Overtly matching relatives in Middle English

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June 18, 2017

1   Introduction

The structure of externally headed relative clauses has been debated for over forty years now. The traditional analysis takes externally headed relatives to be adjuncts, standing in a straightforward modification relation to some projection dominating N. However, since Schachter (1973) and Vergnaud (1974), an alternative **raising** analysis has gained in popularity. On the raising analysis, the head NP[1] is base-generated within the relative, and moves to its surface position. A third option, the **matching** analysis, assumes two base-generated copies of the head NP, one within the relative clause and one in the surface position.

These three competing analyses are the only three normally countenanced on a transformational or copy-theoretic approach. It is therefore remarkable that none of the three has yet been discarded: each of the above analyses still has plenty of support.

This is partly because evidence about this kind of movement is necessarily indirect: the evidence that A′-movement is involved in the derivation of headed relatives is well-known (for instance, the demonstrations of island-sensitivity in Ross 1967 and Chomsky 1977), but the kind of distributional evidence that informs classic movement-based analyses (e.g. Chomsky 1956, 1957) simply is not available here. For instance, the postulation of a movement dependency between base position and landing site in (1) is supported by the fact that precisely one of the two positions must be filled.

(1) a. __ You noticed something.
     b. What did you notice __?
     c. *__ Did you notice __?
     d. *What did you notice something?

Relative clauses are less cooperative: in the simplest examples, such as Present-Day English examples without an overt relativizer, the gap site is not filled, and there is nothing overt in the landing site.[2]

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[1]The **head** of the relative clause is a noun phrase without a determiner. On the DP-hypothesis, this corresponds to NP; on the NP-hypothesis, it corresponds to N′. We choose the terminology of the DP-hypothesis more or less at random. Everything in this paper is compatible with either analysis.

[2]We use ∅ in (2) to indicate the likely position of any covert moved element. However, on variants of the raising analysis following Kayne (1994), there is no covert moved element in precisely this position. The subtlety of the evidence regarding the composition of the landing site, and concomitant difficulty in choosing between competing analyses, is precisely what we are trying to emphasize.

(2)   a.   the problem
          b.   the problem [∅ you noticed __]
          c.   *the problem [∅ you noticed it/something]

Hypotheses about the nature of the movement relation are instead typically grounded in interpretive phenomena: some interpretive phenomenon (reflexive binding, for instance) is given a configurational analysis, and the movement relations postulated in relative clauses are what they have to be, given the observed interpretive phenomena. In this way, the observation that a reciprocal pronoun within the head can be bound by an antecedent within the relative clause, as in (3), can license the inference that the head is within the relative clause at the appropriate level of representation. Most versions of the raising and matching analyses since Schachter (1973) have relied at least in part on this kind of argument.

(3)   the rumours about each other [that the twins spread __]

The support for these analyses is then a function of two factors: the support for the configurational approach to the relevant interpretive phenomena, and the evidence that the relevant interpretive effects really do obtain in externally headed relatives. These two lines of inquiry are major foci of Chomskyan syntactic research, and we will not seriously attempt to summarize the discoveries that have been made.

Instead, we approach the same problem from a new angle: imagine that, in a given construction in a given language, you *knew* that there was a copy of the head base-generated inside the relative clause. What would that entail? What properties of the relative would follow from presence of the head?

We discuss three constructions along these lines in the history of English *which*-relatives. Although the constructions do not all demonstrably have an internal copy of the external head, they do all have an overt NP in the internal Spec,CP position implicated in the raising and matching analyses. We focus on English here, but structurally similar relative clauses are attested across Romance and West Germanic, and preliminary informal investigation suggests that they have the same properties reported here. We leave a thorough investigation of the crosslinguistic facts for the future.

The constructions in question are free *which*-relatives like (4a), which we discuss only briefly, and two types of headed *which*-relative illustrated in (4b–c), differentiated by whether the N′ internal to the relative is formally identical to the external head.[3]

(4)   a.   teʒʒ … follʒhenn ure Laferrd Crist Whatt gate summ he ganngeþþ
               they   follow   our Lord   Christ what way SE   he goes
               'They follow our Lord Christ wherever he goes.' (cmorm-m1,I,285.2358)
          b.   the bifore knowing of God, which bifore knowing of God bihooldith so
              the before knowing of God, which before knowing of God beholds   so

without fayling thingis to comynge
without failing things to coming
'the foresight of God, which foresight of God beholds so infallibly things
to come'   (cmpurvey-m3,I,55.2216)

c.   Asa, kyng of Juda, . . . had sore feet, whech passioun oure bokys sey it
Asa king of Judea   had sore feet which passion   our   books say it
was podegra
was gout
'Asa, king of Judea, had sore feet, which suffering our books say was gout'
(cmcapchr-m4,33.43)

The internal syntax of the three types of relative is very similar. The external syntax of each construction is different. However, the three constructions share a semantic property: the relative is **maximizing** — that is, the semantics of each of the above constructions makes reference to a maximal group bearing some specified property. For the free relative (4a), this is entailed by standard analyses of free relatives as definite descriptions. In the headed relative constructions (4b–c), this maximization takes the form of a nonrestrictive interpretation. We believe this correlation between presence of an internal NP and maximizing interpretation is not an accident, but will not develop this argument here (see Gisborne & Truswell 2016).

Our main claim in this paper is that relatives with an internal copy of the head are maximizing. This casts doubt on many analyses which postulate internal copies of heads in nonmaximizing relatives (e.g. restrictive relatives). We show that many such analyses are incompatible with our claim, though one variant of the raising analysis can capture the claim, with specific auxiliary assumptions. In contrast, the classical adjunction analysis is straightforwardly compatible with the claim.

The paper is structured as follows. Section 2 summarizes the three competing analyses of externally headed relatives. Section 3 gives a brief introduction to relevant aspects of the history of English. Section 4 explains our tests for maximization. Section 5 introduces the three relative structures with overt internal N's, and Section 6 is a discussion.

2   Analyses of externally headed relatives

Although externally headed relatives canonical A'-movement constructions in many respects, a couple of small differences make the precise nature of the A'-dependency in question a matter of ongoing controversy.

As described in Chomsky (1977), the hallmark of A'-movement is the combination of apparently unbounded dependency with the range of locality effects classically analysed in terms of Subjacency. By those criteria, externally headed relatives clearly involve A'-movement. The gap can be arbitrarily deeply embedded within the relative (5), but displays the usual range of locality effects (e.g. the fact that the dependency crosses a *wh*-island leads to ungrammaticality in (6)).

