No Clash Constraint in Nominal RNR Number Agreement

Zheng Shen*

1 Introduction

The Right Node Raising (RNR) constructions in (1) have been discussed by numerous researchers (see Sabbagh 2014 for an overview and references therein). The focus of the RNR research has been primarily put on the RNR in the VP, TP, and CP domains. The RNR in the NP domain, however, has received less attention (but see Arregi and Nevins 2013 and Harizanov and Gribanova to appear).

This paper focuses on sentences like (2) where the subject NP involves RNR (NRNR): the noun *student* is shared by the two demonstratives *this* and *that*. I will label the shared element as TARGET and the sharing elements as SOURCES. When the sources are demonstratives in English as in (2), only the singular target is acceptable, I will label this as the singular pattern. In (3) where the sources are bare possessor DPs *John's* and *Mary's*, on the other hand, only the plural target is acceptable, which I will label as the plural pattern. The predicate *are a couple* is chosen to make sure that the NRNR refers to two individuals. The current paper explores these agreement facts in the NRNR construction and offers an account to capture the cross-linguistic data. This account also has implications on agreement/concord, NP structures, and RNR analyses.

(1)   John likes but Mary hates apples.

(2)   a.   This and that student are a couple.   (3)   a.   * John's and Mary's student are a couple.
       b.   * This and that students are a couple.   b.   John's and Mary's students are a couple

The paper is organized as follows: section 2 lays out the NRNR agreement patterns in terms of the singular/plural patterns with a cross-linguistic survey; section 3 derives the availability and the unavailability of the singular target; section 4 derives the availability and the unavailability of the plural target; section 5 concludes the paper.

2 The Singular and the Plural Target

In English, the availability of the singular and the plural target is sensitive to the type of the sources. As is shown from (4) to (8), the singular pattern emerges when the sources are DEMONSTRATIVES (4), DEMON-STRATIVES+ADJECTIVES (5), NUMERALS+ADJECTIVES (6), INDEFINITE ARTICLES+ADJECTIVES (7), DEFINITE ARTICLES+ADJECTIVES (8).

(4)   a.   This and that student are a couple.   Demonstratives
       b.   * This and that students are a couple
(5)   a.   This tall and that short student are a couple.   Demonstratives + Adjectives
       b.   * This tall and that short students are a couple.
(6)   a.   One tall and one short student are a couple.   Numerals + Adjectives
       b.   * One tall and one short students are a couple.

(7)   a.   A tall and a short student are a couple.   Indefinite articles + Adjectives
      b.   * A tall and a short students are a couple.
(8)   a.   The tall and the short student are a couple.   Definite articles + Adjectives
      b.   * The tall and the short students are a couple.

On the other hand, the BARE POSSESSIVE PRONOUNS (9) and the BARE POSSESSOR DPs (10) allow only the plural targets.

(9)   Possessive pronouns   (10)   Possessive DPs
      a.   * His and her student are a couple.   a.   * John's and Mary's student are a couple.
      b.   His and her students are a couple.   b.   John's and Mary's students are a couple.

It is obvious that the insertion of the adjectives plays a role as well: after the insertion of the adjectives, the singular targets become acceptable and the plural targets become ungrammatical for the possessive pronouns and the possessor DPs: POSSESSIVE PRONOUNS+ADJECTIVES (11), POSSESSOR DPs+ ADJECTIVES (12). Note however that the insertion of the adjectives in (5) case does not change the pattern for the DEMONSTRATIVE case. All the sources with adjectives in them only allow the singular target.

(11) a.   His tall and her short student are a couple.   Possessive pronouns + Adjectives
      b.   * His tall and her short students are a couple.
(12) a.   John's tall and Mary's short student are a couple.   Possessive DPs + Adjectives
      b.   * John's tall and Mary's short students are a couple.

2.1 The Cross-linguistic Picture

The cross-linguistic picture is more complicated. Table 1 presents a survey done with the sentences above in English, German, Dutch, Icelandic, Polish, Serbo-Croatian, and Slovenian[1]. SINGULAR means only the singular target is accepted and the plural target is ruled out (the singular pattern). PLURAL means only the plural target is accepted and the singular target is ruled out (the plural pattern). N/A means the combination is impossible for independent reasons: for example Polish and Serbo-Croatian lack articles. Note also that the scope of the survey is restricted only to prenominal sources.

