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Merge (Late and Parallel) and Agree (Closest and Multiple): A view from Polish relative clauses with conjoined heads

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My main goal in this paper is to examine agreement in relative clauses with conjoined heads. Since there are many elements that can potentially agree with the conjoined head (i.e., the relative pronoun, the verb, nominal modifiers if present), there are many logically possible agreement patterns, only a subset of which is attested. I focus on the question of what the available (and unavailable) patterns tell us about the nature of the Agree, the mechanism responsible for agreement. The more theoretical question I examine is why sometimes Agree between a single Probe and multiple Goals surfaces as Resolved Agreement, and other times as agreement with a single Goal. Focusing on coordinate structures, I argue that Agree between a single Probe and multiple Goals in a Parallel Merge structure obligatorily leads to Single Conjunct Agreement, whereas Agree between a single Probe and multiple Goals in a non-Parallel Merge structure can result in either Single Conjunct Agreement or Resolved Agreement. This proposal has implications that go beyond Polish relative clauses, which I also discuss in the paper.

1 Background

Polish is one of the languages that allows so-called First Conjunct Agreement (**FCA**) with postverbal conjoined subjects, in addition to Resolved Agreement (**RA**) (see, among many, many others, Kallas 1974; 1993; Corbett 1983; 1991; Zbróg 2003; Citko 2004; 2018a; Bošković 2009a; Ruda 2010; Willim 2012; Franks & Willer-Gold 2014; Marušič, Nevins & Badecker 2015), as shown in (1a–b).[1]

(1) a. Na   wykład **przyszła**   nowa studentka i   jej koleżanka.   **FCA**
         for lecture arrived.**F.SG** new student.F.SG and her friend.F.SG
         'For the lecture arrived a new student and her friend.'

    b. Na   wykład **przyszły**   nowa studentka i   jej koleżanka.   **RA**
         for lecture arrived.**F.PL** new student.F.SG and her friend.F.SG
         'For the lecture arrived a new student and her friend.'

The variation between First Conjunct Agreement and Resolved Agreement with postverbal subjects is typically analyzed as agreement either with the first conjunct or with the entire conjunction phrase.[2] Since in (1a–b) the two conjuncts agree in gender and number, the verb agreement that we see in (1a) could be agreement with the last conjunct. This confounding factor is controlled for in (2a–b), where the first conjunct is feminine and the second conjunct masculine. The contrast between (2a) and (2b) shows that we are dealing with First Conjunct Agreement, not Last Conjunct Agreement (**LCA**).[3]

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[1] Polish has three genders in the singular (i.e., masculine, feminine and neuter) and two genders in the plural, one for masculine personal nouns and the other one for all other nouns. Here, I refer to the two plural genders as *masculine* and *feminine*; they are also referred to in the literature as *masculine personal* vs. *non-masculine personal* or *virile* vs. *non-virile*. The gender resolution rule I assume here is given in (i) (Corbett 1983; 1991; see, however, Prażmowska 2016 for arguments in favor of more fine-grained resolution rules).

    (i) If at least one of the conjuncts is masculine personal, the form of the verb is virile/masculine personal; if there is no masculine personal conjunct, the form of the verb is non-virile/non-masculine personal.

The specifics of Polish resolution rules in Polish are not directly relevant, as the focus of this paper is on what determines the choice between Resolved Agreement and First Conjunct Agreement.

[2] There are many variants of this account, as well as alternative accounts. For example, Citko (2004) proposed a structural ambiguity analysis, in which plural agreement stemmed from the presence of a null plural pronominal element.

[3] Thank you to an anonymous reviewer for the suggestion to include examples in which the two conjuncts disagree in gender. Not surprisingly, Resolved Agreement is also possible in such cases:

    (i) Na   wykład **przyszli**   nowa studentka i   jej kolega.   **RA**
         for lecture arrived.**M.PL** new student.F.SG and her friend.M.SG
         'For the lecture arrived a new student and her friend.'

(2) a. Na wykład **przyszła** nowa studentka i jej kolega. **FCA**
         for lecture arrived.**F.SG** new student.F.SG and her friend.M.SG
         'For the lecture arrived a new student and her friend.'

     b. *Na wykład **przyszedł** nowa studentka i jej kolega. **LCA**
         for lecture arrived.**M.SG** new student.F.SG and her friend.M.SG
         'For the lecture arrived a new student and her friend.'

For completeness' sake, let me also note that with preverbal subjects only Resolved Agreement is possible:[4]

(3) a. Nowa studentka i jej kolega **przyszli** na wykład. **RA**
         new student.F.SG and her **friend.M.SG** arrived.**M.PL** for lecture
         'A new student and her friend arrived for the lecture.'

     b. *Nowa studentka i jej kolega **przyszła** na wykład. **FCA**
         new student.F.SG and her friend.M.SG arrived.**F.SG** for lecture
         'A new student and her friend arrived for the lecture.'

     c. *Nowa studentka i jej kolega **przyszedł** na wykład. **LCA**
         new student.F.SG and her friend.**M.SG** arrived.**M.SG** for lecture
         'A new student and her friend arrived for the lecture.'

Furthermore, when there is more than one element that can agree with the subject, we might see both Resolved Agreement and First Conjunct Agreement in a single example. Citko (2018a) examined cases in which the coordinated subject is 'sandwiched' between an agreeing complementizer and an agreeing verb, and found that out of many *logically* possible patterns, the three in illustrated in (4a–c) are *in fact* possible.[5] In (4a), both the complementizer and the verb show Resolved Agreement, in (4b) the complementizer shows First Conjunct Agreement and the verb Resolved Agreement, and in (4c) the complementizer agrees with the first conjunct and the verb agrees with the last conjunct.

(4) a. COMP$_{RA}$ [DP$_1$ and DP$_2$] VERB$_{RA}$
         żebyśmy   ja i mąż **wytrwali**
         that.COND.**1PL** I and husband persevered.**M.PL**

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b. COMP$_{FCA}$ [DP$_1$ and DP$_2$] VERB$_{RA}$
    żebym   ja   i   moje   dziecko **miały** zabezpieczoną
    that.COND.**1SG** I   and my   child.**N.SG** had.**F.PL** secured
    przyszłość
    future

c. COMP$_{FCA}$ [DP$_1$ and DP$_2$]   VERB$_{LCA}$
    żebyśmy   my   i   nasza praca **była**   traktowana z
    that.COND.**1PL** we and our work was.**F.SG** treated   with
    szacunkiem
    respect   (Google)

The empirical question I address in this paper is what happens when the subject consisting of a single determiner modifying two conjoined NPs is postverbal *and* modified by a relative clause.[6] As shown in (5a), there are three 'agreeing' elements: the matrix verb, the determiner and the relative pronoun.[7] The agreement patterns I survey in the next section are schematized in (5b); the verb can show either Resolved Agreement or First Conjunct Agreement, the determiner can only show First Conjunct Agreement and the relative pronoun can only show Resolved Agreement.

(5)   a.   VERB$_{AGR1}$ [$_{DP}$ [$_{DP}$ D$_{AGR2}$ NP$_1$ and NP$_2$] [$_{CP}$ REL$_{AGR3}$ …]]
         b.   VERB$_{RA/FCA}$ [$_{DP}$ [$_{DP}$ D$_{FCA/*RA}$ NP$_1$ and NP$_1$] [$_{CP}$ REL$_{RA/*FCA}$ …]]

The patterns in (5b) raise the question of what determines when First Conjunct Agreement is the only option, when Resolved Agreement is the only option, and when both First Conjunct Agreement and Resolved agreement are possible. Within the minimalist Agree-based Probe-Goal system, the more general way to frame the same question is what determines when Agree between a single Probe P and multiple Goals yields agreement with a single Goal, when it yields (resolved) agreement with multiple Goals, and when both options are possible. The logical possibilities are schematized in (6a–f), with the subscripts on the Probe (P) representing *all* the Goals and *only* the Goals (G$_1$ and/or G$_2$) the Probe agrees with. Crucially, I distinguish here between the syntactic operation *Agree* and *agreement,* the morphological realization of this operation. In all the cases

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[6] Such relative clauses are not true hydras in the sense of Link (1984). In his examples of true hydras, given in (ia–b) below, the determiners are *not* shared between the two conjuncts.

(i)   (Link 1984: 246)
     a.   The boy and the girl who dated each other are friends of mine.
     b.   All the students and some of the professors who had met in secret joined in underground activities after the coup d'état.

[7] In what follows, I ignore agreement on the relative clause internal predicate, since it is independent from agreement on the relative pronoun. For example, if the object (rather than the subject) is relativized, the predicate will agree with the subject, and the relative pronoun with the object.

in (6a–f), the Probe undergoes Agree with both Goals; this can in principle surface as agreement with a single Goal (G_1 or G_2), agreement with both Goals (G_1 and G_2), or agreement with either a single Goal or multiple Goals.[8]

(6)   a. P_1 G_1 G_2
      b. P_2 G_1 G_2
      c. P_{1+2} G_1 G_2
      d. $P_{1/1+2}$ G_1 G_2
      e. $P_{2/1+2}$ G_1 G_2
      f. $P_{1/2/1+2}$ G_1 G_2

Two of the reviewers wonder if (6a) and (6c) are not redundant, given (6d), which combines the patterns in (6a) and (6c). Similarly, (6b) and (6c) might seem redundant, given (6e). They are not; (6d), for example, is meant to indicate that the result of Agree between P and the two Goals (G_1 and G_2) can surface morphologically as *either* agreement with G_1 *or* with *both* G_1 and G_2, whereas (6a) indicates that only agreement with G_1 is possible.

The proposal I make is that when a single Probe undergoes Agree with multiple Goals *in a Parallel Merge structure*, the result is *agreement with a single Goal*. Parallel Merge is the kind of Merge responsible for creating multidominant structures of the kind given in (7b), in which a single element (P, for example), merges first with G_1, and next with G_2, as shown in (7a–b) (Citko 2005; 2011). Consequently, P undergoes Agree with G_1 first, and with G_2 next.

(7)   a.

        P G_1

      b.

        P G_1 G_2
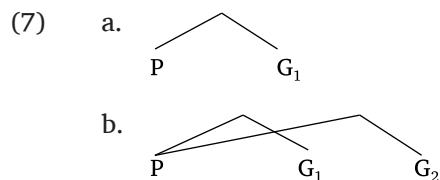
However, when a single Probe undergoes Agree with two Goals *in a non-Parallel Merge structure* such as the one in (8), the result is *Resolved Agreement*. This would be a case of simultaneous Multiple Agree of the kind proposed by Hiraiwa (2001).

(8)

      P
        G_1
          G_2

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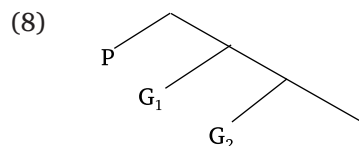
[8] Thank you to one of the reviewers for pointing out the missing pattern in (6f) and suggesting a more precise formulation of the discussion in the paragraph preceding (6).

The rest of the paper is structured as follows. In Section 2, I present in more detail the agreement patterns in Polish relative clauses. In Section 3, I turn to DP internal agreement more generally, where First Conjunct Agreement is the only option. I attribute it to the fact that in such cases a single D or DP internal modifier undergoes Parallel Merge with the two conjuncts. This still raises the question of why Parallel Merge should make Resolved Agreement impossible. This is the focus of Section 4, where, following Citko and Gračanin-Yuksek (2021), I derive it from the relationship between Parallel Merge and syntactic derivations. Since my focus is on agreement in Polish relative clauses with coordinated heads, I also consider the issue of what derivation such relative clauses involve. Focusing on relative clauses with agreeing relative pronouns more generally, in Section 5 I argue that they involve Head Promotion. In Section 6, I show how the various pieces of the analysis come together, by providing a step-by-step derivation of a Polish headed relative clause with a coordinated head.

2 Agreement in Polish relative clauses

Polish has three types of relative clauses in Polish, illustrated in (9a–c) (Fisiak, Lipińska-Grzegorek & Zabrocki 1978; Pesetsky 1998; Broihier 1995; Hladnik 2015; Guz 2017, among many, many others):[9]

(9)   (b and c examples from Hladnik 2015: 67)

    a. ten   samochód, **który**   Janek widział wczoraj   RELATIVE PRONOUN
        this   car.M.SG   which.M.SG Janek saw   yesterday

    b. ten   samochód, **co**   Janek widział wczoraj   COMP
        this   car   COMP Janek saw   yesterday

    c. ten   samochód, **co**   **go** Janek widział wczoraj   COMP + RESUMPTIVE
                                                                         PRONOUN
        this   car   COMP RP Janek saw   yesterday
        'the car that/which Janek saw yesterday'

Here, I focus on relative clauses with the relative pronoun *który* 'which', since this relative pronoun agrees with the relative clause head.[10] First, however, let us look at the matrix verb

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[9] Examples (9b–c) suggest that resumptive pronouns are optional in Polish. This is only apparent (see Bondaruk 1995; Broihier 1995; Pesetsky 1998; Guz 2017 on Polish; Hladnik 2015 on Slovenian and Polish; Gračanin-Yuksek 2013 on Croatian; Bošković 2009b on Serbo-Croatian, among others, for different proposals regarding the conditions under which resumptive pronoun can be dropped).

[10] Resumptive pronouns also agree with the head, and similarly to relative pronouns, only allow Resolved Agreement, as shown in (i–ii). Example (ii), with the resumptive pronoun agreeing with the closest/second conjunct, is only possible if the relative clause modifies the second conjunct.

    (i)   [[ten   list   i   gazeta]   **co**   **je/*ją**   Maria przeczytała]
              this.M.SG letter.M.SG and newspaper.F.SG COMP RP.F.PL/F.SG Maria read

agreement. The examples in (10a–b) involve configurations we are interested in: relative clauses with conjoined heads occupying matrix subject positions. In both examples, the conjuncts are singular feminine noun phrases, which means that Resolved Agreement would be feminine plural, and First Conjunct Agreement would be feminine singular. We see that both options are possible.