(5)   the book [that you mistakenly believe [that I said [that I had read __]]]

3

(6)   *the book [that I wonder [who read ___]]

More recently, a major diagnostic of A′-movement has been **reconstruction** effects: the moved constituent behaves with respect to some interpretive phenomena as if it were still in a pre-movement position. As noted by Schachter (1973), the external head behaves as if it had originated within the relative with respect to many reconstruction effects. (7) gives representative examples.

(7)   a.   the headway [that we made ___]
        b.   the pictures of each other [that the children took ___]

The major reconstruction effect not found with relative clauses is Principle C: the configuration violating Principle C is not established in (8).

(8)   the picture of John [that he likes ___ best]

This conflicts with claims in Lebeaux (1988) and Chomsky (1993) that Principle C reconstruction is obligatory (modulo Lebeaux's Late Adjunction) under A′-movement. However, Adger et al. (2016) have shown that Principle C reconstruction is optional in for many speakers even in questions like (9), so the assumption that Principle C reconstruction is obligatory in all cases of A′-movement appears to be empirically unfounded.

(9)   Which side of Elizabeth does she say Philip prefers ___?

The conclusion that there is an A′-dependency within externally headed relatives is not in serious doubt, then. However, the constituents that undergo A′-movement are typically 'major categories', canonically DP, PP, AP, and AdvP. Restrictive relatives appear different in this respect: the most natural semantic analysis (e.g. Partee 1973, Heim & Kratzer 1998) puts them within the scope of D: *Every book I read* quantifies over individuals in the intersection of the set of books and the set of things I read, and doesn't entail *I read every book*.

In *that-* or zero-relatives (we will come to *wh*-relatives below), no overt category larger than NP is compatible with this semantic analysis. This entails that either a 'nonstandard' category (NP, rather than DP) has undergone A′-movement, or a null DP has moved.

Neither of those choices are particularly natural, which is partly why no one analysis has been widely adopted. In the following subsections, we survey the pros and cons of the different analyses.

2.1   Adjunction

The most conservative analysis of externally headed relatives takes the optionality of most relatives as evidence that they are adjuncts. Given that the head is external to the adjunct, and adjuncts are typically taken to be islands for A′-movement, this entails that the head has not undergone A′-movement. Rather, the A′-movement in question is to Spec,CP. In the case of a zero- or *that*-relative, the moved constituent is a null operator.

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(10)

```
                        DP
                   ┌────┴────┐
                  the        NP
                        ┌─────┴─────┐
                       NP           CP
                        │        ┌───┴───┐
                      house      ∅       ...
                              ┌──┴───┐
                              C      IP
                              │   ┌──┴──┐
                           that/∅ Jack  ...
                                     ┌──┴──┐
                                     I     VP
                                         ┌─┴─┐
                                       built __
```
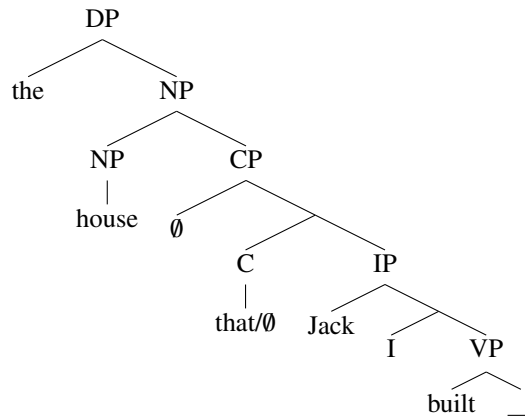
In the case of a *wh*-relative, the relativizer itself has moved.

(11)

```
                        DP
                   ┌────┴────┐
                  the        NP
                        ┌─────┴─────┐
                       NP           CP
                        │      ┌─────┴─────┐
                      house   PP          ...
                           ┌──┴──┐    ∅    IP
                          in which     ┌───┴───┐
                                      Jack     ...
                                          ┌────┴───┐
                                          I        VP
                                             ┌─────┴─┐
                                           lives    __
```
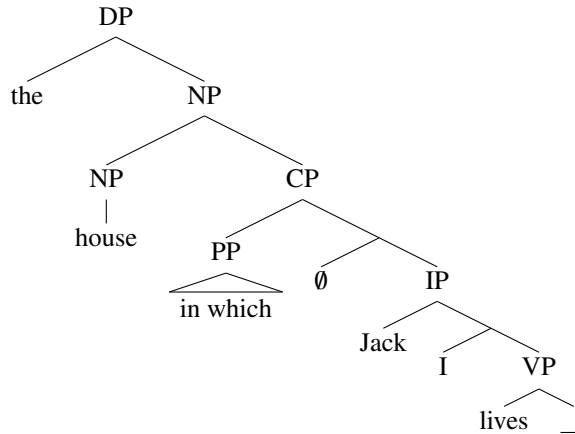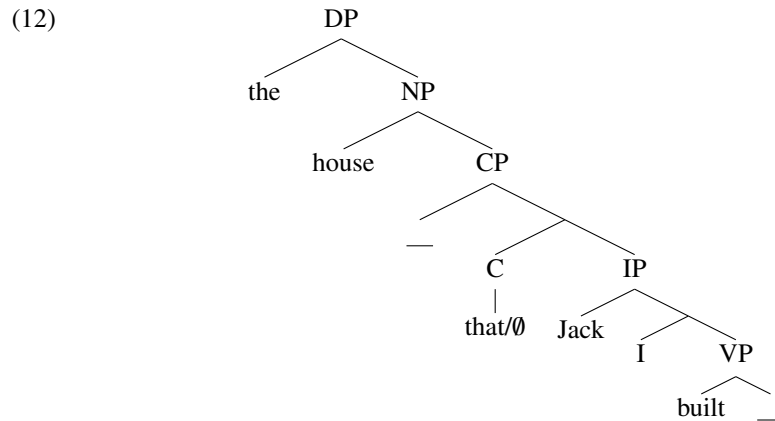
In other words, the adjunction analysis treats all externally headed relatives as *wh*-relatives, as far as possible. As well as capturing the optionality of such relative clauses (relative clauses are adjuncts, and adjuncts can usually just be omitted), it also gives a syntactic structure that matches the composiitonal semantic sketch given above: the head denotes a property of individuals, the relative denotes another property of individuals, and the adjunction relation corresponds to Predicate Modification, in the terms of Heim & Kratzer, or conjunction of the two properties.