	English	German	Dutch	Icelandic	Polish	Serbo-Croatian	Slovenian
Dem	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR
Dem+Adj	SINGULAR	SINGULAR	SINGULAR	N/A	SINGULAR	SINGULAR	SINGULAR
Num+Adj	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR
Ind+Adj	SINGULAR	SINGULAR	SINGULAR	SINGULAR	N/A	N/A	SINGULAR
Def+Adj	SINGULAR	SINGULAR	SINGULAR	SINGULAR	N/A	N/A	N/A
Poss DP+Adj	SINGULAR	SINGULAR	SINGULAR	N/A	SINGULAR	SINGULAR	SINGULAR
Poss Pron+Adj	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR	SINGULAR
Poss Pron	PLURAL	SINGULAR	PLURAL	SG PL	SG PL	SINGULAR	SINGULAR
Poss DP	PLURAL	PLURAL	PLURAL	PLURAL	SG PL	SINGULAR	SINGULAR

Table 1: Cross-Linguistic Distribution

As is shown in the table, the singular pattern prevails for most of the cases. In English, German, Dutch, and Icelandic, the bare possessor DPs show the plural pattern. Out of them, only English and Dutch show

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[1]In Slovenian, the test sentences are with a singular target or a dual target.

the plural pattern in the bare possessive pronoun condition. Icelandic bare possessive pronouns, Polish bare possessor DPs and possessive pronouns show a split pattern which will be discussed promptly.

These split cases in Icelandic and Polish provide important evidence for the main factor involved in the distribution of the singular vs. plural patterns. In Icelandic, when the sources are 1st or 2nd person possessive pronouns, the target must be singular as in (13). On the other hand, when the sources are the 3rd person possessive pronouns, the target must be plural as in (14). One distinction between the 1st and 2nd person possessive pronouns and the 3rd person possessive pronouns in Icelandic is agreement: only the former show agreement with the noun, the 3rd person possessive pronouns do not show agreement.

(13) Icelandic agreeing possessive pronouns: Singular Pattern

   a.   Minn nemandi og þinn   nemandi eru sætt par.
          my.sg student   and your.sg student.sg are cute couple

          'My student and your student are a cute couple.'

   b. ? Minn og þinn   nemandi   eru sætt par.
          my.sg and your.sg student.sg are cute couple

          'My and your student are a cute couple.'

   c. * Minn og þinn   nemendur eru sætt par.
          My.sg and your.sg student.pl are cute couple

          'My and your students are a cute couple.'

(14) Icelandic non-agreeing possessive pronouns: Plural Pattern

   a.   Hans   nemandi og hennar nemandi eru sætt par.
          he.gen student   and she.gen student   are cute couple

          'His student and her student are a cute couple.'

   b. * Hans   og hennar nemandi eru sætt par.
          he.gen and she.gen student   are cute couple

          'His and her student are a cute couple.'

   c.   Hans   og hennar nemendur eru sætt par.
          he.gen and she.gen students   are cute couple

          'His and her students are a cute couple.'

The second split pattern involves two possessive constructions in Polish: the adjectival possessives that agree with the possessees and the genitive possessives that do not show agreement. The agreeing possessive shows the singular pattern in (15) and the non-agreeing genitive shows the plural pattern in (16) [2].

(15) Polish agreeing adjectival possessive: Singular Pattern

   a.   Janowy i   Marysiny student są parą.
          John's.sg and Mary's.sg student are couple

          'John's student and Mary's student are a couple.'

   b. ?? Janowy i   Marysiny studenci są parą.
          John's.sg and Mary's.sg students are couple

          'John's student and Mary's student are a couple.'

(16) Polish non-agreeing genitives: Plural Pattern

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[2]The Polish possessive pronouns work largely the same as the Icelandic possessive pronouns with 1st and 2nd person pronouns showing agreement and the 3rd person pronouns not.

    a. * Jana   i   Marii   student są parą.
        John.gen and Mary.gen student are couple

        'John's student and Mary's student are a couple.'

    b.   Jana   i   Marii   studenci są parą.
        John.gen and Mary.gen students are couple

        'John's student and Mary's student are a couple.'