(10) a. Na konferencję **przyjechały** doktorantka z Warszawy i
for conference arrived.**F.PL** PhD.candidate.F.SG from Warsaw and
studentka z Krakowa, które spotkały się na lotnisku.
student.F.SG from Cracow, which met.F.PL REFL at airport

      b. Na konferencję **przyjechała** doktorantka z Warszawy i
for conference arrived.**F.SG** PhD.candidate.F.SG from Warsaw and
studentka z Krakowa, które spotkały się na lotnisku.
student.F.SG from Cracow, which met.F.PL REFL at airport
'A PhD candidate from Warsaw and a student from Cracow, who met at the airport, arrived at the conference.'

The relative pronoun, on the other hand, can only show Resolved Agreement. Agreement with the closest conjunct is in principle possible, but only if the relative clause modifies this conjunct. However, this is only possible when the relative clause contains a non-collective predicate, as in (11b). When the relative clause contains a collective predicate, as in (11c), the relative clause has to modify conjuncts, and consequently, agreement with the closest conjunct is not possible.[11]

(11) a. Na konferencję przyjechała/przyjechały [[doktorantka z Warszawy i
for conference arrived.F.SG/F.PL PhD.candidate from Warsaw and
studentka z Krakowa], **które/*która** spotkały się na lotnisku].
student from Cracow, which.**F.PL/*F.SG** met.F.PL REFL at airport
'A PhD candidate from Warsaw and a student from Cracow, who met at the airport, arrived at the conference.'

      b. Na konferencję przyjechała/przyjechały doktorantka z Warszawy i
for conference arrived.F.SG/F.PL PhD.candidate from Warsaw and

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(ii) ten list i [gazeta **co** **ją** Maria przeczytała]
this.M.SG letter.M.SG and newspaper.F.SG COMP RP.F.SG Maria read

[11] It is also impossible for the relative pronoun to show Resolved Agreement, and for the relative clause internal verb to agree with the closest conjunct:

(i) *Na konferencję przyjechała/przyjechały doktorantka z Warszawy i [studentka
for conference arrived.**F.SG/F.PL** PhD.candidate from Warsaw and student
z Krakowa, **które** **spotkała** **się** na lotnisku].
from Cracow, which.**F.PL** met.**F.SG** REFL at airport

    [[studentka z   Krakowa], **która**   spóźniła   się na samolot].
     student   from Cracow,   which.**F.SG** was.late.**F.SG** REFL for plane
    'A PhD candidate from Warsaw and a student from Cracow, who was late for the
    plane, arrived at the conference.'

   c. *Na konferencję przyjechała/przyjechały doktorantka   z   Warszawy i
     for conference arrived.**F.SG/F.PL**   PhD.candidate from Warsaw   and
     [studentka z   Krakowa, **która**   spotkała się na   lotnisku].
     student   from Cracow,   which.**F.SG** met.**F.SG** REFL at   airport
    'A PhD candidate from Warsaw and a student from Cracow, who met at the airport,
    arrived at the conference.'

And the last type of agreement to consider is the agreement internal to the relative clause head. As the contrast in (12a–b) shows, only First Conjunct Agreement is allowed on the demonstrative that modifies the conjoined head of the relative clause. For the sake of concreteness, I treat demonstratives as D heads, but nothing hinges on this choice. As we will see in the next section, other DP internal modifiers behave similarly.[12]

(12) a. Na stole leżała/leżały **ta**   książka i   gazeta,   które
      on table lay.**F.SG/F.PL** this.**F.SG** book.**F.SG** and paper.**F.SG** which.**F.PL**
      Maria   przeczytała.
      Maria   read
      'On the table lay this book and paper that Maria read.'

   b. *Na stole leżała/leżały **te**   książka i   gazeta,   które
      on table lay.**F.SG**/ **F.PL** these.**F.PL** book.**F.SG** and paper.**F.SG** which.**F.PL**
      Maria   przeczytała.
      Maria   read
      'On the table lay this book and paper that Maria read.'

(13) summarizes the available and unavailable agreement patterns: the matrix verb allows either Resolved Agreement (**RA**) or First Conjunct Agreement (**FCA**), the determiner allows only First Conjunct Agreement (**FCA**), and the relative pronoun allows only Resolved Agreement (**RA**).

(13)   **VERB**$_{\text{RA/FCA}}$ [$_{\text{DP}}$ [$_{\text{DP}}$ **D**$_{\text{FCA/*RA}}$ **NP and NP**] [$_{\text{CP}}$ **REL**$_{\text{RA/*FCA}}$]]

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[12] A question raised by one of the reviewers is whether (12a) illustrates true First Conjunct Agreement, given that the two conjuncts in (12a) agree in number and gender. The conjuncts do not have to match, however, and when they don't, the determiner agrees with the first conjunct, as shown in (i).

(i)   mój   sąsiad   i   sąsiadka,   których   znam   od lat
     my.**M.SG** neighbor.**M.SG** and neighbor.**F.SG** which.M.PL   know.1SG for years
     'my male and female neighbor who I have known for ages'

Since First Conjunct Agreement on the determiner is independent of the presence or absence of the relative clause and interesting in itself, I discuss it first.

3 DP internal agreement

The question I turn to in this section is why a single determiner that is 'shared' between two NPs cannot show Resolved Agreement. The examples in (14a–c) show that, more generally, adjectives and determiners modifying two conjoined singular NPs agree with the First/Closest Conjunct (Kallas 1974; 1993; Zbróg 2003; Willim 2012, among others).[13]

(14)   (Willim 2012: 233–234)
     a. **gorąca/*gorące** kawa   i   herbata
        hot.**F.SG/*F.PL** coffee.F.SG and tea.F.SG
        'hot coffee and tea'

     b. **ten/*ci**   pan i   pani
        this.**M.SG**/*these.**M.PL** man and woman
        'this man and woman'

     c. **czyja/*czyje**   koszula i   krawat
        whose.**F.SG/*PL** shirt.F.SG and tie.M.SG
        'whose shirt and tie'

These examples clearly involve what Heycock and Zamparelli (2005) call *a split reading* (*i.e.*, referring to two individuals or objects), and not a *joint reading* (i.e., one individual or object reading), illustrated in (15a–b) (see also King and Dalrymple 2004; Lamoure 2023, and the references therein).[14]

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[13] Zbróg (2003) also notes that the ban on plural modifiers is *not* without exceptions; plural adjectives become possible 'when the coordinated nouns form a tight conceptual unit' or 'when the modifier is participial or is an adjective with complex argument structure'.

   (i)   (Zbróg 2003: 116)
      a. **sympatyczni** dziewczyna i   chłopak
         nice.**M.PL**   girl   and boy

      b. **ganiające**   **się/*ganiający**   się kot i   mysz
         chasing.**F.PL** REFL chasing.**M.SG** REFL cat and mouse

      c. **mili/*miły**   dla siebie mężczyzna i   dziadek
         nice.**M.PL/M.SG** for self   guy.M.SG   and old.man.M.SG

[14] These authors also note that languages differ with respect to whether they allow split interpretations when one modifier modifies two singular coordinated nouns. English allows both joint and split interpretations, as shown in (ia–b), but Italian, for example, allows only joint interpretations, as shown in (iia–b):
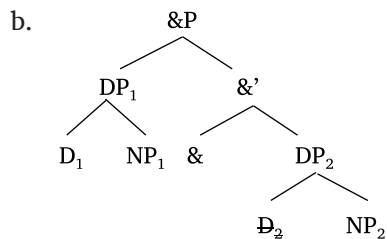
(15) (Heycock and Zamparelli 2005: 204)

    a. [$_{DP}$ My [$_{NP}$ friend and colleague]] is writing a paper.

    b. [$_{DP}$ That [$_{NP}$ liar and cheat]] is not to be trusted.

The example in (16) shows that the First Conjunct Agreement on the determiner can co-occur with Resolved Agreement on the verb.

(16) (Kallas 1993: 63)

Przed   nami   **były**   **tamten**   brzeg,   rzeka   i   –   most.

before us   were.**F.PL** that.**M.SG** bank.M.SG, river.F.SG and   bridge.M.SG

'Before us were that riverbank, river and bridge.'

The question now is how to explain the fact that First Conjunct Agreement on the determiner is obligatory. There are several possible accounts, which I consider in turn. The first one involves coordination of two DPs, with D ellipsis in the second conjunct, as shown in (17a–b).

(17) a. ten   mężczyzna i   kobieta

         this.M.SG man.M.SG   and woman.F.SG

         'this man and woman'

  b.

```
                  &P
                 /  \
              DP₁    &'
             /  \   /  \
           D₁  NP₁ &   DP₂
                        /  \
                      D̶₂̶   NP₂
```

I follow Shen (2019) and Heycock & Zamparelli (2005) in excluding such an ellipsis account.[15] This type of First Conjunct Agreement is quite widespread, but it does not seem to be subject

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  (i)   English (Heycock and Zamparelli 2005: 204)

      a.   My friend and colleague is writing a paper.

      b.   This soldier and sailor are inseparable.

  (ii)   Italian (Heycock and Zamparelli 2000: 343)

      a.   L' amico e   collaboratore di Gianni è   stato   qui.

         the friend and collaborator   of Gianni is been   here

         'Gianni's friend and collaborator was here.'

      b.   *Questo soldato e   marinaio sono buoni amici.

         this   soldier and sailor   are   good friends

         'This soldier and sailor are good friends.

[15] As brought to my attention by one of the reviewers, Heycock and Zamparelli (2005: Section 6) give a number of arguments against an ellipsis account. For example, they point out that the difference in interpretation betweeen (ia)

to the same restrictions that we find in other constructions where determiner ellipsis has been implicated. For example, the structure of the English example in (18a) would have to be (18b) on an ellipsis account.

(18)   a.   this man and woman

b.
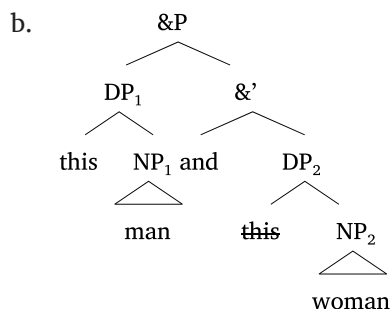
However, determiner ellipsis (sharing) in English, illustrated in (19a), is quite restricted, as shown by McCawley (1993); Johnson (2000); Lin (2000), among others. These authors also note that determiner sharing is contingent on gapping, as shown by the ungrammaticality of (19b), and that not all determiners allow it, as shown by the ungrammaticality of (19c). (19c) also shows that the demonstrative pronoun *this* does not allow ellipsis, which is what would have to be necessary for the ellipsis account in (18b) to work.

(19)   a.   (Johnson 2000: 59)
         Few dogs eat Whiskas or ~~few~~ cats ~~eat~~ Alpo.
       b.   *Few dogs eat Whiskas or ~~few~~ cats eat Alpo.
       c.   *This dog eats Whiskas or ~~this~~ cat ~~eat~~ Alpo.

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and (ib) is unexpected on the ellipsis account: while (ia) *can* refer to a total of 5 people, (ib) lacks this interpretation, and can only refer to a total of 10 people.

(i)   (Heycock and Zamparelli 2005: 255)
       a.   those five men and ~~those five~~ women
       b.   those five men and those five women

Polish behaves similarly in this respect:

(ii)   a.   tych   pięć   studentek   i   asystentek
            these   five   students   and   assistants
            'these five students and assistants'

       b.   tych   pięć   studentek   i   tych   pięć   asystentek
            these   five   students   and   these   five   assistants
            'these five students and assistants'

Heycock and Zamparelli (2000) also argue against an ellipsis account, pointing out the contrast between (20a) and (20b), which shows that with three conjuncts, gapping can target only the third conjunct, but determiner ellipsis cannot.

(20)   (Heycock and Zamparelli 2000: 344)
     a.   John wrote the first chapter, Mary wrote the second chapter, and Bill ~~wrote~~ the conclusion.
     b.   *the man, the woman, and ~~the~~ child

Another possibility is for a single D to be merged above the coordination level, as shown in (21b).

(21)   a.   ten   mężczyzna   i   kobieta
          this.M.SG   man.M.SG   and   woman.F.SG
          'this man and woman'

     b.

```
              DP
             /  \
            /    \
           D     &P
                /  \
              NP_1  &'
                   /  \
                 and  NP_2
```
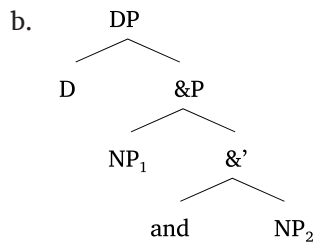
Such a structure seems straightforward and has been proposed for noun phrases with shared determiners (see, for example, Heycock and Zamparelli 2005, for a variant of it). However, (21b) seems to me to be a more plausible structure for DPs with joint readings, such as the one in (22) below, especially if we assume that D is the locus of reference (as argued by Longobardi 1994), and, consequently, that a single DP headed by a singular determiner should yield reference to a single individual.

(22)   mój   przyjaciel   i   kolega
        my.M.SG   friend.M.SG   and   colleague.M.SG
        'my friend and colleague'

The possibility I would like to explore instead is that a single determiner undergoes Parallel Merge with two NPs, as shown in (23b), which yields two distinct DPs. It is not until later that these two DPs become the two conjuncts in a coordinate structure, as shown in (23c).

