the second conjunct.

A shared RNR construction is also problematic for the MCA as far as the (invisible) conjunction within the RNRed phrase functions as a union operator. If the union operator is applied to the conjoined full-fledged DPs, it functions as

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the sum operator, which leads to a cumulative reading. In fact, the conjunction should be treated as an identity operator for a shared RNR construction, but this approach also faces its own problem: it cannot capture that a shared RNR construction allows a non-identical reading.

Constructions with relational adjectives such as same and different are problematic for the MCA, which assumes such expressions as discourseappropriate adjectives in the post-syntax: same and different under the MCA are viewed to be inserted later (post-syntactically) to mark the (non-)identity of the two conjoined elements. However, this assumption fails to explain what prevents such relational adjectives from appearing in all other RNR constructions where conjoined elements in an RNRed phrase are either the same or different. Furthermore, if the presence of different is due to a pragmatic reason, it is difficult to account for why the internal reading of different is subject to some syntactic constraint. As with the case of respectively, the asymmetric adjunction structure will also fail to locate a proper plural licensing expression for the relational adjective.

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[^1]:    1 Rightward movement always leads to a linearization problem under Kayne's (1994) Linear Correspondence Axiom (LCA). To avoid this problem, Sabbagh (2007) adopts Fox and Pesetsky's (2004) Cyclic Linearization and Principle of Order Preservation (POP) instead. The gist of the two principles runs as follows. Linearization applies phase-by-phase (or cyclically) and a word order established in a phase cannot be altered at a later phase. As far as a rightmost constituent moves rightwards, as in the RNR construction, no linear order is altered, satisfying the POP. A crucial assumption he should and does make, however, is that rightward movement can only land at the right edge of the first phase or of the final phase. The non-cyclic property of the rightward movement leads to a non-trivial theoretical burden, considering the fact that (leftward) movement in general is subject to cyclicity.

[^2]:    2 Park may take these examples as instances of RNR constructions. But see footnote 4 .

[^3]:    ${ }^{3}$ [ 150 frogs and 162 frogs all together] cannot produce the intended reading ' 312 frogs'. Then all together is introduced only at the post-syntactic morphological component, or it should be assumed that all together obligatorily induces a sum or union operation.

    4 Park analyzes conjoined DPs as regular plurals for a cumulative reading by treating the conjunction as the sum operation (cf. Link 1983; Munn 1993). However, the difference between (9) and (10) shows that conjoined DPs and plural DPs differ. It has been argued that plurals and coordination should be treated differently on empirical grounds (Camacho 2003). One argument in favor of this claim has to do with distributional differences between plural DPs and coordinated DPs found in various languages. For example, in Spanish, plural bare DPs are not allowed in preverbal subject position, while conjoined DPs are possible.

[^4]:    5 A simple multi-dominance structure does not suffer from such a syntactic problem, as illustrated in Chung (2004) for the licensing of plural dependent elements in the shared position.

[^5]:    6 An anonymous reviewer points out that the MCA can deal with the distributive reading of （13）if only the phonological features of the two conjuncts undergo the union operation in（14）under phonological identity．

[^6]:    7 The sloppy interpretation problem may be avoided by arguing that the identity operator in (16) does not require strict identity, but it is still puzzling how to extend the semantics of the conjunction for sloppy identity.

[^7]:    8 Park drops Kayne's (1994) LCA in favor of some sort of order preservation requirement. Kayne's LCA does not tolerate the VP structure in (4), for example. Note that \&P in (4) c-commands into the lower VP and the LCA requires that the terminal nodes under \&P precede those under the

[^8]:    lower VP. The two conjuncts within \&P can be said to be spelled out later as shared elements (Bachrach and Katzir 2009), avoiding the LCA problem. However, the conjunction and itself is not shared and is expected to precede the verb in the second conjunct, leading to an unacceptable word order, as in (i).

[^9]:    ${ }^{9}$ External remerge is not different from Nunes' (2004) sideward movement in the sense that the two positions shared do not show a c-command relation. Thus, they do not form a chain in their current states, and problems arise with respect to linearization, as Nunes points out.
    ...if two copies do not form a chain or if the independent chains containing them do not have a link in common, these copies cannot be targeted by Chain Reduction and end up preventing the structure from being linearized by violating the asymmetry and irreflexivity conditions on linear order. (Nunes 2004: 159)

    In Nunes' system, therefore, when an element undergoes sideward movement, it should further move to a position that c-commands the traces.