I suggest that these split cases in Polish and Icelandic are the key to the distribution of singular vs. plural agreement: agreement between the source and the target correlates with the singular pattern. In every language in the survey, the demonstratives only allow the singular target and all the demonstratives show agreement with the nouns, e.g.: *this student* and **this students*. The sources containing adjectives allow only singular targets in all the surveyed langauges. In almost all the languages, the adjectives show agreement with the target nouns.

As for the plural pattern licensing sources, the possessor DPs in English, German, Dutch, and Icelandic do not show agreement with the possessees e.g. *John's student* vs. *John's students*, nor do English and Dutch possessive pronouns e.g. *his student* vs. *his students*. In precisely these cases, the singular target is unavailable. The possessor DPs and the possessive pronouns in other languages show agreement with the possessees and the target under these sources in NRNR must be singular.

Based on these cross-linguistic observations, I propose the generalization in (17).

(17)   **Generalization**: The singular pattern appears when the sources show morphological agreement with the target. [3]

Given that adjectives agree with the nouns they modify and allow only the singular target in NRNR in almost all the languages surveyed, the adjectives in English presents a special case in that there is no overt morphological agreement between adjectives and nouns they modify: *tall student* vs. *tall students*, but at the same time, it is clear that the adjectives as sources allow only singular targets as shown in cases like (18). I take this as the evidence that the English adjectives also agree with the nouns they modify and this agreement relation is covert.

(18)   Possessive pronouns + Adjectives
     a.   His tall and her short student are a couple.
     b. * His tall and her short students are a couple.

Having established the cross-linguistic generalization of NRNR agreement, the next two sections derive this generalization.

3 Deriving the Possible and the Impossible Singular Target

Following Ritter 1991, I assume a number projection numP headed by NUM above the NP and that the numerals are base generated in the Spec,numP position. Based on the linear order of determiners, numerals, adjectives, and nouns, I assume the structure in (19a) for *the three tall students* (see Longobardi 2001 for an overview of the DP structure) and (19b) for *John's three tall students* where *John's* sits in the Spec,DP and the D is the POSS head.

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[3]Although I state the generalization in terms of morphological agreement, the analysis I propose will be based on certain syntactic agreement features.

(19) a. [$_{DP}$ [$_{D'}$ [$_D$ *the*] [$_{numP}$ *three* [$_{num'}$ NUM [$_{NP}$ [$_{AP}$ [$_A$ *tall*]] [$_{NP}$ [$_N$ *students*]]]]]]]
      b. [$_{DP}$ John's [$_{D'}$ [$_D$ POSS] [$_{numP}$ *three* [$_{num'}$ NUM [$_{NP}$ [$_{AP}$ [$_A$ *tall*]] [$_{NP}$ [$_N$ *students*]]]]]]]

As for the number feature configurations within the DP, I follow the standard assumption that the interpretable features are relevant to interpretation whereas the uninterpretable features are spelled out in morphology. In DPs, a valued interpretable number feature originates on the NUM head and the morphological number markings on nouns, adjectives, demonstratives, and articles indicate uninterpretable features on these elements which are eventually valued by NUM. Although the interpretable number feature starts on NUM, it is also present at the top projection of the nominal domain, i.e. the phase head, since it is necessary for the semantic information to be visible to the DP-external elements e.g. in cases where a verb requires a semantically plural argument.

I follow Chomsky 2000 and Bhatt and Walkow 2013 in assuming a two-step agree process: Matching and Valuation (*Agree* in Bhatt and Walkow 2013). Matching establishes a dependence relation between two features to ensure feature value identity. Valuation involves copying the feature value from a node to another node that it matches with. I follow Pesetsky and Torrego 2001 et seq. in assuming that two unvalued features can establish a matching relation which will be valued when the value is available. Additionally, I assume that Agree can proceed both upward and downward.