(23)   a.   ten   mężczyzna   i   kobieta
          this.M.SG   man.M.SG   and   woman.F.SG

b.

```
        DP₁        DP₂
       /   \      /   \
      D    NP₁  NP₂
```

c.

```
              &P
             /  \
            /    &'
           /    / \
        DP₁  and  DP₂
       /  \        / \
      D   NP₁    NP₂
```
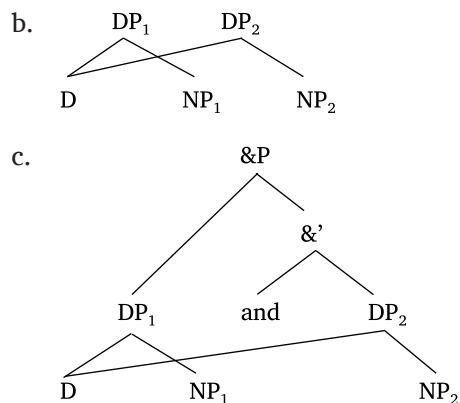
There is still the question of why determiner sharing (*i.e.*, the structures in (23b–c)) does not give rise to Resolved Agreement. This is the question Shen (2019) addresses in his analysis of so-called nominal Right Node Raising, illustrated in (24) below, proposing that DP internal sharing does not give rise to plural agreement because it is morphological rather than semantic agreement.[16] For him, morphological agreement with two singular Goals yields singular agreement, whereas semantic agreement yields (resolved) plural agreement.

(24) (Shen 2019: 2)
      This tall and **that** short **student/*students** are a couple.

While it is not inconceivable that DP internal and clausal agreement might be different, it is not totally clear why DP internal agreement should be morphological and clausal agreement semantic within the same language. Therefore, I will not pursue this line of reasoning here, and, instead, reduce the difference between Resolved Agreement and Single Conjunct Agreement to the difference between a Parallel Merge structure and a non-Parallel Merge structure.[17] My preliminary proposal, to be revised in the next section, is given in (25a–b).

(25) a. When a single Probe undergoes Agree with multiple Goals in a Parallel Merge structure, the result is agreement with a single Goal.
      b. When a single Probe undergoes Agree with multiple Goals in a non-Parallel Merge structure, the result can be either Resolved Agreement or Single Conjunct Agreement.

---

[16] More specifically, Shen was interested in the difference between nominal agreement (which is singular in cases of nominal Right Node Raising (D and D N configurations) and clausal agreement (which can be plural in cases of verbal Right Node Raising of the kind studied by Grosz 2015).

[17] As brought to my attention by one of the reviewers, resolved DP internal agreement is not universally impossible (see Dalrymple and Nikolaeva 2006, for example).

This still does not fully answer the *why*-question: why should Parallel Merge structures preclude Resolved Agreement? The answer, I believe, lies in the relationship between Parallel Merge and derivations. This relationship was explored in Citko and Gračanin-Yuksek (2021), and the next section is based on that work.

4 Parallel Merge and derivations

Citko and Gračanin-Yuksek (2021) propose a constraint they call a Binarity Constraint on Merge (**BiCoM**) which, instead of preventing Merge from *combining more than two objects at a time*, prevents it from *relating more than two positions at a time*. Simplifying somewhat, BiCoM allows the Parallel Merge structure in (26a) but disallows the structure in (26b), in which Parallel Merge is followed by Internal Merge.

(26) a.

b.
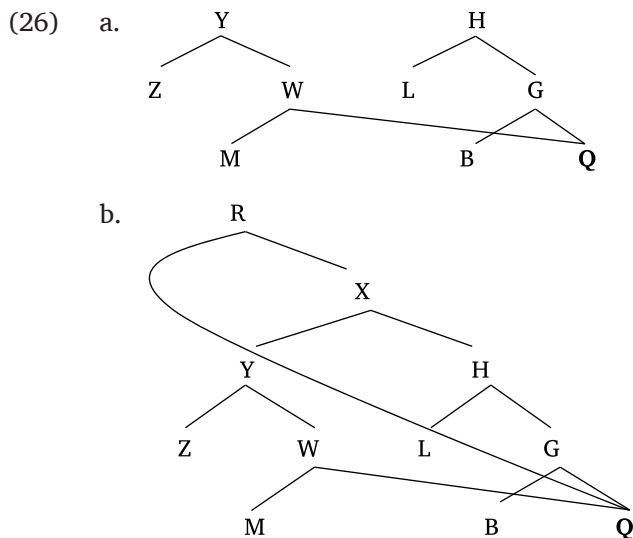
The reason why (26b) is disallowed is that Q occupies two positions before it merges with X. Thus, merging Q and X will relate these two positions of Q to the position of X, which violates BiCoM. The next question Citko and Gračanin-Yuksek faced is: if positions matter, why (26a) is allowed. In (26a), merging B and Q relates two positions: the position of B and the position of Q. However, subsequent merging of M and Q would relate these two positions (the position of Q inside G, the position of Q inside W) to a third position (the position of M), which also should not be allowed. Citko and Gračanin-Yuksek propose that the reason (26a) *is allowed* because Q is shared *across two distinct derivations*, where derivations correspond to roots, and within each derivation, Merge only relates two positions. In intuitive terms, one derivation does not 'see' the other derivation, and constraints such as BiCoM apply within a single derivation.

Empirical motivation in favor of BiCoM comes from the contrast between Across-the-Board wh-constructions and Right Node Raising with respect to parallelism; as first noted by Williams (1978), ATB extraction from non-parallel positions is ungrammatical, as shown in (27a). On the Parallel Merge approach, the shared wh-phrase *who* in (27a) occupies non-parallel positions: the object in the first conjunct and the subject in the second conjunct. By contrast, analogous configurations in Right Node Raising are well-formed, as shown in (27b). Here the shared DP *a guy in a blue suit* is also the direct object in the first conjunct and the subject in the second conjunct.[18]

(27)   (Citko and Gračanin-Yuksek 2021: 5–6)
         a.   *Tell me **who**$_i$ everyone expected t_i and t_i walked into the room.
         b.   Everyone expected _, and into the room walked _, **a guy in a blue suit**.

Let me capitalize on Citko and Gračanin-Yuksek's insight and rephrase (25a–b) above as (28a–b).

(28)   a.   When a single Probe undergoes Agree with multiple Goals *across multiple derivations*, the result is agreement with a single Goal.
         b.   When a single Probe undergoes Agree with multiple Goals *within the same derivation,* the result can be either Resolved Agreement or Single Conjunct Agreement.

Citko and Gračanin-Yuksek (2021) define a derivation as a sequence of stages in a Workspace, where at each stage, Merge creates a new set that is a member of the Workspace (i.e., a new root). If a given application of Merge creates an 'extra' root (as is the case in Parallel Merge structures), a new derivation is initiated. This is stated in more formal terms in (29a–b).

(29)   (Citko and Gračanin-Yuksek 2021: 14–15)
         a.   A **derivation** D is a sequence of stages $\langle S_0, S_1, S_2, \ldots S_n \rangle$ in a Workspace W, such that for every i, $0 \leq i \leq (n\text{-}1)$, S_{i+1} is created from S_i by an application of Merge, and the number of sets that are members of W at S_{i+1} does not exceed the number of sets that are members of W at S_i.
         b.   If the number of sets that are members of the Workspace at the stage S_{i+1} exceeds the number of sets that are members of the Workspace at the immediately preceding stage S_i, then at S_{i+1} a new derivation is initiated at S_{i+1}.

---

[18] Grammatical ATB examples, in which extraction takes place from parallel positions, as in (i), are attributed to *structural syncretism*.

(i)   Tell me **who**$_i$ you met t_i and invited t_i to the party.

Informally speaking, two positions count as one if they are structurally the same (e.g., both are complements of the verb). I refer the interested reader to Citko and Gračanin-Yuksek (2021) for details.

For example, if we have created the set {A, B} and we merge this set with C, as in (30b), we have not increased the number of roots (technically, the number of sets that are members of the Workspace). We also haven't increased the number of roots if we Internally Merge A with {C, {A, B}}, as in (30c).

(30)   a.   External Merge of A and B
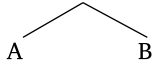
        b.   External Merge of **C** with **{A, B}** → **{C, {A, B}}**
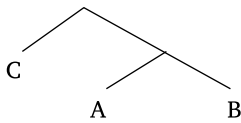
        c.   Internal Merge of **A** with **{C, {A, B}}** → **{A, {C, {A, B}}}**
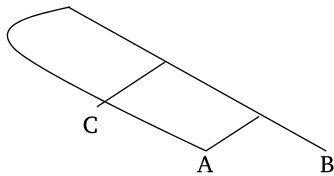
If, however, instead of Externally Merging C with {A, B}, we Parallel Merge it with B, as in (31b), we have increased the number of sets that are members of the Workspace from one (i.e., {A, B}) to two (i.e., {A, B} and {B, C}). Thus, we have started a new derivation.

(31)   a.   External Merge of A and B → {A, B}
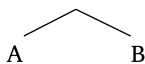
        b.   Parallel Merge C with B → **{B, C}**
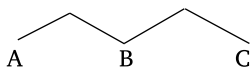
Just as one derivation does not 'see' the other for the purposes of BiCoM, one derivation does not see the other one for the purposes of agreement. Thus, if a Probe (P) merges with a Goal with one set of features (G_1) *within one derivation*, and another Goal within another set of features (G_2) within another derivation, the Probe will end up with *two independent sets of features*, as shown in (32). This will be realized as agreement with the closest Goal.[19]

---

[19] Admittedly, the mechanism behind it is not fully fleshed out here. One possibility would be to assume that morphology cannot deal with two independent sets of uninterpretable phi-features on a single Probe, which forces one of them to delete. As pointed out by one of the reviewers, the structure in (32) is reminiscent of a Right Node Raising structure, in which the RNR-ed element, such as *a book about RNR* in (i), is shared between the two conjuncts:

(32)

$$P_{1,2} \quad G_1 \quad G_2$$
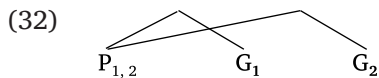
Alternatively, a single Probe can also agree with two Goals *simultaneously within the same derivation*, as shown in (33). This is Multiple Agree of Hiraiwa (2001). In this case, the Probe ends up with *two values* of a single uninterpretable feature, which in turn is realized as Resolved Agreement, marked as P_{1+2}.

(33)

$$P_{1+2} \quad G_1 \quad G_2$$
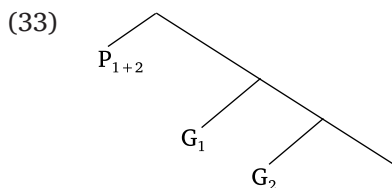
A single Probe can also agree with the Closest Goal, as shown in (34). In this respect, I follow previous accounts of First Conjunct Agreement, such as that of Van Koppen 2005, which derive First Conjunct Agreement from the ability of the Probe to agree with the closest conjunct.

(34)

$$P_1 \quad G_1 \quad G_2$$
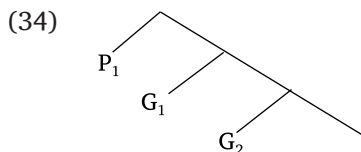
The structure I proposed in the previous section for conjoined DPs with split interpretations is the Parallel Merge structure repeated below. In this structure, D first merges and agrees with one conjunct, and then (Parallel) merges and agrees with the second one. Since it does not happen simultaneously, D ends up with two sets of values rather than Resolved Agreement.

(35)   a.   ten   mężczyzna i   kobieta
            this.M.SG man.M.SG and woman.F.SG

       b. DP_1

            D_1 NP_1
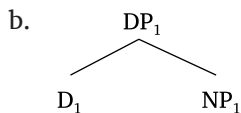
(i)   Mary wrote and Bill read *a book about RNR*.

In (i), the shared element gets two case values (one from each conjunct), but only one case can surface (see Citko 2011; 2017; Asarina 2013). The configuration in (32) differs from the RNR configuration in one respect: in RNR, the Agree relationship is between two Probes and a single Goal, rather than a single Probe and two Goals. Adamson and Anagnostopoulou (to appear) make a similar proposal about gender resolution. I thank the reviewer for bringing this to my attention.

c.

```
        DP₁      DP₂
       /  \      /
      /    \    /
   D₁,₂    NP₁  NP₂
```

d.

```
                &P
               /  \
              /    \
             /      &'
            /      /  \
           /      /    \
        DP₁     and     DP₂
        /  \            /
       /    \          /
     D₁,₂   NP₁      NP₂
```
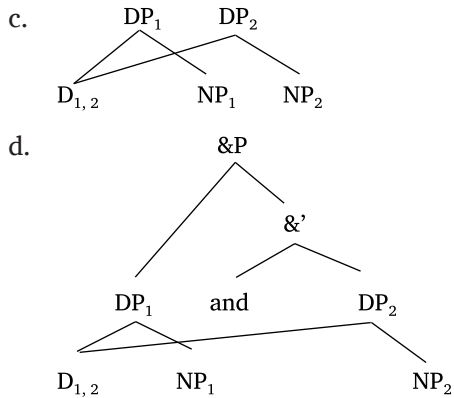
If this proposal is on the right track, we should find similar effects in clausal domains. Let us look at subject verb agreement, which is commonly assumed to be a reflex of Agree between T and the subject DP in [Spec, vP]. If T undergoes Agree with two DPs *across two distinct derivations* (with DP_1 within one derivation, and with DP_2 within another derivation), as in (36), the result is predicted to be agreement with the closest subject.

(36)

```
      TP₁                  TP₂
     /   \                /
    /     \              /
  T₁,₂   vP₁           vP₂
        /   \          /  \
       /     \        /    \
     DP₁     v'     DP₂     v'
            /  \           /  \
           /    \         /    \
          v     VP       v     VP
```
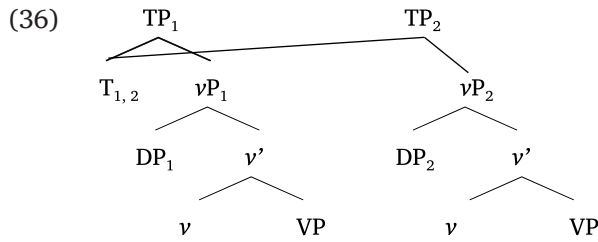
If the two subjects move to their respective [Spec, TP] positions and the two TPs merge with a conjunction, as shown in (37), this might be a plausible structure for gapping.