The major problem with the adjunction analysis is that it does not straightforwardly account for reconstruction effects. With few exceptions, reconstruction is taken to be tied to movement, but on the adjunction analysis no movement relation holds between the external head and any position within the relative. This complication has been seen as sufficient to rule out the adjunction analysis altogether as incompatible with the spirit of the copy theory of movement (Hulsey & Sauerland 2006).
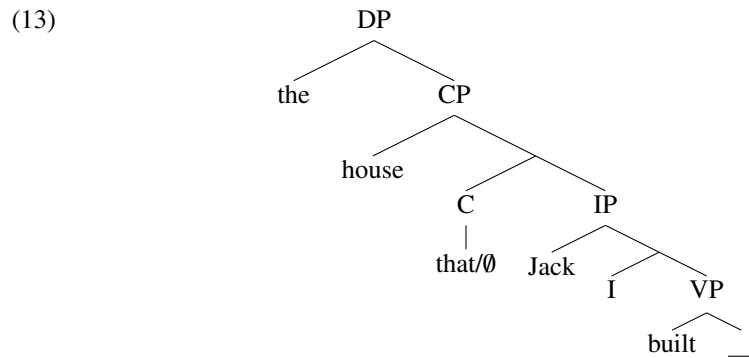
2.2 Raising

The second option is a family of analyses that share the property that the unique base position of the head is internal to the relative. The surface word order is then derived by movement.

Within this broad family, there are two main options. The first is that the head raises out of the relative clause, broadly as in Schachter (1973), giving a structure like (12).

(12)

```
                    DP
              ┌─────┴─────┐
             the          NP
                     ┌─────┴─────┐
                   house         CP
                            ┌─────┴─────┐
                           __     ┌─────┴─────┐
                                  C           IP
                                  |      ┌─────┴─────┐
                               that/∅  Jack    ┌─────┴─────┐
                                               I          VP
                                                      ┌────┴────┐
                                                    built      __
```

The second, popularized by Kayne (1994) and Bianchi (1999), has D taking a CP complement, as in (13).

(13)

```
                    DP
              ┌─────┴─────┐
             the          CP
                     ┌─────┴─────┐
                   house   ┌─────┴─────┐
                           C           IP
                           |      ┌─────┴─────┐
                        that/∅  Jack    ┌─────┴─────┐
                                        I          VP
                                               ┌────┴────┐
                                             built      __
```

In this paper, we will focus on the latter structure, in common with most work since Kayne that we are aware of.[4] The major advantage of this structure is that it is straight-forwardly compatible with the movement-based analysis of reconstruction effects: the head originates within the relative, so there is no problem with interpreting it within the

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[4]There are several reasons to prefer this structure. First, the structure in (12) requires NP to project after movement, although similar possibilities are considered for free relatives in Chomsky (2008). Second, the nature of the relationship between NP and CP is problematic. If CP is adjoined to NP then (12) involves extraction out of an adjunct (although Truswell (2011) argues that such extraction is sometimes possible, there are several factors that suggest that it should be possible in a structure like (12)). And if CP is a complement of N, then the structure with internally complex heads (*the picture of Mary that I drew*) is unclear.

relative. Moreover, a conceptual benefit of (13) for Kayne and Bianchi is compatibility with Kayne's Linear Correspondence Axiom, which bans rightward adjunction.
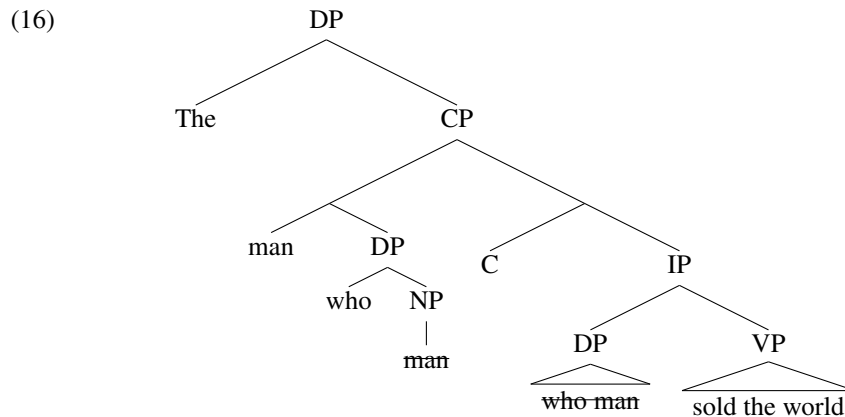
However, this analysis raises questions (discussed at length by Bianchi) about the compositional implications of *house* (rather than *the house*) as a complement of V. Moreover, (13) has the striking property that complements of D with and without relative clauses are of different categories. This is surprising, because they can be coordinated.

(14)   The [[_{NP} bill] and [_{CP} surcharge that the restaurant added]] came to £123.45.

Perhaps the best way to address this challenge would be to claim that the CP, like NP *bill*, somehow denotes a property of individuals, and that coordination requires identity of semantic types, rather than syntactic categories (see Klein & Sag 1985). This, if tenable, would make (14) no more remarkable than (15)

(15)   Jane is [[_{AP} competent in semantics] and [_{DP} an authority on unicorns]]

(Partee 1987)

As for the treatment of *wh*-relatives, Bianchi argues for an analysis where the *wh*-phrase is underlyingly a determiner taking the head as complement. The surface word order is then derived by movement, as in (16).

(16)

```
                        DP
                   ┌─────┴─────┐
                  The          CP
                         ┌──────┴──────┐
                       man  DP      C      IP
                         ┌──┴──┐        ┌────┴────┐
                       who   NP        DP        VP
                              │      ┌──┴──┐   ┌──┴──┐
                             man̶   who̶ man̶  sold the world
```
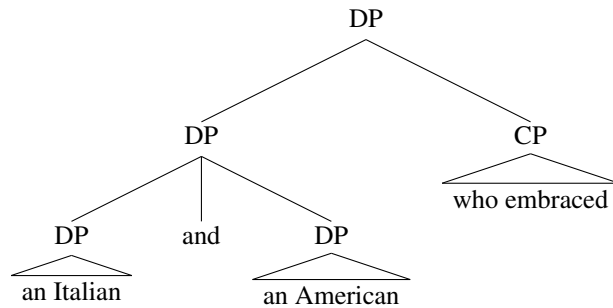
However, this generates a further challenge, from examples like (17a) (Vergnaud 1974), where the relative clause cannot be taken to have either the head *Italian* or *American* (see (17b)).