Combining the assumptions, the DP *these three tall students* starts as (20a). The unvalued uninterpretable number feature on N matches with that on A, which in turn matches with the valued, interpretable feature on the NUM head. The unvalued uninterpretable and interpretable features on D match with the NUM head as well in (20b). In (20c), the [PL] value on NUM head gets copied onto D, A, and N. The arrows in the tree structures indicate the direction of Matching.

(20) a.   b.   c.
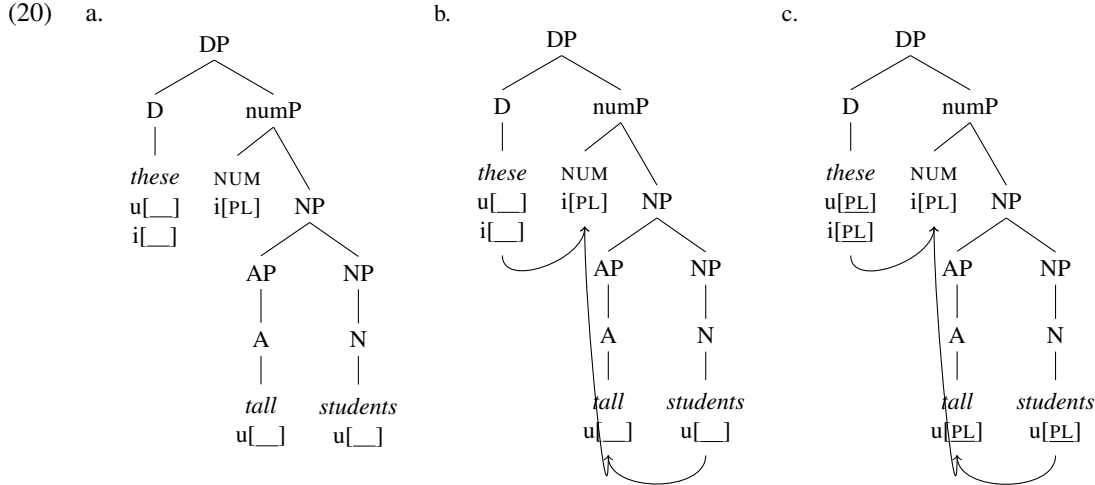
Having dealt with the assumptions involved in the agreement processes in a simple DP, the following subsection will layout the account for the singular target in NRNR.
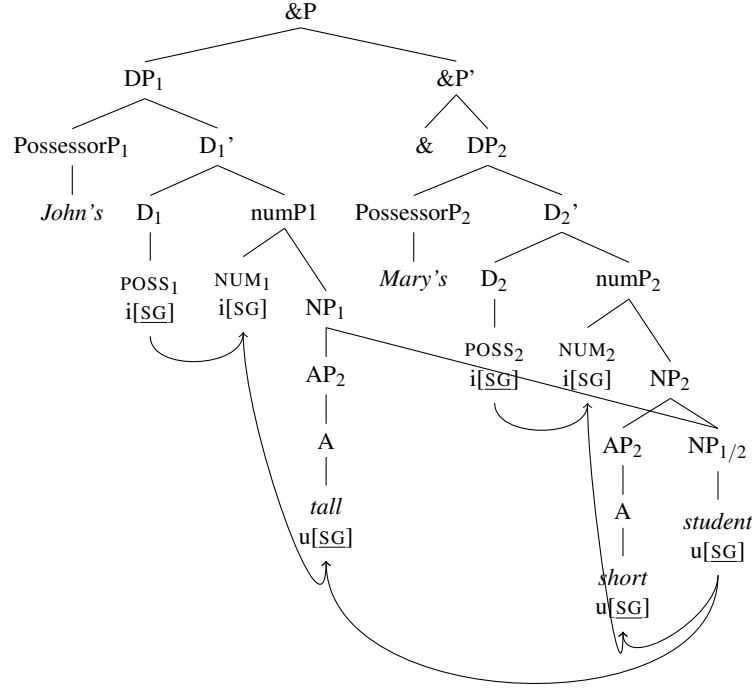
3.1 Deriving the Possible Singular Target in NRNR

I propose a multi-dominance analysis for the singular target. Multi-Dominance (MD) has been proposed for right node raising in the literature (Moltmann 1992; Wilder 1999; Citko 2005; Gračanin-Yuksek 2007

among many others). I follow the parallel merge analysis of Citko 2005.