(37)

```
                    &P
                   /  \
                  /    &'
                 /    /  \
               TP₁   &    TP₂
              /  \       /   \
            DP₁   T'   DP₂    T'
                 /  \             \
               T₁₊₂  vP₁          vP₂
                    /   \        /   \
                  D̶P̶₁    v'    D̶P̶₂    v'
                        /  \        /  \
                       v   VP      v   VP
```
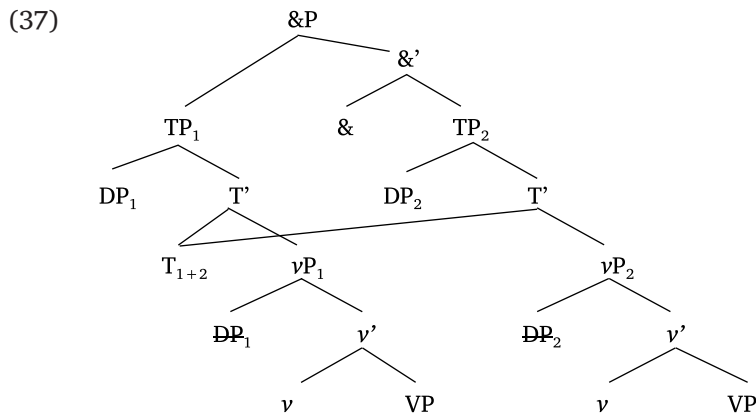
While my goal here is not to motivate this approach to gapping, such a structure would explain why Resolved Agreement is *not* possible in gapping; the non-gapped auxiliary or verb agrees with the subject in the first conjunct, as shown in (38a–c). The verb *lubić* 'like' is syncretic in the

third person present tense feminine and masculine gender, so technically it is not possible to tell whether in (38b) it agrees with the subject in the first conjunct or the second one. However, in the past tense, the two are not syncretic, so (36c) clearly shows that agreement is with the subject in the first conjunct.

(38)   a.   Mary **hasn't/*haven't** eaten the cake and John, drunk the beer.

   b.   Jan **lubi/*lubią** kawę a Maria herbatę.
        Jan like.**M.SG/F.SG/*M.PL** coffee and Maria tea
        'Jan likes coffee and Maria tea.'

   c.   Jan **lubił/*lubiła/*lubili** kawę a Maria herbatę.
        Jan like.**M.SG/*F.SG/*M.PL** coffee and Maria tea
        'Jan liked coffee and Maria tea.'

If, on the other hand, T undergoes Agree with two DP subjects *within the same derivation*, the result is predicted to be Resolved Agreement. This is schematized in (39).

(39)
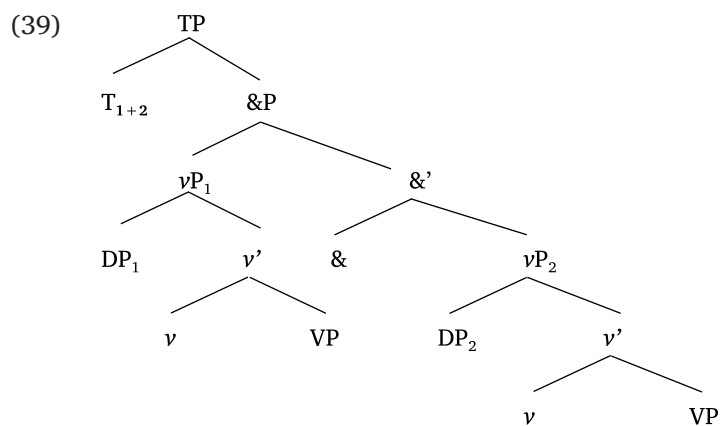
This could be the structure for what Kazenin (2002) calls a *pair-list* construction, where we find Resolved Agreement, as shown in (40).[20]

(40)   **Zwiedzili:** Maria Kraków, a Jan Warszawę.
       visited.**M.PL** Maria Cracow and Jan Warsaw
       'Maria visited Cracow and Jan Warsaw.'

---

[20] Agreement with the subject in the first conjunct is also possible, as shown in (i). This is not surprising, given that T could instead undergo Agree with just the closest DP, which in this case is the subject inside the first conjunct.

   (i)   **Zwiedziła** Maria Kraków, a Jan Warszawę.
         visited.**F.SG** Maria Cracow and Jan Warsaw
         'Maria visited Cracow and Jan Warsaw.'

The structure in (39) is essentially the structure proposed by Grosz (2015) for verbal RNR constructions exhibiting Resolved Agreement, which he refers to as *cumulative agreement* and which I adopted in Citko 2018b for certain cases of backwards gapping. (41a) is an example. In Grosz's structure, given in (41b), involves T undergoing Multiple Agree with two DPs in a multidominant configuration, which on the current account should not lead to Resolved Agreement.

(41)   a.   (Grosz 2015: 5)

[Sue's proud that *Bill* _] and [Mary's glad that *John* _] **traveled** $t_{Bill/John}$ **to Cameroon**.

      b.   (adapted from Grosz 2015: 13)
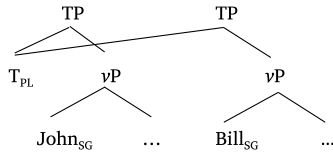
However, this is not the only possible account of examples like (41a). Otaki (2011), for example, analyzes analogous constructions in Japanese as involving underlying coordination of the two subjects, with the conjunction head being null. In that case, T could simply agree with the coordinate phrase within a single derivation.

(42)   Japanese (adapted from Otaki 2011: 200–201)

      a.   Masa$_i$-wa   te-de,   (sosite)   Ken$_j$-wa   batto-de   otagai$_{i+j}$-o   nagut-ta.

            Masa-TOP   hand-with   and   Ken-TOP   bat-with   each.other-ACC   hit-PAST

            Lit. 'Masa by hand, and Ken hit each other with a bat.'

      b.
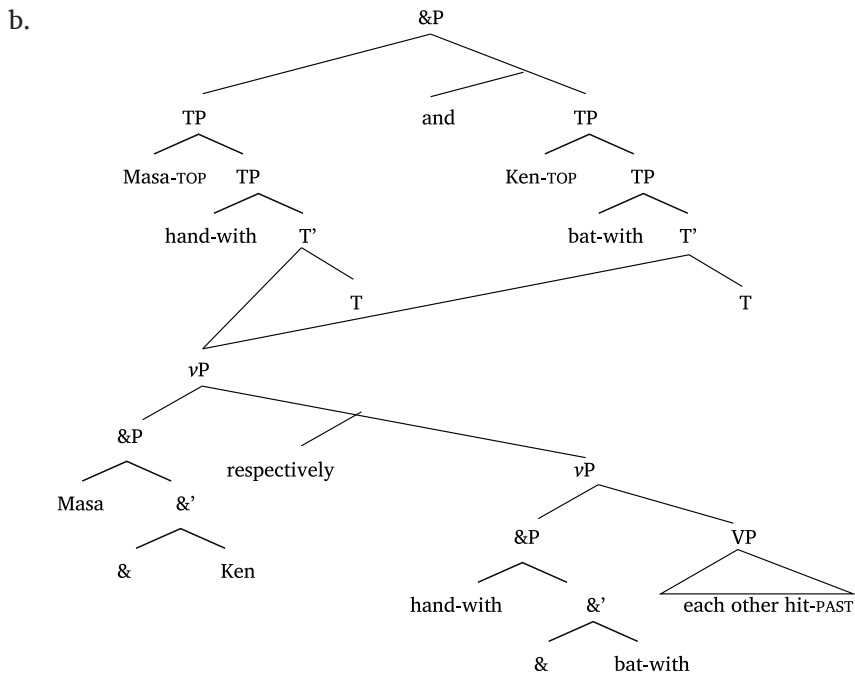
There are two Ts in this structure, so it is not clear how to ensure plural agreement on the verb, but the modification given in (43), in which the TPs are shared and there is a single T, would accomplish that.

(43)
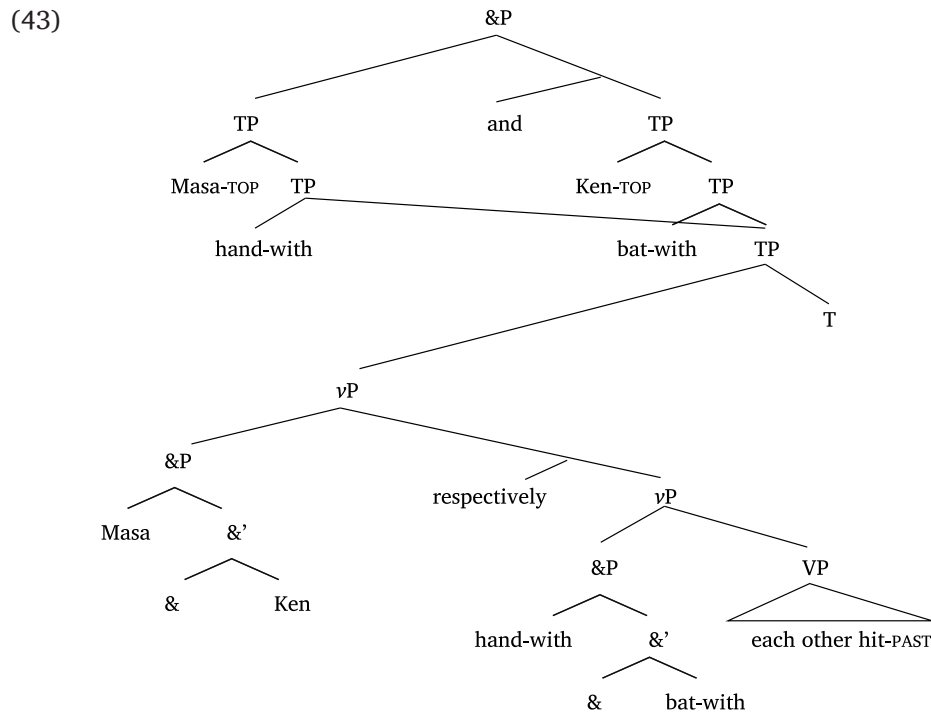
And Chaves (2014) argues that cumulative agreement (*summative agreement* in his terms) is a result of the speaker's 'repackaging', conditioned by context, of two independent propositions with singular agreement into one with plural agreement.[21]

To recap, obligatory agreement with the closest Goal arises if Agree between a single Probe and multiple Goals takes place across distinct derivations. If multiple Goals are within the same derivation, the Probe can either undergo Multiple Agree with all Goals simultaneously (yielding Resolved Agreement) or Agree only with the closest Goal.

In the remainder of this paper, we will see how this applies to relative clauses, which are the focus of this paper. The example illustrating the agreement patterns that we want to account for is repeated in (44).

---

[21] Chaves gives the context in (ia) to illustrate the context that facilitates repackaging (and consequently plural agreement) of the example in (ib).

(i)   (Chaves 2014: 871)
    a. *Suppose that Fred (the speaker) knows that (i) Mia thinks Mary is a wonderful student and that (ii) Tom thinks John is a wonderful student. Then, Fred might opt to say that Mia and Tom think that Mary and John are wonderful students, respectively.*
    b. Tom said that John—and Mia said that Mary—[were wonderful students].

(44) Na stole **leżała/leżały ta/*te**   książka i   gazeta,
      on table lay.**F.SG/F.PL** this.**F.SG/*F.PL** book.**F.SG** and paper.**F.SG**
      które/*którą   Maria przeczytała.
      which.**F.PL/*F.SG** Maria read
      'On the table lay this book and paper which Maria read.'

What is important for us to establish first, however, is the structure and derivation of Polish relative clauses with the agreeing relative pronoun *który* 'which'. This is the topic of the next section, where I show that Polish relative clause with *który* involve Head Promotion and do not seem to differ in this respect from relative clauses with the complementizer *co*. This is not uncontroversial, since by far the more common view is that only relative clauses with the complementizer *co* involve promotion.

5 Head Promotion for all

The two structures for relative clauses I will consider in this section are Head Promotion (also known as Head Raising) and External Head structures, given in (45b–c), respectively.[22]

(45) a. książka, którą   Maria przeczytała
          book.**F.SG** which.**F.SG** Maria read
          'the/a book which Maria read'

      b. Head Promotion

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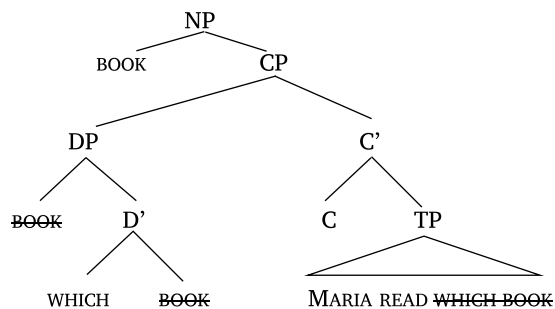
[22] I am not including here the third structure, the so-called Matching structure, which in a way combines the properties of these two; like the External Head structure, it contains a base-generated head in the CP external position, but it also includes two copies of the internal head. Since the internal head matches the external one, it can undergo deletion under identity (Sauerland 1999; Citko 2001).