(17)   a.   An Italian and an American who embraced
         b.   *An Italian who embraced

Instead, a structure like (18) would appear to be indicated, but this is not straightforwardly compatible with the raising analysis under standard locality assumptions (e.g. antecedents must c-command dependents, Koster 1987): there is no easy way to derive (18) from a structure with *who Italian and American* as a constituent.
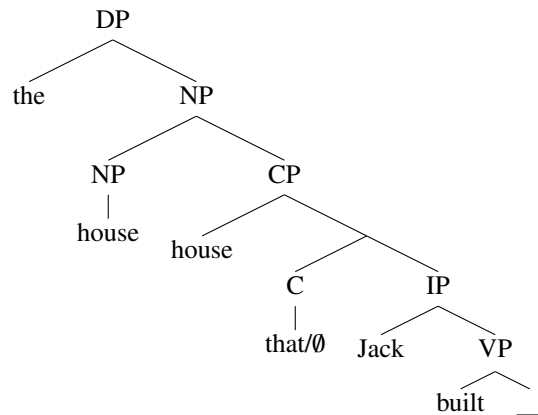
7

(18)

```
                        DP
                  ┌──────┴──────┐
                 DP             CP
           ┌─────┼─────┐      who embraced
          DP    and   DP
       an Italian   an American
```

2.3 Matching

The most venerable of the three analyses was assumed by a large amount of Standard Theory work, including Chomsky (1965), but was resurrected in a different guise by Sauerland (2004), Hulsey & Sauerland (2006). On the matching analysis, two copies of the head are interpreted, one in the surface position and one inside the relative.

(19)

```
              DP
          ┌────┴────┐
         the       NP
              ┌─────┴─────┐
             NP          CP
              │      ┌─────┴─────┐
            house  house         ...
                          ┌───────┴───────┐
                          C              IP
                          │         ┌─────┴─────┐
                        that/∅     Jack        VP
                                          ┌─────┴─────┐
                                         built       __
```

Initially, this analysis appears to have the best of both worlds: nothing forces literal identity between the external and internal heads, so the internal head could plausibly be a DP. At the same time, the internal head may explain some of the interpretive phenomena that motivate the raising analysis.

However, Hulsey & Sauerland (2006) intend the matching structure in precisely those case where reconstruction effects are not attested. They show that extraposition of the relative blocks reconstruction (see (20)), and interpret this as indicating that, although both the raising and the matching structures are available in regular restrictive relatives, the raising structure is blocked by extraposition, leaving only the matching structure.

(20) a. *Mary praised the headway last year that John made.
      b. *I saw the picture of himself yesterday that John liked.

The reason why (20) should be ungrammatical on the matching analysis is that the

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external copy of the head is still interpreted, independently of the internal copy. The external copy of *headway* in (20a) and *himself* in (20b) is not in an appropriate licensing environment. From this perspective, the matching analysis shares many core properties of the adjunction analysis.

2.4 Summary

No single analysis of externally headed relatives is problem-free. Rather, there is a trade-off between transparency of the syntax–semantics mapping under the raising analysis and simplicity of the syntactic analysis (particularly parity between structures with and without relatives) under the adjunction and matching analyses. The raising analysis soon starts to creak syntactically, while the adjunction analysis has been discarded by many recent theorists, from Bianchi to Hulsey & Sauerland, and the matching analysis has not been proposed in recent decades as a general analysis of relative clauses. Perhaps because of this, many works, from Carlson (1977) to Hulsey & Sauerland (2006), have adopted multiple complementary analyses of relative clauses, proposing that many examples are structurally ambiguous between the raising and matching analysis (for Hulsey & Sauerland) or the raising and adjunction analysis (for Carlson).

Some researchers may have other priorities, for instance treating compatibility with the LCA as essential. However, we will not pay particular attention to the LCA here, as close relatives of all three structures are in fact LCA-compatible. For instance, Bianchi (1999) discusses an analysis of appositive relatives involving a structure like (21) (see also De Vries 2002, 2006), where X is some functional head taking the relative as complement and host DP as specifier.

(21)

Inspired by this, we might imagine a structure for restrictive relatives like (22).

(22)
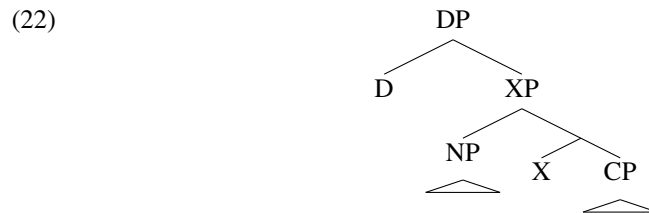
These are near-equivalents of the adjunction analysis, which happen to be LCA-compatible. Indeed, Bianchi dismissed (21) because of its similarity to the adjunction analysis, but the more important conclusion is that the LCA is compatible with such structures. For this reason, among others, we do not regard the LCA as sufficiently

restrictive to discriminate between competing analyses.

As for reconstruction effects, some further comment is warranted. The advantage of the raising analysis over the matching and adjunction analyses in accounting for reconstruction effects rests on the assumption that no mechanism is available to link external and internal positions at LF. Although that assumption is common, and probably entailed by the copy theory, it is not inevitable. Much hinges on reconstruction across predication relations, in the sense of Williams (1980). See Williams (1983) for an early analysis that implicates predication in reconstruction effects, and Chomsky (1986), Barss (1986), Browning (1987) for further discussion.

How all of this translates to the copy theory is an open question. However, our position in this paper will be not to presuppose that the copy theory is the correct treatment of reconstruction effects, but rather to remain agnostic and evaluate whether the data to be discussed below independently support analyses compatible with the copy theory.

In this paper, we examine a construction in which there is little doubt that there are external and internal copies of the head, because we can hear them both. We will show that such relative clauses are always interpreted as maximizing, unlike the examples for which the raising and matching analyses were intended, and discuss the conditions under which this link between internal head and maximization could be expected to hold. Although no analysis is definitively ruled out by the phenomena to be discussed below, significant problems are raised for simple-minded versions of the raising and matching analyses, but not for the adjunction analysis.