As illustrated in (21), the singular target in NRNR involves the *structural sharing* of the target (the NP *students*). The agreement proceeds in the same manner as in a simple DP except that now both the adjectives match with the noun simultaneously. The feature value on the NUM heads, which is SG in both cases, is copied onto the determiners (POSS), adjectives, and the noun. The noun will carry two instances of the SG value which are spelled out as singular (*cf.* Grosz 2015). Other cases where the singular target is possible undergo the same process.

(21)   John's tall and Mary's short student are a couple.

3.2 Deriving the Impossible Singular Target in NRNR

I argue that the multi-dominance structure in (21) is unavailable in the cases where the singular target is impossible. I propose two constraints on multi-dominance in (22). The uAgree constraint is motivated by the fact that the availability of the singular target is sensitive to the morphological agreement shown in the previous section. In the definition in (22a), uAgree constraint rules out the NRNR where the sources show no agreement with the target. The MaxShare constraint has been proposed independently by Citko (2006) (Citko's *maximizing structure sharing*) to account for left branch extraction in across-the-board movement in Slavic languages. Here I define *shareable* as non-distinct. In the previous sentence in (21), the NP is shareable but the adjectives in the two conjuncts are distinct thus unshareable. The contrast in (23) further supports MaxShare.

(22)   Constraints on Multi-Dominance

a. uAgree constraint: ZP is shareable by X and Y if there is a uAgree relation between X and Z and Y and Z. A uAgree relation involves an uninterpretable feature on at least one element in the agree relation.

b. MaxShare: XP can be shared only if there is no YP such that YP dominates XP and YP is shareable, if the XP sharing structure and the YP sharing structure have identical interpretations.[4]

(23) a. ?? John's tall and Mary's tall student are a couple.
      b.   John's tall and Mary's short student are a couple.

To illustrate the impossibility of the singular target with non-agreeing sources, two derivations are presented in (24) and (25). In (24), the NP is shared by the two numPs. The uAgree constraint is met given that the i[SG] features on the NUM heads agree with the uninterpretable feature on the noun. However the MaxShare constraint is not met since there are non-distinct constitutions up along the structure. In (25), the MaxShare is met given that D' is the largest shareable node. But since there is no agreement relation between the PossessorPs (PossP) and the POSS head, the uAgree constraint is violated. As a result of the two constraints, none of the derivations involving non-agreement sources in NRNR is legal, thus the singular target is not possible in these cases. The generalization in (17) is derived [5].

(24)   * His and her student are a couple.
        MaxShare constraint: ✗
        uAgree constraint: ✓
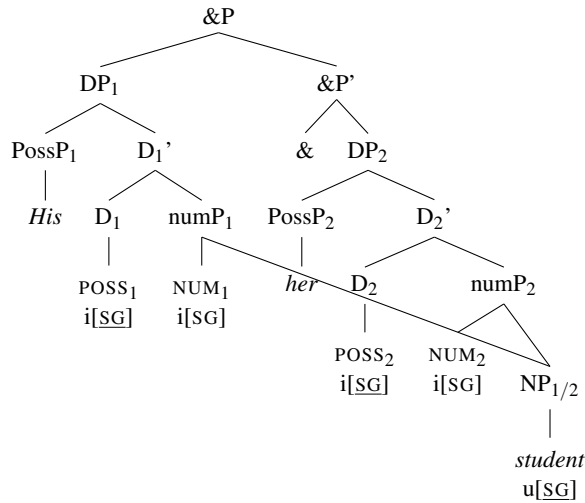
(25)   * His and her student are a couple.
        MaxShare constraint: ✓
        uAgreement constraint: ✗

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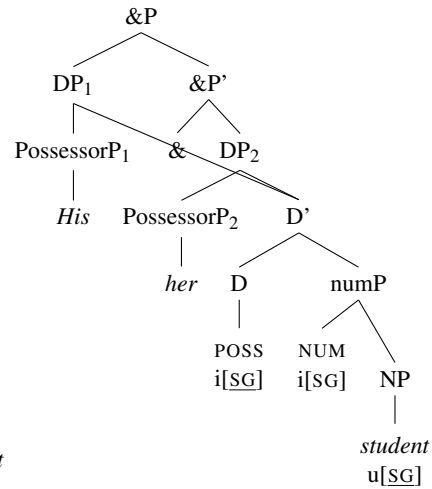
[4]Note that the MaxShare constraint involves cross-derivational competition, which is not ideal. A more derivational formulation is left for further research.