   (i)   [DP the [NP book [CP which ~~book~~ C [TP Maria read ~~which book~~]]]]

c. External Head

```
                    NP
                   /  \
              BOOK      CP
                       /  \
                 W̶H̶I̶C̶H̶      C'
                            /  \
                           C    TP
                               /  \
                    M̶A̶R̶I̶A̶ ̶R̶E̶A̶D̶ ̶W̶H̶I̶C̶H̶
```
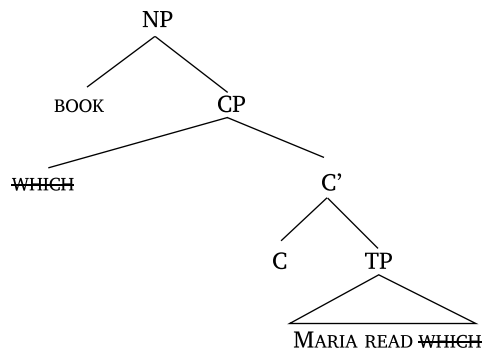
In all of them, the nominal head *book* combines with the relative clause, irrespective of whether it raised from it or not, before combining with the determiner. This is necessary to capture the interpretation of restrictive relatives. This is a standard assumption in the literature on restrictive relative clauses (see Bhatt 2002 a discussion of this point in the context of Head Promotion derivations for relatives, and Partee (1975) in the context of the structure of relative clauses more generally).The two structures differ with respect to their predictions with respect to reconstruction effects (Vergnaud 1974; Kayne 1994; Bhatt 2002; Bianchi 1999; 2000; de Vries 2002; Hulsey & Sauerland 2006; Hladnik 2015, among many others). A Head Promotion derivation predicts the presence of reconstruction effects, since there is a copy of the raised head inside the relative clause, whereas the External Head structure does not, since there is no internal copy. Standard reconstruction diagnostics involve (but are not limited to) idiom interpretation, variable binding, anaphor binding and scope, and are illustrated in (46a–d).

(46) a. the headway that John made h̶e̶a̶d̶w̶a̶y̶
      b. a picture of their idol that every teenager cherishes p̶i̶c̶t̶u̶r̶e̶ ̶o̶f̶ ̶t̶h̶e̶i̶r̶ ̶i̶d̶o̶l̶
      c. a picture of herself that Mary liked p̶i̶c̶t̶u̶r̶e̶ ̶o̶f̶ ̶h̶e̶r̶s̶e̶l̶f̶
      d. two patients that every doctor examined t̶w̶o̶ ̶p̶a̶t̶i̶e̶n̶t̶s̶

The views in the literature on the reconstruction in Polish relative clauses, and consequently on their structure, differ quite a bit. For Szczegielniak (2004) *co*-relatives allow reconstruction, whereas *który*-relatives do not. Hladnik (2015), focusing on a wider range of Slavic languages, also maintains that only relative clauses with complementizers (*co*-relatives in Polish) allow reconstruction. Giltner (2018), in his work on Russian *čto* vs. *kotoryj* relatives shows that they exhibit behavior that is not consistent with Head Promotion vs. no Head Promotion derivation. And Gračanin-Yuksek (2013), focusing on Croatian, arrives at the conclusion that even *što*-relatives with no resumption do not involve a Head Promotion derivation.

What we are interested in here is the derivation of Polish relative clauses with the relative pronoun *który 'which'*. What the data presented in the remainder of this section will show is that both *co* and *który*-relatives allow reconstruction, and that coordination of the relative heads does not affect reconstruction possibilities. Examples (47a–b) show that both types of relatives allow bound variable interpretation; in both a and b example, *każdy rodzic* 'every parent' can bind *zdjęcia swoich dzieci* 'pictures of self's children'.

(47)   a. Te   zdjęcia swoich$_i$ dzieci, **które** każdy rodzic$_i$ trzyma na biurku,
           these pictures self's children which every parent keeps   on desk
           podnoszą go   na duchu.
           lift   him on spirit

       b. Te   zdjęcia swoich$_i$ dzieci, **co**   każdy rodzic$_i$ trzyma na biurku,
           these pictures self's   children COMP every parent keeps   on desk
           podnoszą go   na duchu.
           lift   him on spirit
           'These pictures of his children that every parent keeps on their desk always lift their spirits.'

Examples (48a–b) make the same point with respect to anaphor binding; in both, the subject *Jan* can bind *blog o swoich podróżach* 'a blog about self's travels'.

(48)   a. Ten blog o   swoich$_i$ podróżach, **który** Jan$_i$ zaczął dwa lata   temu,
           this blog about self's   travels   which Jan started two years ago
           zrobił   się bardzo popularny.
           became sefl very   popular

       b. Ten blog o   swoich$_i$ podróżach, **co**   Jan$_i$ zaczął dwa lata   temu,
           this blog about self's   travels   COMP Jan started two years ago
           zrobił   się bardzo popularny.
           became sefl very   popular
           'This blog about his travels that/which Jan started two years ago, became very popular.'

Next, let's turn to idiom interpretation. Szczegielniak gives the following contrast in support of his claim that *który* relatives does not allow reconstruction.

(49)   (Szczegielniak 2004: 24)
       a. słów **co** on nie rzucał na wiatr
           words that he not threw on wind
           'empty promises that he did not make'

b. ??słów **których** on nie rzucał na wiatr
    words which he not throw on wind
    'empty promises that he did not make'

However, being a native speaker of Polish, I find (49b) to be well-formed, and such relatives are also quite common on the web.

(50) a. Żałosne są tylko puste **słowa, które rzucasz na wiatr**!!!
    pityful are only empty words which throw on wind
    'Empty promises you make are pitiful.'

b. Znów **słowa, które rzucasz na wiatr**
    again words which throw on wind
    'Again empty promises you make'

c. Słowa i znów **słowa, które rzucasz na wiatr**
    words and again words which throw on wind
    'Empty promises and again empty promises you make'   *(Google)*

The examples in (51a–b) make the same point for two other idioms, *mieć węża w kieszeni* 'to be very stingy' (*lit.* to have a snake in a pocket) and *ręka rękę myje* 'you scratch my back and I scratch yours' (*lit.* a hand washes a hand).
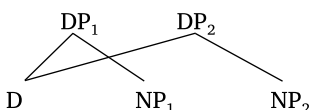
(51) a. Był do tego stopnia skąpy, że zamorzył głodem **węża, którego**
    was to this degree stingy that starved hunger snake which
    miał w kieszeni.
    had in pocket
    Lit. 'He was so stingy that he starved a snake in his pocket.'

b. Państwo nie dostarczyło im żadnych narzędzi, więc posłużyli się tym,
    state not provided them any tools so used REFL this
    co mieli: instynktem przetrwania, twardą dupą i **ręką, która rękę**
    COMP had: instinct survival, hard ass and hand which hand
    myje.
    washes
    'The state provided them with no tools so they used what they had: survival instinct, badass (attitude) and mutual favors.'   *(Google)*

Coordination of relative heads is allowed in both *co* and *który* relatives and does not affect reconstruction. Examples (52a–b) establish this for variable binding, and (53a–b) for anaphor binding.

(52) a. To zdjęcie swojej$_i$ żony i list od swoich$_i$ dzieci, **które** każdy
this picture self's wife and letter from self's children, which every
żołnierz$_i$ trzymał w kieszeni munduru, na nic mu się nie
soldier kept in pocket uniform for nothing him refl not
przydały.
were.useful

   b. To zdjęcie swojej$_i$ żony i list od swoich$_i$ dzieci, **co** każdy
this picture self's wife and letter from self's children, COMP every
żołnierz$_i$ trzymał w kieszeni munduru, na nic mu się nie
soldier kept in pocket uniform for nothing him REFL not
przydały.
'This picture of his wife and letter from his wife, which every soldier kept in his uniform pocket were good for nothing.'

(53) a. Ten blog o swoich$_i$ podróżach i album swoich$_i$ zdjęć, **które** Jan$_i$
this blog about self's travels and album self's pictures which Jan
opublikował dwa lata temu, zrobiły się bardzo popularne.
published two years ago made REFL very popular

   b. Ten blog o swoich$_i$ podróżach i album swoich$_i$ zdjęć, **co** Jan$_i$
this blog about self's travels and album self's pictures COMP Jan
opublikował dwa lata temu, zrobiły się bardzo popularne.
published two years ago made REFL very popular
'This blog about his travels and album of his photos that Jan published two years ago became very popular.'

Thus, we need a derivation of relative clauses with conjoined heads and a shared determiner that allows reconstruction. This is the Head Promotion derivation. We saw above that the movement involved in Head Promotion targets the nominal projection to the exclusion of the external determiner.

However, I have argued above that in order to explain First Conjunct Agreement on the determiner, we need a structure in which a single determiner undergoes Parallel Merge with two NPs, as shown in (54a). This might suggest that the conjunction head is merged next, as shown in (54b).

(54) a.

DP_1 DP_2

D NP_1 NP_2

b.

```
                    &P
             ╱        ╲
            ╱          &'
           ╱         ╱   ╲
          ╱         ╱     ╲
       DP₁      and       DP₂
      ╱   ╲               ╱   ╲
     D    NP₁          NP₂
```
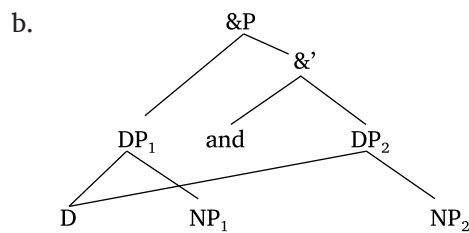
This, however, makes it impossible to raise the conjoined head of the relative clause without raising the determiner. To solve this problem, I extend Chomsky's (2013) proposal regarding the structure of coordination, in which the two conjuncts first merge with each other, and the conjunction head is merged late. I take it a step further and argue that the conjunction head can be merged *quite* a bit later, namely *after* the two "conjuncts" (technically, not conjuncts yet) undergo Head Promotion.

Chomsky's (2013) proposal concerning the structure of coordination is couched within the Labeling Algorithm, also due to Chomsky (2013), which reduces labeling to locality: when two elements merge, the closest head determines the label of the newly formed constituent (i.e., of the root). When a head X merges with a phrase YP (as in (55a), the head X determines the label (since it is closer to the root than the head of YP). However, when two phrases merge (as in (55b)), neither head is closer to the root than the other one, so the result cannot be labeled.

(55)   a.

```
            XP
          ╱   ╲
         X     YP
```

b.

```
            ???
          ╱   ╲
         X     YP
```
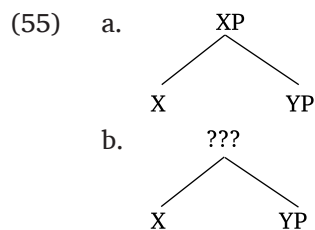
Chomsky proposes that (55b) is the first stage in the derivation of coordinate structures, with XP and YP being the two conjuncts. The conjunction head is merged next, as shown in (56b). The conjunction head, even though it is a head, is not 'strong' enough to determine the label. Thus, one of the two conjuncts moves out of this unstable/unlabelable structure, which allows the other one to label it. In (56c), XP moves, so YP labels the structure. When XP internally merges with YP, the result also cannot be labeled unless the two conjuncts agree in some relevant features (*e.g.,* categorial features). This is how Chomsky derives the Law of Coordination of Likes (i.e., the requirement that the conjuncts in a coordinate structure be of the same category) without sacrificing the asymmetric approach to coordination.

(56)   (adapted from Chomsky 2013: 46)

a.
```
        ???
       /   \
     Conj   ???
           /   \
          XP    YP
```

b.
```
        XP/YP
        /   \
      XP     YP
            /   \
          Conj   YP
                /   \
              X̶P̶     YP
```
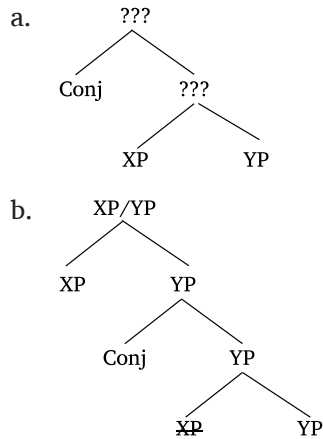
However, if (56b) is labelable if XP and YP agree in categorial features, (55b) is should also be labelable if XP and YP agree in categorial features. This is what I will adopt in the next section.

6 Putting it all together

The conclusion that emerges from the discussion in the previous sections is that in order to capture the behavior of Polish relative clauses with conjoined heads, we need a derivation with the following properties. First, it has to allow reconstruction, which calls for Head Promotion. Next, in order to First Conjunct Agreement on the determiner, we need a derivation in which a single determiner undergoes Parallel Merge with two NPs. This means that coordination has to be at the DP level, and that the conjunction head can be merged late. If it can be merged late, why not allow it to merge *even later*, after Head Promotion takes place. This is what will allow us to reconcile the Head Promotion derivation with conjoined heads being DPs.

With these considerations in mind, let us look at what a derivation of (57a) might look like, starting with the relative clause portion in (57b).

(57) a. Na stole leżała   ta   książka   i   gazeta,   które   Maria
          on table lay.F.SG this.F.SG book.F.SG and   paper.F.SG which.F.PL Maria
          przeczytała.
          read
          'On the table lay this book and paper which Maria read.'

      b. ta   książka   i   gazeta,   które   Maria   przeczytała
          this.F.SG book.F.SG and   paper.F.SG which.F.PL Maria   read
          'this book and paper which Maria read'

For the sake of clarity, I will use English glosses (in small caps) in the diagrams that follow. The two NPs, *książka* 'book' i *gazeta* 'paper', which will eventually become relative head(s) start out

inside the relative clause, but *not* as two conjuncts in a conjunction phrase. Rather, they first merge with each other, as shown in (58a), creating a symmetric nominal constituent, marked as NP_3. Next, this nominal constituent merges with the relative determiner, as shown in (58b).