3   Background: Early English

3.1   Old English free *wh*-relatives

We are exclusively concerned with *wh*-relatives in this paper. In Old English, *wh*-forms were found in free, but not headed, relatives (Allen 1977); externally headed relatives were marked with an invariant complementizer *þe* (23a), an inflected demonstrative specifier (23b), both, or neither.

(23)   a.   ic [**ðe** ___ to eow sprece]
          I that   to you speak
          'I, that speaks to you'   (coaelhom,+AHom_1:63.45)

       b.   he is ure lif [**on þam** we lybbað &   styriað ___]
          he is our life in   DEM we live   and move
          'He is our life, in whom we live and move.'

                                               (coaelhom,+AHom_1:280.148)

Old English free relatives occurred clause-peripherally (in either initial or final position, disregarding other peripheral elements such as conjuncts and parentheticals). When a free relative is in clause-initial position, the *wh*-phrase is obligatorily surrounded by *swa ... swa* (see the first free relative in (24a)); in clause-final position, *swa ... swa* is optional: the second free relative in (24a) has *swa ... swa*, but the one

in (24b) does not.[5]

(24)   a.   [swa hwilc untrum man swa __ come   into þam wætere æfter þæs
            so   which sick   man SE   came.SBJ into the water after the
            engles styrunge], se wearþ   sona hal   fram [swa hwilcere
            angel's stirring,   he became soon whole from so   which
            untrumnysse swa he wære gehæfd __].
            illness   SE he were had
            'whichever sick man went into the water after the angel had troubled it
            was healed of whichever illness he had.'   (coaelhom,+AHom_2:17.253)

       b.   Gemyne,   [hwæt Sanctus Paulus cwæð __]
            Remember what Saint   Paul   said
            'Remember what Saint Paul said.'
                                (cogregdC,GDPref_and_3_[C]:15.207.28.2739)

Old English formed free relatives with *hwylc* (> *which*) and *hwæt* (> *what*), among many other *wh*-forms. These were differentiated in part based on the internal structure of the NPs they headed: as illustrated in (24), *hwæt* was always used as a pronoun, without a following NP, while *hwylc* could (though often didn't) take a complement NP.

This use of *hwylc* in free relatives with an internal head NP is our first construction of interest. However, we will treat it only briefly here, summarizing the arguments presented in Truswell & Gisborne (2015), because the externally headed relatives discussed below provide a more direct comparison to the three analyses discussed in Section 2.

Recent work on the interpretation of English free relatives assumes a basic definite denotation. This explains the interpretation of (25) as roughly 'Do the things that the babysitter told you to do' (Jacobson 1995).

(25)   Do what the babysitter told you.

However, in the scope of a generic quantifier over situations, for instance in (26), this definiteness, relativized to situations, results in an interpretation sometimes mistaken for universal quantification. That is, (26) could be paraphrased as 'Do everything that the babysitter tells you to do', but Dayal (1997) argues that a better paraphrase would be 'In every situation in which the babysitter tells you to do something, do the thing that the babysitter tells you to do.'

(26)   Do what the babysitter tells you.

Meanwhile, von Fintel (2000) identifies the compositional meaning of *-ever* in examples like (27) as conveying 'ignorance or indifference'. On von Fintel's analysis, this reading arises from a universal quantification over worlds, with the nature of the referent of the *wh*-phrase immaterial to the content of the sentence. (27) could then be

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[5]We illustrate the latter option with a *what* relative rather than a *which NP* relative, because bare *which NP* relatives are unattested in YCOE. We are unaware of whether this is an accidental or a principled gap in the textual record.

glossed, roughly, as 'Regardless of what is was that the babysitter told you to do, do the thing that the babysitter told you to do.'

(27)   Do whatever the babysitter told you.

These same meanings are identifiable in Old English, with *swa . . . swa* being restricted to cases like (27). (28) is a straightforwardly definite example, with no *swa . . . swa*, while (29a–b) arguably illustrate the ignorance-and-indifference characteristic of *-ever*.

(28)   Gemyne,   [hwæt Sanctus Paulus cwæð]
        Remember what Saint   Paul   said
        'Remember what Saint Paul said.'
                                (cogregdC,GDPref_and_3_[C]:15.207.28.2739)

(29)   a.   se hælend þe het   biddan [swa hwilce bene   swa þu
              the saviour thee commanded ask.INF so   which prayer SE thou
              wille].
              will
              'The saviour commanded you to pray for whatever you want.'
                                            (coaelive,+ALS_[Cecilia]:82.7165)
        b.   he him aþas swor & gislas salde, þæt he him gearo wære [swa
              he them oaths swore and pledges gave that he them ready be.SBJ so
              hwelce dæge swa hie hit habban wolden]
              which day so they it have   want.PST.SBJ
              'he swore oaths and pledged to them that he would be ready whenever
              they wanted it.'   (cochronA-1,ChronA_[Plummer]:874.5.844)

Although this doesn't demonstrate that Old English free relatives are definite descriptions, it suggests that they are compatible with such an analysis. Moreover, Caponigro (2003) has shown that the arguments skteched above concerning the definiteness of Present-Day English free relatives can be reproduced in a range of other languages. The only indefinite free relatives are found in specific syntactic environments disjoint from the environments in which Old and Early Middle English free relatives were found. Our crosslinguistic understanding of free relative semantics would lead us to expect that Old and Middle English free relatives are definite descriptions, and the attested examples are compatible with such an analysis. We conclude that free *which NP*-relatives are definite descriptions, as a special case of the crosslinguistic generalization that free relatives, with a few well-defined exceptions, are definite descriptions.