[5]Note the difference between possessive DPs/pronouns and adjectives. I assume earlier that English adjectives agree with the noun just like demonstratives do despite the lack of morphological markings. On the other hand, possessive DPs/pronouns with no morphological number marking do not agree with the possessee. Without a detailed argument, I provide one piece of evidence: demonstratives and adjectives behave identical, in contrast to possessive pronouns and possessive DPs, in the distribution of *one* in ellipsis: *this one*, *this nice one* vs. *his one*, *Peter's one*. If *one* must occur in the presence of agreement features (cf. also *this one* and *these ones*), this contrast shows that such features are present with adjectives despite the lack of a visible morphological exponent.

## 4 Deriving the Possible and the Impossible Plural Target

The previous section derives the correlation between the singular target in NRNR and the agreeing sources, as well as why the non-agreeing sources are not compatible with the singular target. The constraints on multi-dominance rule the singular targets out in the sentence with English non-agreeing possessive pronouns as sources in (24) and (25). The same constraints rule out other cases where the singular target is unavailable, e.g. the Icelandic 3rd person possessive pronouns in (14), the Polish non-agreeing genitives in (16), and the English bare possessor DP in (26a).

(26) a. * John's and Mary's student are a couple.
   b.   John's and Mary's students are a couple.

The question arises why the non-agreeing sources allow the plural target as in (26b). I argue that the plural target cases do not involve multi-domiance but involve a conjunction construction. Take the English bare possessor DPs in (27) for example, the sentence with the plural target involves conjoined PossessorPs including *John's and Mary's*. Since the whole DP refers to two individuals, the NUM head carries the valued interpretable feature i[PL] which gets copied onto the POSS head and the noun *students*. As a result, sentences with the singular target in NRNR and those with the plural target involve two different structures: the former involve a multi-dominance construction and the latter involve a conjunction construction. [6]

The next question then is why the cases where only the singular target is possible cannot have a conjunction structure and allow the plural target as well. There are two subcases that fall into this category. The first subcase involves sources with multiple elements as in (28). Since the conjunction requires the two conjuncts to be constituents and the complex sources like *John's tall* do not form a constituent, the structure in (28) is ruled out.

(27) John's and Mary's students are a couple.
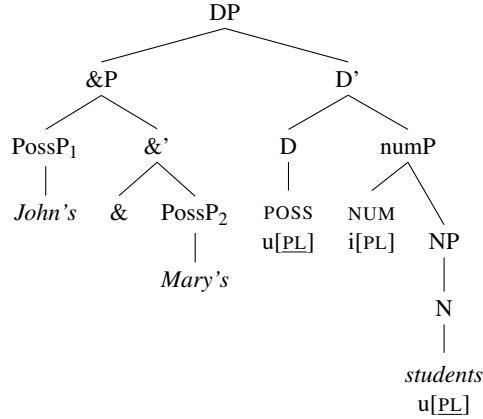
(28) * John's tall and Mary's short students are a couple.
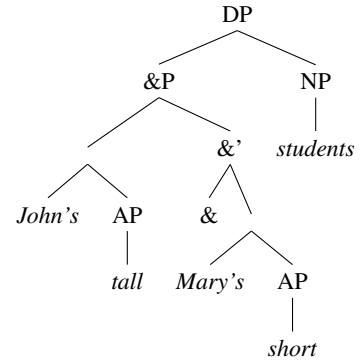
The second subcase involves the sources like bare demonstratives in English. Even if these sources can in theory be conjoined, however, the morphological agreement rules the conjunction structure out. In (29), the determiners *this* and *that* indicate the number features to be u[SG]. At the same time, the feature on the

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[6]Note three interpretations of (27) 1. John and Mary share at least two students. 2. Both John and Mary have at least two students. 3. John has one student and Mary has one student, all of which can be generated in the structure in (27).