(58)   a.

```
              NP₃
           /      \
        NP₁        NP₂
        /\          /\
       /__\        /__\
       BOOK        PAPER
```

   b.

```
              DP
           /      \
        WHICH      NP₃
                 /     \
               NP₁      NP₂
               /\        /\
              /__\      /__\
              BOOK      PAPER
```
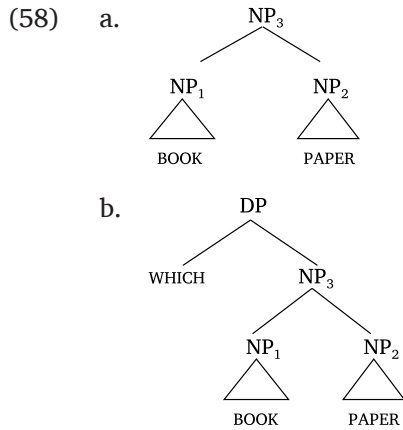
A question raised by one of the reviewers is why in (58b), the determiner merges with NP_3, rather than with the two NPs (NP_1 and NP_2) in a Parallel Merge fashion (as shown in (59)). If this structure were possible, we would expect Closest Conjunct Agreement on the relative pronoun, which is not what we find.

(59)

```
        DP              DP
       /  \            /
      /    \          /
   WHICH   NP₁      NP₂
           /\        /\
          /__\      /__\
          BOOK      PAPER
```
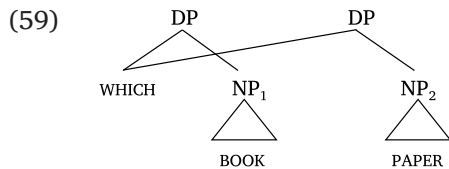
I exclude it on the following grounds. At a later stage in the derivation, this doubly headed relative DP would have to move to [Spec, CP]. However, since (59) involves two DP roots, hence two derivations, such movement is impossible; one DP is not able to pied-pipe the other one on any of the approaches to pied-piping I am familiar with. An alternative might be for the two DPs in (59) to merge with a conjunction head, one as its complement and the other one as its specifier, as shown in (60).

(60)

```
              &P
           /      \
          /        &'
         /        /   \
       DP      AND     DP
      /  \            /
   WHICH  NP₁       NP₂
          /\         /\
         /__\       /__\
         BOOK       PAPER
```
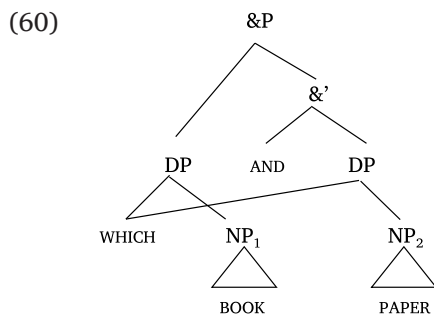
The entire &P could in principle move to [Spec, CP].[23] However, this is excluded in relative clauses because subsequent promotion of the two NPs would violate the Coordinate Structure Constraint. Even though the result would be a coordinate structure with a gap in each conjunct, this is not ATB extraction because two NPs are different (*book* vs. *paper*). Thus, moving either of them violates CSC.

Thus, the next stage involves the relative DP from (58b) above merging with the verb, T, the subject and C, resulting in (61).[24]

(61)

```
                CP
              /    \
            C       TP
                   /   \
                MARIA   T'
                       /   \
                      T     VP
                          /    \
                       READ    DP
                              /    \
                          WHICH    NP₃
                                  /    \
                               NP₁      NP₂
                               /\       /\
                             BOOK     PAPER
```
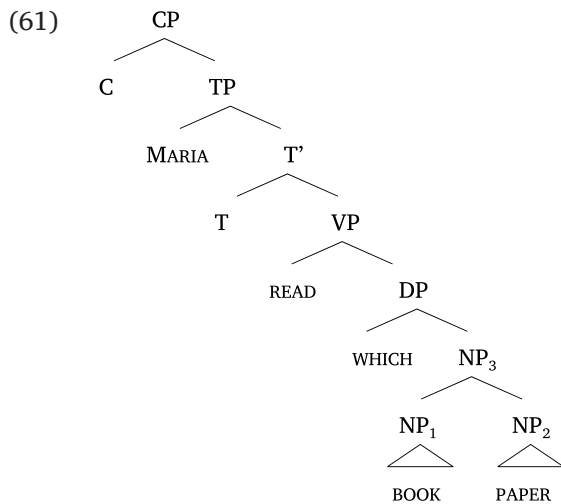
Next, the relative DP [_DP which [_NP [_NP book] [_NP paper]]] moves to [Spec, CP]:

(62)

```
                       CP
                    /      \
                  DP        C'
                /    \     /   \
            WHICH    NP₃  C     TP
                    /  \       /   \
                 NP₁   NP₂  MARIA   T'
                 /\    /\          /   \
               BOOK  PAPER        T     VP
                                      /    \
                                   READ    D̶P̶
```

---
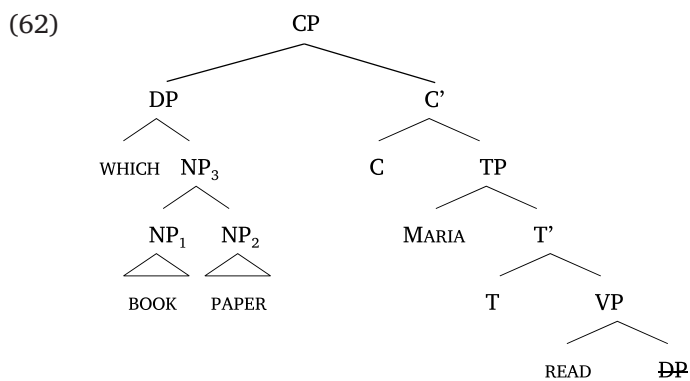
[23] This might be a plausible structure for wh-questions with a shared wh-determiner, such as the one in (i), where Closest Conjunct Agreement is obligatory.

(i) **Czyją/*Czyje**   książkę   i   artykuł   przeczytałaś?
     whose.**F.SG/*M.PL**   book.F.SG   and   article.M.SG   read
     'Whose book and article did you read?'

[24] For the sake of brevity, I am not including the *v*P layer in the derivations that follow.

And within the specifier of CP, the NP [$_{NP}$ [$_{NP}$ book] [$_{NP}$ paper]] moves to [Spec, DP], as shown in (63).

(63)

```
                              CP
                    ┌──────────┴──────────┐
                   DP                      C'
              ┌────┴────┐             ┌────┴────┐
            NP₃        D'             C          TP
          ┌──┴──┐   ┌──┴──┐                  ┌───┴───┐
        NP₁   NP₂ WHICH  N̶P̶₃            MARIA       T'
         △     △                              ┌──────┴──────┐
       BOOK  PAPER                            T             VP
                                                        ┌───┴───┐
                                                      READ     D̶P̶
```
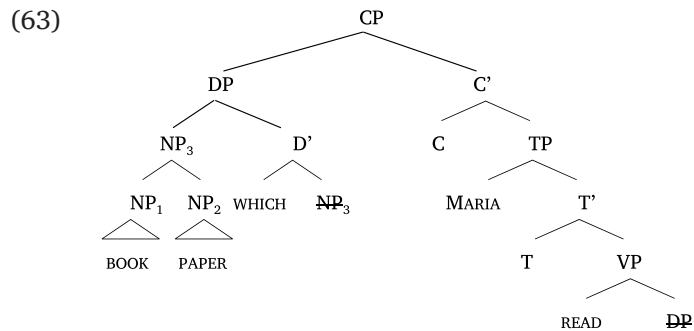
This step follows Kayne's (1994) derivation of relative clauses. It also explains why the relative pronoun must show Resolved Agreement. The result is a configuration in which NP₃ is in the specifier of the relative pronoun, and spec-head configurations are known to result in more 'complete' agreement (see Baker 2008, for example).

So far, this derivation has been a straightforward implementation of Kayne's (1994) Head Promotion account. The next couple of steps are an important departure; instead of promoting NP₃, the two NPs (NP₁ and NP₂) get promoted independently, as shown in (64a–b).

(64)   a.

```
                            NP₁
                   ┌─────────┴─────────┐
                  NP₁                   CP
                   △            ┌───────┴───────┐
                 BOOK          DP                C'
                          ┌────┴────┐       ┌────┴────┐
                        NP₃        D'       C          TP
                      ┌──┴──┐   ┌──┴──┐            ┌───┴───┐
                    N̶P̶₁   NP₂ WHICH  N̶P̶₃        MARIA       T'
                           △                          ┌─────┴─────┐
                        PAPER                          T           VP
                                                               ┌───┴───┐
                                                             READ     D̶P̶
```

        b.

```
                  NP₁        NP₂
              ┌────┴──┐  ┌────┴───────────────┐
            NP₁       NP₂                      CP
             △         △              ┌────────┴────────┐
           BOOK      PAPER           DP                  C'
                                ┌─────┴─────┐       ┌────┴────┐
                               NP          D'       C          TP
                             ┌──┴──┐    ┌──┴──┐            ┌───┴───┐
                           N̶P̶₁  N̶P̶₂  WHICH N̶P̶₃        MARIA       T'
                                                              ┌─────┴─────┐
                                                              T           VP
                                                                      ┌───┴───┐
                                                                    READ     D̶P̶
```
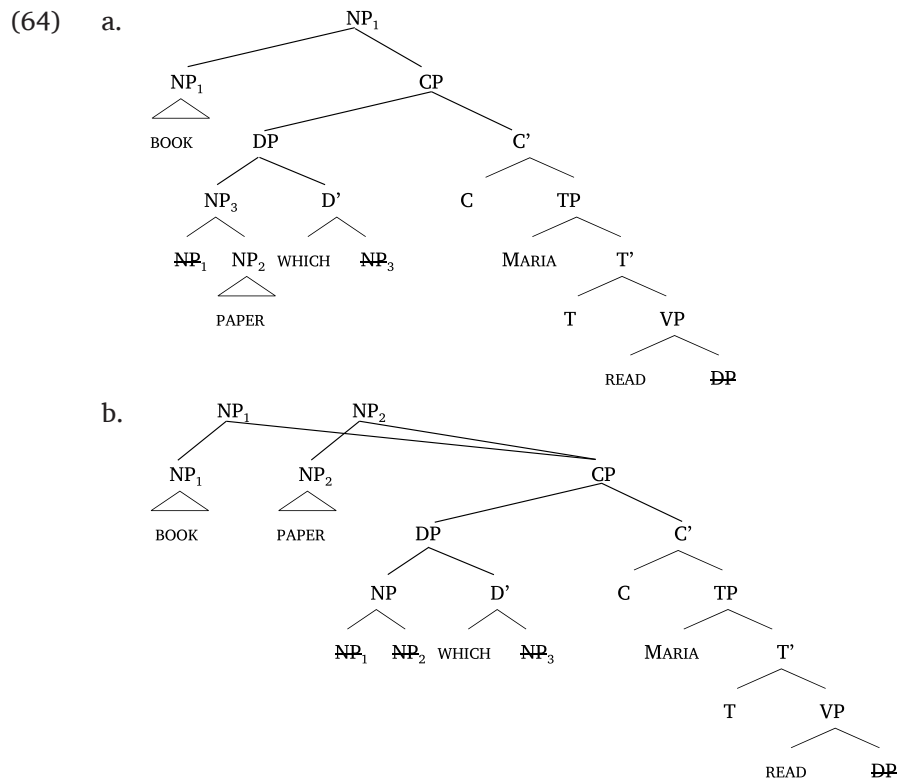
The question raised by one of the reviewers is what motivates this step; why couldn't the entire NP$_3$ get promoted instead? If instead of the DP 'which book paper' from (62), the &P moved to [Spec, CP], as shown in (65a–b) below, subsequent promotion of the two NPs would violate the Coordinate Structure Constraint (**CSC**); NP$_1$ and NP$_2$ would be moving out of two conjuncts in a coordinate structure. Crucially, promotion in (64a–b) does not violate CSC, since it happens *before* the coordinate structure is formed.

(65) a.

```
                CP
              /    \
            C       TP
                  /    \
              MARIA     T'
                      /    \
                    T       VP
                          /    \
                       READ     &P
                              /    \
                             /      &'
                            /      /  \
                          DP    AND    DP
                         /  \          /  \
                    WHICH   NP₁      NP₂
                            /\        /\
                         BOOK      PAPER
```

b.

```
                      CP
                   /      \
                 &P        C'
               /    \     /  \
              /     &'   C    TP
             /     /  \      /   \
           DP   AND   DP   MARIA   T'
          /  \        /  \        /  \
     WHICH  NP₁     NP₂        T     VP
            /\       /\             /   \
        BOOK      PAPER         READ    &P
```
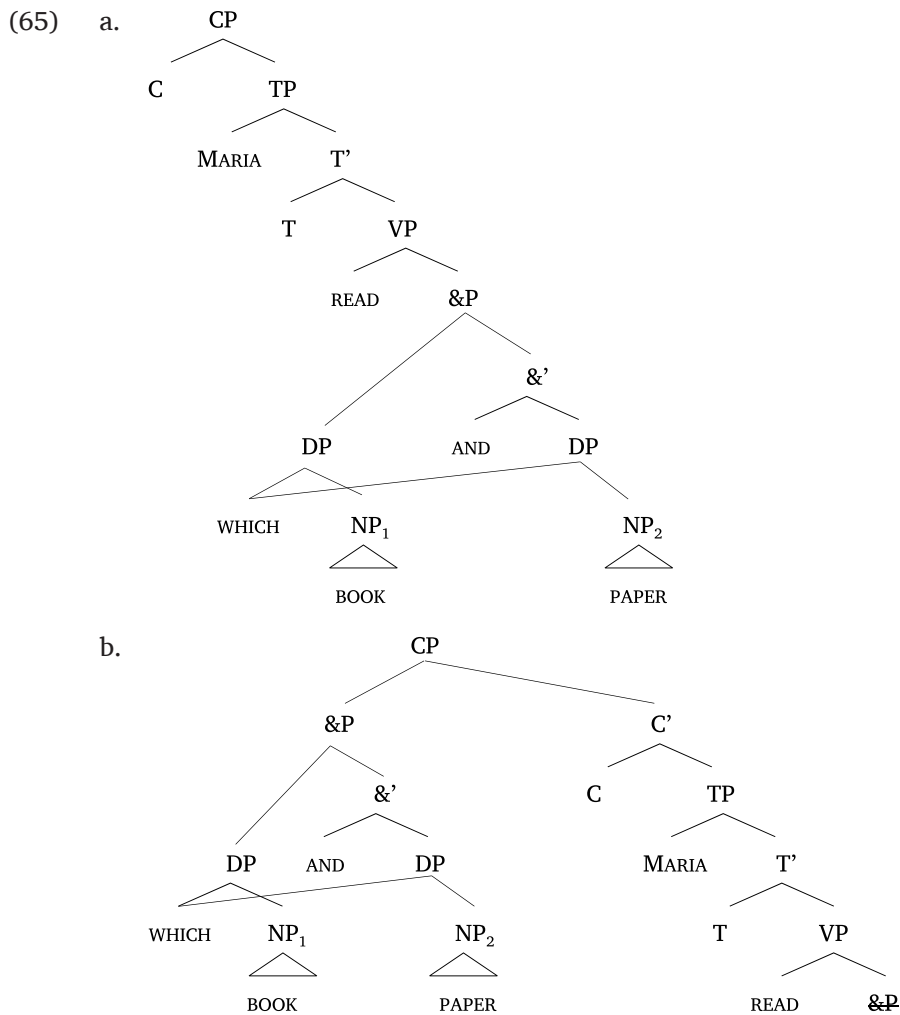
Since the steps given in (65b–c) are not possible, let us back to the derivational stage given in (64b) above. The next two stages will involve the determiner 'this' merging with NP$_1$ and parallel merging with NP$_2$:

(66) a.

```
                    DP₁
                 ╱      ╲
              THIS      NP₁ ─────────── NP₂
                      ╱    ╲          ╱        ╲
                    NP₁     NP₂              CP
                    △        △          ╱         ╲
                   BOOK    PAPER      DP            C'
                                    ╱    ╲        ╱    ╲
                                  NP₃     D'     C      TP
                                 ╱  ╲    ╱  ╲        ╱      ╲
                               N̶P̶₁̶ N̶P̶₂̶ WHICH NP₃   MARIA    T'
                                                          ╱    ╲
                                                         T      VP
                                                               ╱   ╲
                                                            READ    D̶P̶
```

b.

```
                 DP₁       DP₂
                ╱    ╲    ╱    ╲
             THIS     NP₁ ──────── NP₂
                    ╱    ╲        ╱       ╲
                  NP₁     NP₂            CP
                  △        △          ╱      ╲
                 BOOK    PAPER      DP          C'
                                  ╱    ╲      ╱    ╲
                                NP₃     D'   C      TP
                               ╱  ╲    ╱  ╲      ╱     ╲
                             N̶P̶₁̶ N̶P̶₂̶ WHICH NP₃ MARIA    T'
                                                       ╱   ╲
                                                      T     VP
                                                           ╱   ╲
                                                        READ    D̶P̶
```
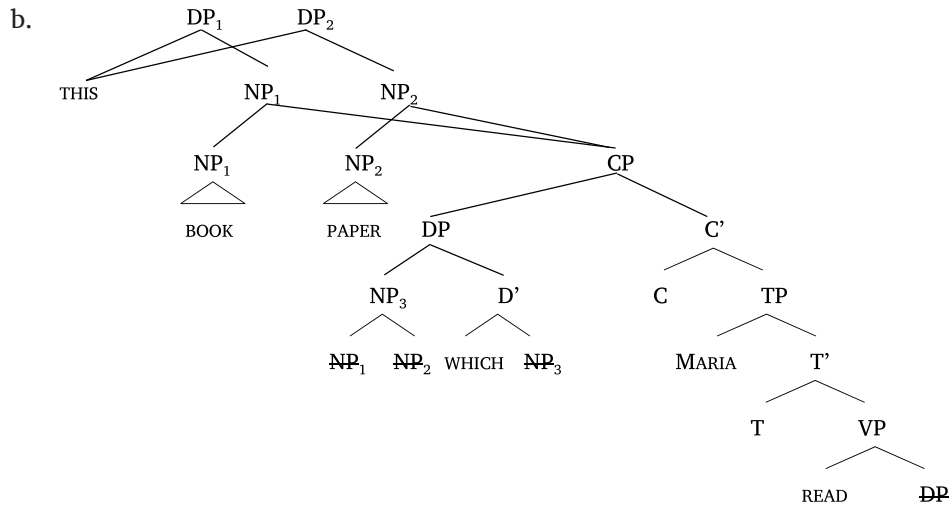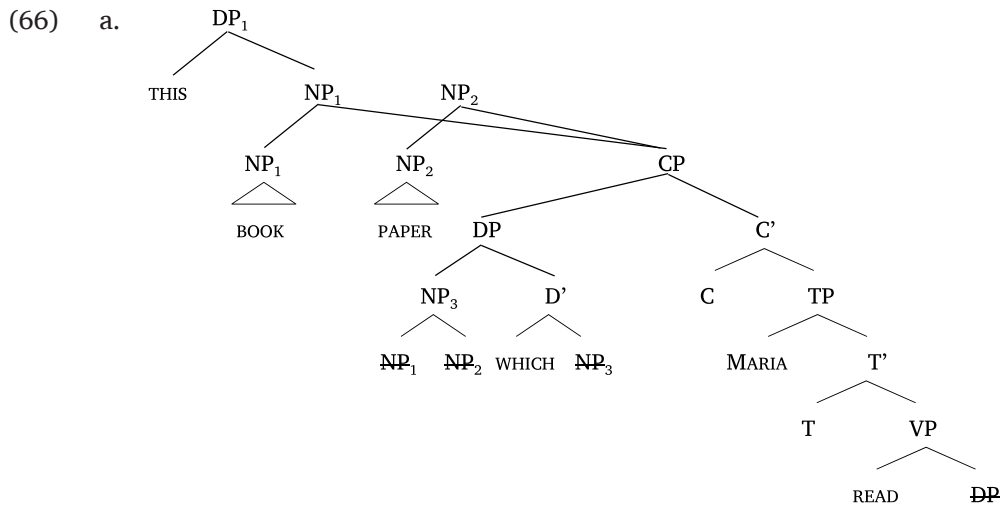
A question raised by one of the reviewers is how sharing a phrasal modifier (rather than a D head) might affect the derivation. Example (63a) shows that they behave similarly with respect to agreement. This is not unexpected; there is nothing preventing a phrasal modifier like *gorąca* 'hot' from undergoing Parallel Merge, as shown in (67b).[25]

---

[25] It is straightforward for it to happen after promotion of the two NPs. However, we know of cases where the modifier must be able reconstruct (Bhatt 2002), such as the one in (i), which suggests that the structure in (63b) also must be possible before promotion takes place.

(i)   the first monograph and article that Mary said that they published

I am afraid I have to leave working out the details of such derivations for future work.

(67) a. **gorąca** kawa i herbata, które zamówiliśmy
hot.**F.SG** coffee.**F.SG** and tea.**F.SG** which.**F.PL** ordered
'hot coffee and tea which we ordered'

b.
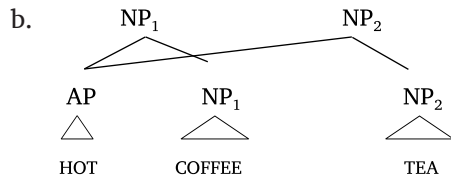
The next two steps involve merging DP_1 as a complement of the conjunction head and DP_2 as its specifier. Only now do the two DPs (DP_1 and DP_2) become the two conjuncts in a coordinate structure:

(68)
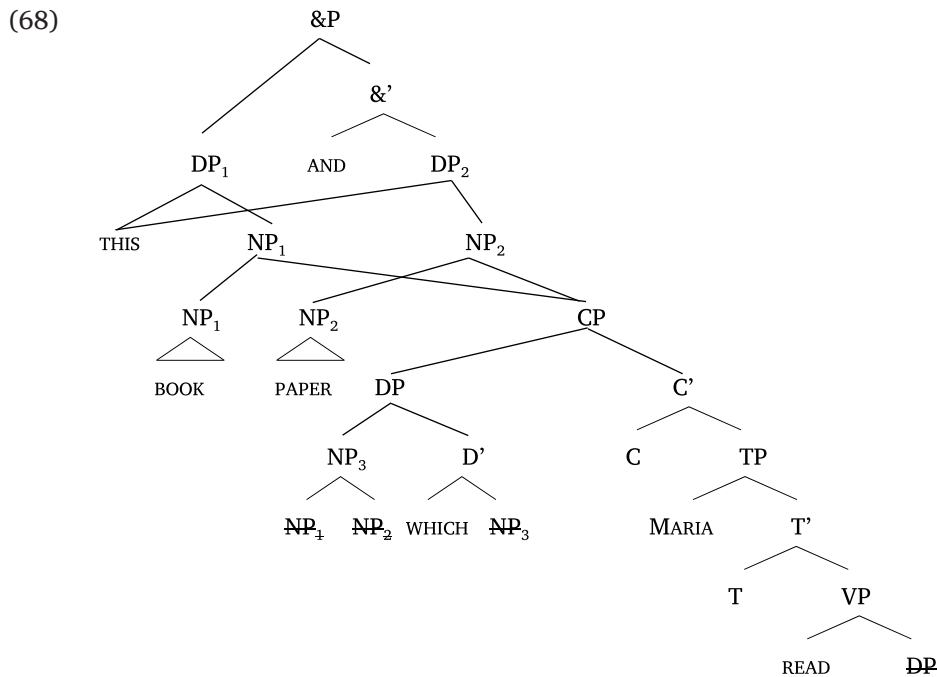
The idea that relative clauses with coordinated heads (especially true hydras such as the one in (69a) below) involve multidominance is by no means new (see McKinney-Bock (2013); Fox & Johnson (2016); Conrod & Woo (2018); also Zhang's (2007) sideward movement analysis). These accounts seem to differ from the one proposed here in that they typically involve External Head (or Matching) structures, as shown in (69).

(69) a. a man and a woman who love each other

b. (Conrod and Woo 2018)

```
                    &P
               ┌────────┴──────┐
              DP₁              &'
            ┌──┴──┐        ┌────┴────┐
           A     NP₁      AND       DP₂
              ┌───┴────┐         ┌───┴───┐
            NP₁       NP₂ ...   A       NP₂
             △         △                 │
            MAN       WOMAN              CP
                               ┌─────────┴────┐
                             WHO             C'
                                        ┌─────┴─────┐
                                       C           TP
                                              ┌──────┴──────┐
                                            WHO  LOVE EACH OTHER
```
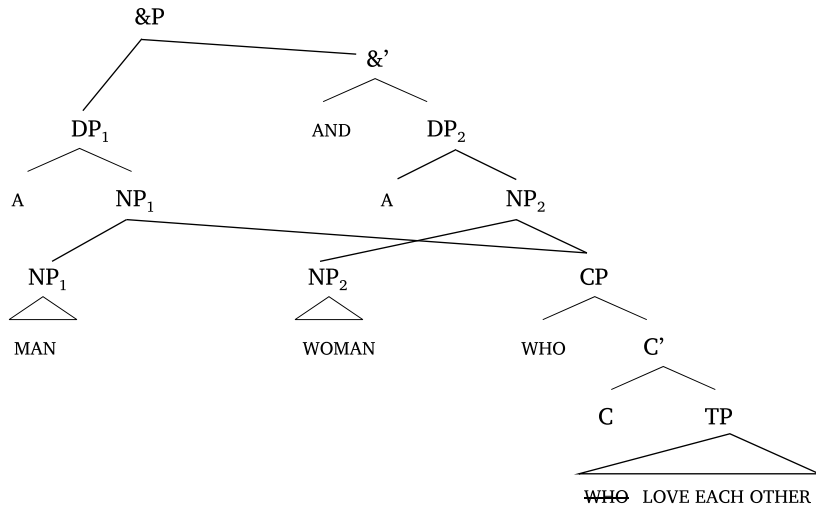
The current proposal can incorporate such relatives without 'sacrificing' Head Promotion. The derivation would proceed in a way parallel to the derivation of the Polish example in (57b). At the next stage, given in (70), another determiner would merge with NP_2 (instead of the same determiner undergoing Parallel Merge with it), as shown in (70).

(70)
```
              DP₁              DP₂
          ┌────┴────┐      ┌────┴────┐
         A        NP₁     A         NP₂
              ┌────┴───┐          ┌───┴───┐
            NP₁      NP₂         ...      CP
             △        △      ┌───────────┴──────┐
            MAN     WOMAN    DP                 C'
                        ┌─────┴─────┐       ┌────┴────┐
                       NP₃         D'      C         TP
                     ┌──┴──┐    ┌───┴───┐        ┌────┴────┐
                    NP₁  NP₂  WHO     NP₃        DP       T'
                                                      ┌────┴────┐
                                                     T         VP
                                                          ┌─────┴─────┐
                                                          LOVE EACH OTHER
```
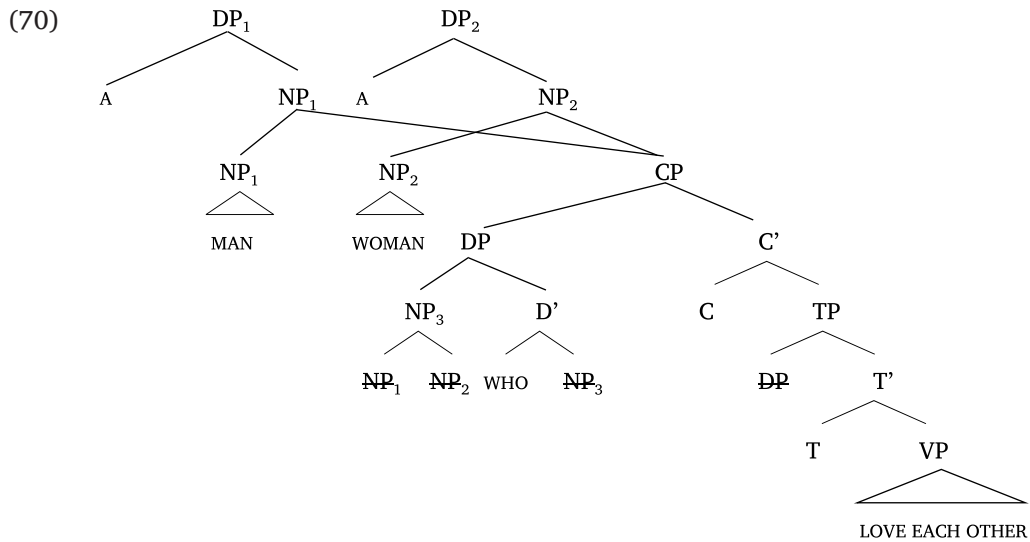
And the difference between relative clauses *with* and *without* determiner sharing, given in (71a–b) respectively, can be reduced to the presence or absence of two determiners in the Numeration. If there are two determiners, each can merge with its 'own' NP, as in (70) above, and if there is only one, it will undergo Parallel Merge with both NPs, as shown in (72).