    This is relevant because definite descriptions, on most analyses (e,g, Link 1983) are maximizing: *the dogs* denotes the maximal set of dogs in the context. The claim that free *which NP* relatives are maximizing therefore follows directly from the claim that free relatives are definite. This is consistent with our main claim below, that *which NP* relatives are always maximizing. We focus below on two less thoroughly investigated varieties of headed *which NP* relatives in Middle English.
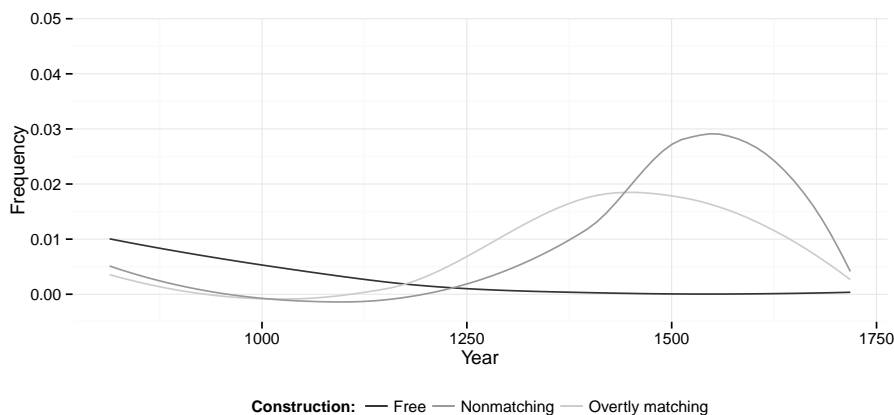
3.2 Middle English: The emergence of externally headed *wh*-relatives

Externally headed *wh*-relatives emerged gradually, in the Middle English period (c.1150–1500; see Mustanoja 1960, Maxwell 1982, Romaine 1982, 1984, Fischer 1992, and Gisborne & Truswell 2017 for diachronic details). Initially, headed *wh*-relatives were almost always sentence-final. For this reason, among others, it is often impossible to distinguish between an analysis as an appositive use of a free relative and a nonrestrictive headed relative in cases like (30). However, it is worth noting that unambiguously appositive uses of free *wh*-relatives are very rare, so the sudden emergence of examples like (30) in the mid-14th century surely represents a grammatical change. We will return to the question of similarities and differences between free relatives and nonrestrictive relatives below.

(30)   Seint Agnes, the whiche thorugh her prayer turned a bordel hous in-to an ora-
        tory   (cmaelr4-m4,11.281)

Our main constructions of interest are two types of externally headed *which NP*-relatives. In one construction (31a), the NP is identical or near-identical to the external head (we will sharpen this characterization below). We call these **overtly matching relatives**. In the other (31b), the NP is distinct from the external head. We call these **nonmatching relatives**.

(31)   a.   the bifore knowing of God, which bifore knowing of God bihooldith so
              the before knowing of God, which before knowing of God beholds   so
              without fayling thingis to comynge
              without failing things to coming
              'the foresight of God, which foresight of God beholds so infallibly things
              to come'   (cmpurvey-m3,I,55.2216)
        b.   Asa, kyng of Juda, … had sore feet, whech passioun oure bokys sey it
              Asa king of Judea   had sore feet which passion our books say it
              was podegra
              was gout
              'Asa, king of Judea, had sore feet, which suffering our books say was
              gout'   (cmcapchr-m4,33.43)

In short, our three constructions of interest have the same form of relativizer (*which NP*), but are distinguished by their head. Free relatives do not have an external head. Overtly matching relatives have an external head identical to NP. Nonmatching relatives have an external head which is not identical to NP.

The different constructions have different diachronies. Free relatives are present in Old English, but become much less frequent in Middle English. Overtly matching relatives are briefly the majority variant in late Middle English (c.1350–1450), and then nonmatching relatives largely take over until *which NP* relatives more or less disappear in the 19th century.[6] Figure 1 shows these different trajectories.

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[6]Isolated examples still occur today. For instance, Fabb (1990) gives (i) as grammatical, while Edwin Williams (p.c.) suggests that such examples are common in the broadcasts of William Buckley.
(i)   The LAGB, which organization meets tomorrow, is based here.   (Fabb 1990:72)

Figure 1: Frequencies of the three *which NP* constructions over time, as a function of all relative clauses. The lines are lowess smoothers regressing over counts of the relevant constructions for each text in YCOE and PPCME2.

We take the combination of different relations to an external head and different diachronies to indicate that the grammar of these three constructions is different, although we will not attempt a full analysis of these differences here. Rather, we concentrate on a second property shared by all three constructions. We have already argued in Section 3.1 that free *which NP* relatives are maximizing. We claim in Section 5 that the same is true of overtly matching relatives and nonmatching relatives.

Before that, though, we need to establish distributional tests for the semantic property of maximization. That is the job of the next section.

4 Diagnosing maximization

The primary data concerning semantic properties like maximization often consists of intuition about meaning relations such as entailment or contradiction. However, intuitions about meaning relations do not fossilize. As with other aspects of the grammar of historical languages, hypotheses about meaning in Middle English have to be operationalized in terms of predictions about strings attested in the written record.

We have claimed that free *which NP*-relatives, interpreted as definite descriptions, are maximizing. Our claim about maximization in externally headed *which NP*-relatives is superficially different: we will argue that all externally headed *which NP*-relatives are nonrestrictive, and that the *wh*-phrase in a nonrestrictive relative is maximizing.

We base this claim on an explicit distributional test: the *wh*-phrase in a nonrestrictive relative cannot have an opaque, nonreferential antecedent. So if we see a relative with an opaque antecedent, we know that the relativizer cannot be nonrestrictive.

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The rationale behind the test comes from the analysis of nonrestrictive relatives in Sells (1985). Sells argues that the relativizer (in English, the *wh*-phrase) in a nonrestrictive relative is interpreted as a discourse anaphor, and therefore enters into the same kinds of anaphoric relations as discourse anaphors. This predicts parallels like (32) and (33).[7]

(32)   a.   A boy arrived. He was clearly angry.
        b.   #No boy arrived. He was clearly angry.

(33)   a.   A boy, who was clearly angry, arrived.
        b.   #No boy, who was clearly angry, arrived.

Restrictive relatives do not show the same constraint.

(34)   a.   A boy who was clearly angry arrived.
        b.   No boy who was clearly angry arrived.

Discourse anaphors are interpreted as maximizing: (35) is incompatible with scenarios in which the state does not buy all the farmers' sheep.

(35)   Each farmer owns some sheep. The state buys them in the Spring.

This is equally true of nonrestrictive relativizers: (36a), but not (36b), is compatible with scenarios in which the state does not buy all the farmers' sheep.

(36)   a.   Each farmer owns some sheep that the State buys in the Spring.
        b.   Each farmer owns some sheep, which the State buys in the Spring.

In sum, we can use co-occurrence with a discourse-opaque antecedent like *no NP* as evidence that a relative is restrictive (and so that its relativizer is not maximizing). To demonstrate nonrestrictiveness, we have to look for evidence of absence of co-occurrence with discourse-opaque antecedents. This is more complicated: we all know that absence of evidence is not the same thing. We will cross that bridge when we come to it, below.