NUM head is i[PL] as indicated by the noun *students*. Since both the features on the demonstratives and on the noun are valued by the NUM, it is impossible under the current account to generate the feature configurations in (29). The feature configurations generated in the conjunction structure are in (30) where the PL value on the NUM head is copied onto the demonstratives and the noun. However the sentence generated would be *These and those students are a couple*. The last question is why is (30) ungrammatical, i.e. why cannot *these and those students* in (30) refer to two individuals. The reason lies in the interpretable features on the demonstratives as phase heads. Since both of the demonstratives carry i[PL], each conjunct must refer to at least two individuals. The conjoined phrase *these and those* must refer to at least four individuals, which is not compatible with the predicate *are a couple*. This analysis provides further evidence for the interpretable number feature on the phase head. Thus it is shown that neither the sources with multiple elements (*John's tall and Mary's short*) nor the sources with morphological agreement (*this and that*) can generate the plural target in a conjoined structure.

(29)   * This and that students are a couple.
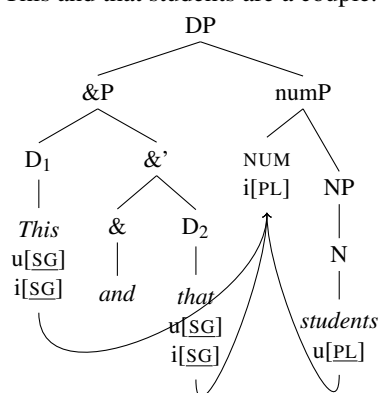
(30)   * These and those students are a couple.
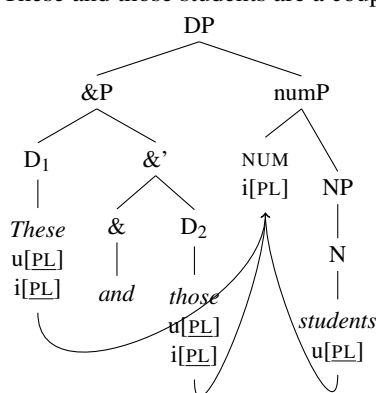
5 Conclusion

This paper discusses a novel agreement pattern of right node raising in the nominal domain. Based on the cross-linguistic survey presented in Table 1, a generalization has been observed correlating the availability of the singular target and the agreeing sources. With a set of well-motived assumptions, I propose a multi-dominance account for the singular target cases and a conjunction account for the plural target cases.

Arregi and Nevins (2013) and Harizanov and Gribanova (to appear) observed that Bulgarian allows singular marked sources with a plural marked target which falls out of the generalizations I observe. An analysis unifying the facts from Bulgarian (and possibly Russian) and the languages covered in this paper is left for further research.

If the current analysis is on the right track, I provide evidence for the syntactic Agree process in the nominal domain and the implicational relation between syntactic and morphological agreement: the morphological agreement implies the syntactic agreement but not necessarily vice versa. The analysis also argues for an Agree mechanism that allows Agree relation between two uninterpretable features and two unvalued features (similar to but different from *feature sharing* in Pesetsky and Torrego 2001).

Besides the multi-dominance, other analyses proposed for the right node raising constructions are PF deletion (An 2007), across-the-board movement, and ellipsis. Without getting into the details here, the

mismatch data in NRNR (31-32) show a closest conjunct agreement pattern (CCA) which argues against the PF deletion account where the identical materials in the first conjunct is deleted in PF. Under the current analysis, the CCA pattern can be accounted for by the 'valuation postpone to PF' approach in Bhatt and Walkow 2013: in a MD structure similar to (21), the nouns in (31) matches with both SG and PL. To solve this conflict, the valuation is postponed to the PF and only the value on the closest conjunct is copied onto the noun.

(31)   a.   one tall and ten short students.   (32)   a.   * one tall and ten short student
       b.   ten tall and one short student.   b.   * ten tall and one short students

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University of Connecticut
365 Fairfield Way, Unit 1145 Storrs, CT
06269-1145 USA
zheng.shen@uconn.edu