(71) a. a man and woman who love each other
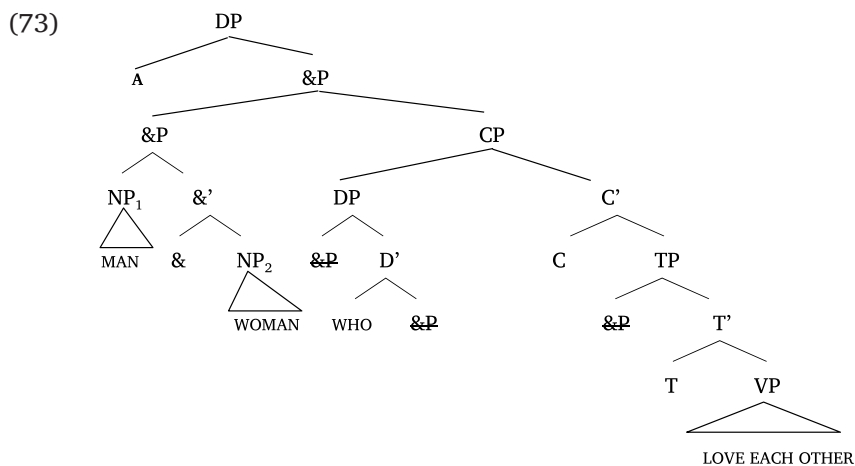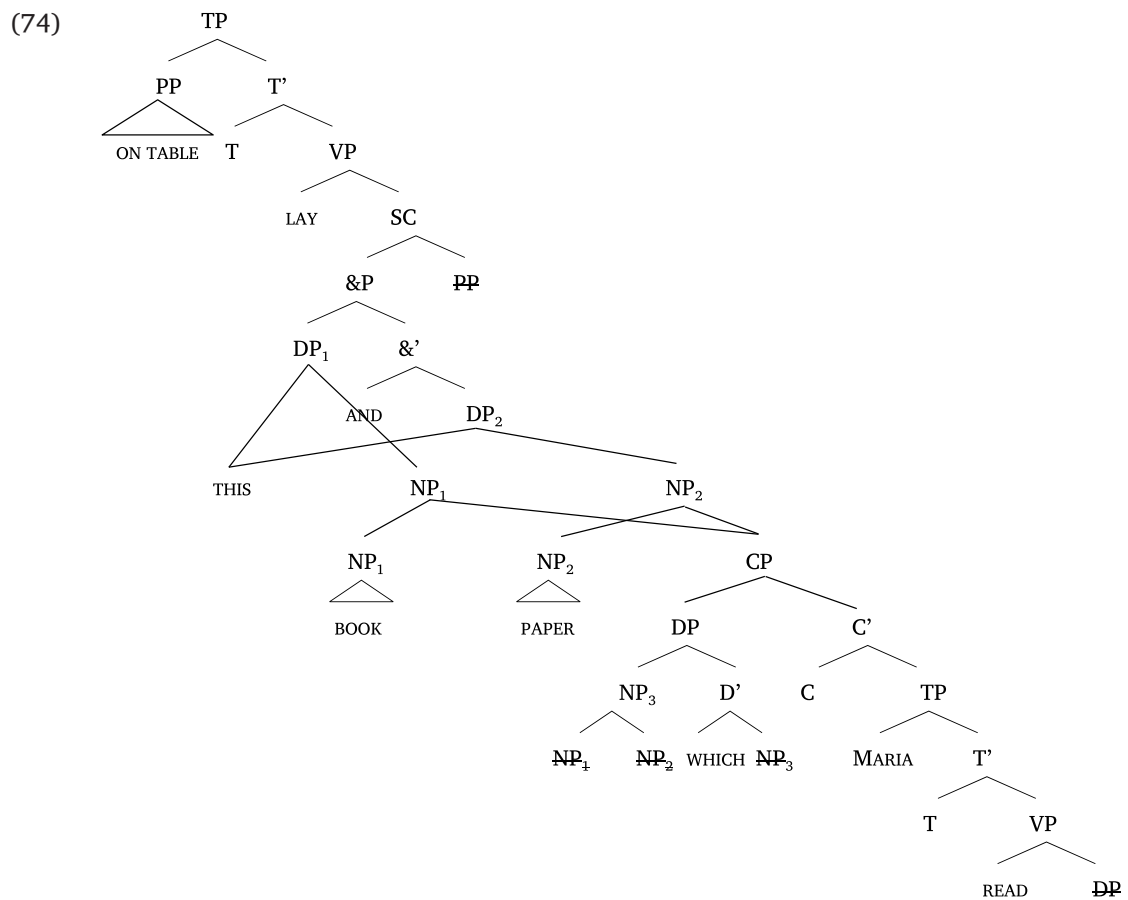
  b. a man and a woman who love each other

(72)

```
                    DP₁                    DP₂
              ┌──────┴────────────┬─────────┐
              A                  NP₁                   NP₂
                            ┌─────┴─────┐         ┌─────┴──────┐
                          NP₁          NP₂                    CP
                           △            △         ┌────────────┴────────┐
                          MAN         WOMAN       DP                    C'
                                           ┌──────┴───┐          ┌──────┴──────┐
                                          NP₃        D'          C            TP
                                        ┌──┴──┐   ┌──┴──┐              ┌───────┴──────┐
                                       NP₁  NP₂  WHO  NP₃            DP            T'
                                                                            ┌──────┴──────┐
                                                                            T            VP
                                                                                     △
                                                                              LOVE EACH OTHER
```
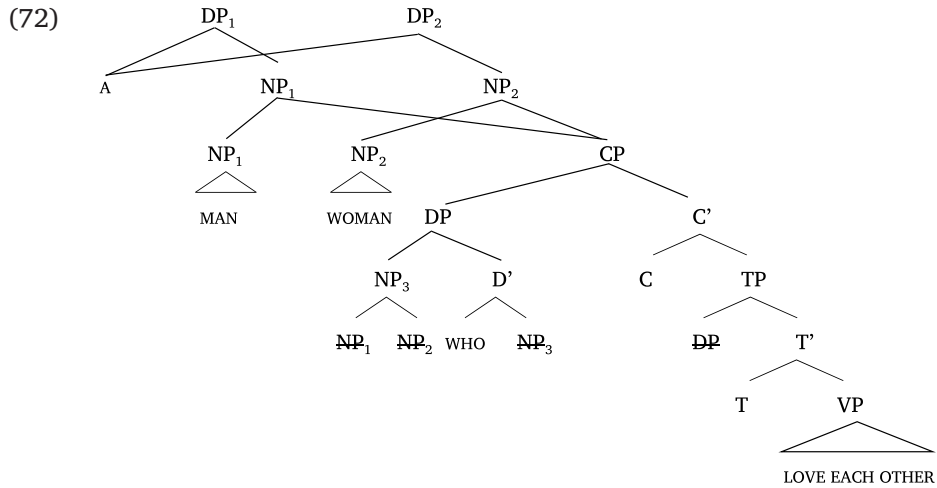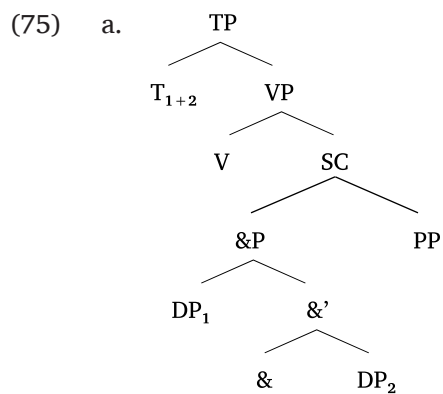
I take the fact that the difference between (71a) and (71b) reduces to the number of determiners in the Numeration (one versus two) to be a welcome consequence of the current proposal. Other than that, the two derivations are identical. The alternative derivation of relative clauses with shared determiners (such as the one in (71a) above), given in (73), suggested by one of the reviewers, makes the similarities between relative clauses *with* shared determiners and the ones *without* shared determiners, rather mysterious.

(73)

```
                     DP
              ┌───────┴────────┐
              A               &P
                       ┌────────┴──────────────┐
                      &P                       CP
                 ┌─────┴─────┐          ┌────────┴────────┐
                NP₁         &'          DP               C'
                 △       ┌──┴────┐   ┌──┴──┐        ┌─────┴─────┐
                MAN      &      NP₂  &P   D'        C          TP
                                △        ┌──┴──┐         ┌──────┴──────┐
                              WOMAN     WHO   &P        &P            T'
                                                                 ┌──────┴──────┐
                                                                 T            VP
                                                                          △
                                                                   LOVE EACH OTHER
```
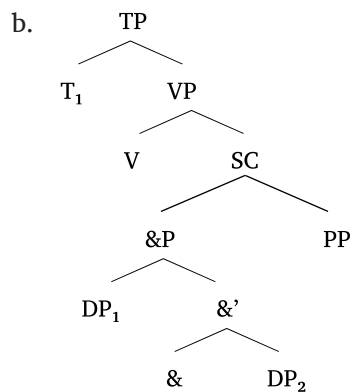
The final two steps are schematized in (74–75); the relative clause structure from (68) above gets incorporated into the matrix clause as the subject of the small clause whose predicate is the PP. The PP moves to [Spec, TP], resulting in (74).

(74)

```
                        TP
                   ┌────┴────┐
                  PP         T'
                 /  \      ┌──┴──┐
            ON TABLE     T       VP
                              ┌──┴──┐
                            LAY     SC
                                  ┌──┴──┐
                                 &P     PP
                               ┌──┴──┐
                             DP₁     &'
                                   ┌──┴──┐
                                 AND     DP₂
                            THIS   NP₁        NP₂
                                 ┌──┴──┐    ┌──┴──┐
                               NP₁   NP₂   CP
                              BOOK  PAPER  ┌──┴──┐
                                          DP     C'
                                        ┌──┴──┐ ┌──┴──┐
                                      NP₃   D'  C    TP
                                    NP₁ NP₂ WHICH NP₃ MARIA  T'
                                                          ┌──┴──┐
                                                         T     VP
                                                             ┌──┴──┐
                                                           READ   DP
```

The availability of either Closest Conjunct Agreement or Resolved Agreement on the matrix verb follows from the ability of T to either undergo Agree with the closest conjunct (DP₁), or both conjuncts (alternatively, the entire Conjunction Phrase, as schematized in (75a–b). This is a common way of accounting for the availability of these two patterns (see van Koppen 2005, for example).

(75) a.

```
              TP
           ┌──┴──┐
          T₁₊₂   VP
               ┌──┴──┐
              V      SC
                   ┌──┴──┐
                  &P     PP
                ┌──┴──┐
              DP₁     &'
                    ┌──┴──┐
                   &      DP₂
```

b.
```
                TP
          ┌─────┴─────┐
         T₁           VP
                 ┌─────┴─────┐
                 V           SC
                       ┌─────┴─────┐
                      &P          PP
                  ┌────┴────┐
                 DP₁        &'
                       ┌────┴────┐
                       &        DP₂
```

7 Conclusion

I set out to answer the following question about agreement, focusing on Polish relative clauses with conjoined heads: (i) what do such relative clauses tell us about the nature of Agree, the mechanism responsible for agreement? (ii) why does Agree between a single Probe and multiple Goals sometimes surface as Resolved Agreement, and other times as agreement with a single Goal?

I have argued that in order to explain the unavailability of Resolved Agreement on the single determiner modifying two nominal heads, the single D head has to undergo Parallel Merge with two NPs. Furthermore, in order to reconcile the evidence pointing towards Head Promotion (i.e., reconstruction effects) with the evidence pointing towards DP (rather than NP) coordination, I proposed that the conjunction head is merged late, after Head Promotion.

More generally, I have tackled the question of why sometimes Agree with multiple Goals surfaces as either Resolved Agreement or agreement with a single Goal, but other times only single Goal agreement is an option. I attributed it to the presence or absence of a Parallel Merge structure, which in turn correlates with a difference in the number of derivations. If a single Probe agrees with multiple Goals across multiple derivations (i.e., in a Parallel Merge structure), the result is agreement with a single Goal. However, if a single Probe agrees with multiple Goals within the same derivation (i.e., in a non-Parallel Merge structure), the result can be either Resolved Agreement or agreement with a single Goal.

Abbreviations

AGR	agreement
CCA	closest conjunct agreement
COMP	complementizer
CSC	Coordinate Structure Constraint
G	Goal
FCA	first conjunct agreement
F	feminine
LCA	last conjunct agreement
M	masculine
P	Probe
PL	plural
RA	resolved agreement
REFL	reflexive
RP	resumptive pronoun
TOP	topic
SG	singular

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Competing interests

The author has no competing interests to declare.

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