5   Maximization in the Middle English constructions

We repeat examples of our two externally headed *which NP*-structures below.

(37)   a.   **Overtly matching relative:**

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[7]Our clearest intuitions about the distinction between restrictive and nonrestrictive relatives in Present-Day English often appear to be tied to the use of comma-intonation. By that criterion, both examples in (33) are nonrestrictive. It may initially seem that (33a) could be interpreted as restrictive, despite the presence of comma intonation, if the relative functions to restrict the set of boys to the set of clearly angry boys. Further examples show that there is no such restrictive function, though: (33a) is infelicitous in scenarios in which non-angry boys also turn up, unlike (34a).

(i)   a.   A boy, who was clearly angry, arrived. #A happy boy arrived at the same time.
        b.   A boy who was clearly angry arrived. A happy boy arrived at the same time.

the bifore knowing of God, which bifore knowing of God bihooldith so
the before knowing of God, which before knowing of God beholds   so
without fayling thingis to comynge
without failing things to coming
'the foresight of God, which foresight of God beholds so infallibly things
to come'   (cmpurvey-m3,I,55.2216)

b. **Nonmatching relative:**
Asa, kyng of Juda, . . . had sore feet, whech passioun oure bokys sey it
Asa king of Judea   had sore feet which passion our books say it
was podegra
was gout
'Asa, king of Judea, had sore feet, which suffering our books say was
gout'   (cmcapchr-m4,33.43)

We discuss the two structures together because the evidence that *which NP* is maximiz-
ing is identical in the two cases, but before turning to that evidence, we want to insist
that they really do reflect distinct English grammars. That is not to say that presence of
one construction in a given text excludes presence of the other, but simply that the two
constructions are grammatically distinguishable: they are two independent structures
that a speaker may be able to build with *which*, among many, and there is no guarantee
that a grammar that generates one will also generate the other.

The first piece of evidence for this is the different diachronies of overtly matching
relatives and nonmatching relatives, illustrated in Figure 1 above. We are unaware
of any functional motivation for this diachronic difference, so we assume that overtly
matching relatives represent a grammatical structure that simply emerged earlier than
nonmatching relatives.

The second piece of evidence concerns the *other* uses to which users of overtly
matching relatives and nonmatching relatives put *which*. As well as our focus on ex-
amples with overt internal NPs, 'bare' *which*-relatives with no overt internal NP like
(30) have been common since the late 14th century. Those bare *which*-relatives could
be restrictive or nonrestrictive; (38) is among the earliest examples of a clearly restric-
tive *which*-relative, as diagnosed by the distributional test from Section 4.

(38)   and for no richesse ye   shullen do no thyng [**which** may in any manere
         and for no riches   you shall   do no thing which   may in any manner
         displese   God]
         displease God
         'and for no riches shall you do anything which may in any way displease God'
                                                         (cmctmeli-m3,234.C1.665)

There appears to be a correlation between overtly matching relatives and nonrestrictive
use bare *which*-relatives. To see this, we divide the set of texts in the corpora into those
in which overtly matching relatives are more common than nonmatching relatives, and
those in which the opposite is true (we discard those texts which have exactly as many
of each type of relative, including those which have no occurrences of either type). In
the texts which have most overtly matching relatives, out of 133 examples like (38) in

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which a relative modifies a negative antecedent, 12 (9%) use *which*. In the texts which have most nonmatching relatives, out of 218 examples, 38 (17%) use *which*. This difference is significant (2-tailed Fisher exact test, $p = 0.04$), and remains significant ($p = 0.04$) if we only count texts from Middle English (before 1500), before the decline of overtly matching relatives in Early Modern English.

In other words, the distinction between overtly matching relatives and nonmatching relatives is indicative of a broader difference in the grammar of *which*-relatives: if you have overtly matching *which NP*-relatives, you make significantly less use of restrictive *which*-relatives than if you have nonmatching *which NP*-relartives. The precise nature of that grammatical difference is not particularly relevant here, though we suspect that it represents a specialization of *which* in some texts for **continuative** relatives, otherwise known as *relatifs de liaison*, like (39).

(39)   He receyued a letter fro þe kyng of Grete Britayn, cleped Lucius, þat he schuld
         sende summe prestes to þis lond to baptize him and his puple. And þe pope
         sent hedir Fugan and Damian, [whech performed þis dede].
         'He received a letter from the king of Great Britain, called Lucius, [which said]
         that he should send some priests to this land to baptise him and his people. And
         the pope sent hither Fugan and Damian, who performed this deed.'

                                                                              (cmcapchr-m4,54.657–8)

The crucial point for this paper is that there are no clearly restrictive examples of *which NP*-relatives, whether overtly matching relatives or nonmatching. That is, even in texts with examples like (38), there are no examples like (40).

(40)   a.   *You shall do no thing [which thing may displease God in any manner].
         b.   *You shall do no thing [which sinful deed may displease God in any man-
              ner].

This suggests that, despite their grammatical differences, both overtly matching and nonmatching relatives are always nonrestrictive. However, before we adopt this conclusion, we should make sure that this is not an accidental gap. We will give two versions of an argument that the gap is not accidental. The first is quite simple, the second is more elaborate, but both point to the same conclusion.

The first argument works by calculating how many examples like (40) we might expect if two probabilities of interest were independent, namely the probability that a relative clause modifying a discourse-opaque noun phrase is headed by *which*, and the probability that an externally headed *which*-relative has an overt NP following *which*.

In the Penn Parsed Corpora of Historical English (Kroch & Taylor 2000, Kroch et al. 2004, 2010, almost 4 million words covering 1150–1914), there are 4,691 relative clauses modifying discourse-opaque DPs, of which 588 are headed by *which*. The first probability is therefore $588/4691 \approx 0.125$.

In the same corpora, there are 19,250 *which*-relatives, of which 1,672 have an overt following NP. The second probability is therefore $1672/19250 \approx 0.087$.

If the two probabilities were independent, then the probability that a relative modifying a discourse-opaque DP is modified by *which NP* would be $(588/4691) \times (1672/19250) \approx 0.011$. This sounds very small. However, it still predicts that 51 of the

Figure 2: Smoothed frequencies of *which*-relatives modifying negative antecedents and of *which NP*-relatives, 1350–1900.

4,691 relative clauses modifying discourse-opaque DPs should have this structure. The absence of any such examples is therefore highly surprising. Indeed, a binomial test indicates that the probability of no successes out of 4,691, for a hypothesized probability of ~ 0.011, is essentially indistinguishable from 0.

However, knowing that the two phenomena are not independent is not the same as knowing that they cannot cooccur. Indeed, there are good independent grounds to believe that the two phenomena of interest are not independent, in an orthogonal way. Neither of the two phenomena is diachronically stable: *which*-relatives modifying opaque antecedents increase in frequency over c.1350–1900, while *which NP*-relatives decline in frequency over the same period (see Figure 2).

To control for this potential confound, we used the lowess smoothers plotted in Figure 2 to estimate the frequencies of the two constructions of interest for each individual text, based on the year of composition, and repeated the calculation above to estimate the expected number of occurrences of examples like (40) for each individual text in the same way as our 'global' estimate above, then summed those per-text estimates to give a global estimate of the expected number of occurrences. That estimate was that examples like (40) should occur 50 times in the corpus, almost identical to the simpler method used above. We can also use the confidence intervals on the lowess smoothers to estimate threshold values for different *p*-values. The threshold value for $p = 0.05$ is 21 hits; for $p. = 0.01$, 17 hits; for $p = 0.001$, 15 hits. We conclude that the systematic absence of such examples in the Penn corpora is extremely surprising.

In sum, there are three relative clause types in which relativizer *which* is followed by an overt NP. The first is free relatives in Old and Early Middle English, as discussed in Section 3.1. Free relatives are standardly taken to be maximizing, and Truswell & Gisborne (2015) have argued that this construction is no different. The second and third types, overtly matching and nonmatching relatives, are types of externally headed

relative. There are no examples of either modifying a discourse-opaque antecedent, which would indicate a restrictive interpretation. Although absence of evidence is not the same as evidence of absence, the absence of evidence is statistically unexpected, even after year of composition is controlled for. We suggest that the absence of relevant examples, like this, is due to the fact that both overtly matching and nonmatching relatives are maximizing.

Therefore, all three *which NP* relative clause types in the history of English, despite their external grammatical differences, are maximizing.[8]

6 Discussion

The empirical challenge laid down by the previous section is as follows. Covert internal copies of the head NP are used in several analyses of externally headed relative clauses, whether restrictive or nonrestrictive. In Middle English, the head NP can be found in various constructions. Those constructions are always maximizing, which for headed relatives implies nonrestrictiveness. This holds regardless of whether we consider overtly matching relatives or nonmatching relatives.

The grammar of relative *which NP* goes at least three distinct stages in the history of English. Relative *which NP* occurs first as a free relative, then as an overtly matching relative, then as a nonmatching relative. The external syntactic context of *which NP*-relatives changes each time, but the internal syntax, and the interpretation, stay the same.

Given the analysis of nonrestrictive relatives as discourse anaphors (Section 4), the association of *which NP* with maximization is natural. Evans (1980), Heim (1990), and Elbourne (2001) have all analysed discourse anaphors as covert definite descriptions. Perhaps the most persuasive piece of evidence for this is the **Formal Link Condition** described by Heim (1990): the antecedents of discourse anaphors must be the referent of some preceding DP, rather than merely implied by the discourse context.[9]

(41)   a.   John has a wife. She is sitting next to him.
        b.   John is married. ??She is sitting next to him.   (Heim 1990: 166)

Elbourne (2001) analyses this as an instance of NP-deletion, felicitous under conditions parallel to those required for VP-ellipsis. Underlyingly, according to Elbourne,

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[8]Further support for this conclusion comes from Italian and French. Cinque (2008) reports that in careful styles of Italian, an overtly matching structure is available in Italian nonrestrictive *il quale* relatives. Meanwhile, in French there is a difference between *lequel N* relatives with accessible or opaque antecedents, as in (i).

(i)   a.   J' ai   acheté trois livres hier,   lesquels livres je vais lire   ce weekend
             I have bought three books yesterday which   books I go   read.INF this weekend
             'I bought three books yesterday, which I will read this weekend.'
       b.   #Je n'   ai   pas acheté des   livres hier,   lesquel livres j' avais déjà   lus
             I   NEG have not bought of.the books yesterday which books I had   already read
             'I didn't buy any books yesterday, which I had already read.'

[9]Heim's examples antedate the legalization of same-sex marriage. In 1990, if a man was married, he had a wife.

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(41a) has approximately the structure in (42), with *wife* deleted under identity with the antecedent.

(42)   John has a wife. She_{wife} is sitting next to him.

Our claim is simply that maximizing externally headed *which NP*-relatives are the same, without deletion under identity.

   Although there is no direct syntactic or compositional problem with a restrictive interpretation of a *which NP*-relative, it is redundant. (43a), where the relative must be restrictive, asserts that the intersection of the set of books with the set of objects you can read is empty. (43b) asserts that the intersection of the set of books, the set of books (again), and the set of objects you can read is empty.

(43)   a.   There are no books which you can read.
        b.   *There are no books which books you can read.

(43b) is then predicted to have the same status as the examples in (44).

(44)   a.   #There are some readable books which are books.
        b.   #There are some book-books which you can read.

These considerations suggest a principled basis for the maximizing nature of externally headed *which NP*-relatives. We will now consider the implications of the maximizing nature of *which NP* relatives for the three analyses of relatives discussed in Section 2.

6.1   Adjunction

The adjunction analysis posits an external base position for the head of a headed relative. This analysis makes no predictions about *which NP*-relatives, and as such is largely untouched by the claims in this paper: it analysis does not posit an internal NP, but nothing about the adjunction analysis hinges on the internal structure of the constituent moved to Spec,CP. Accordingly, the adjunction analysis can unproblematically accommodate an internal NP, and any independent explanation for the maximizing nature of *which NP*-relatives, though it does not appear to entail specific predictions about maximization or any other properties of these relatives.

6.2   Raising

As for the raising analysis, the variants adopted by Kayne (1994) and Bianchi (1999) are similar in many respects to an internally headed relative structure, as both Kayne and Bianchi note. As reported by Bianchi and by Grosu & Landman (1998), Williamson (1987) argues that head of an internally headed relative in Lakhota is interpreted externally to the relative, giving rise to the set-intersective semantics associated with restrictive relativization.[10] The challenge to the raising analysis of externally headed

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[10]Grosu & Landman claim that this is a point of variation among languages with internally headed relatives: some interpret the head within the relative, giving rise to maximizing interpretations on their theory, and some, like Lakhota, do not.

relatives is to allow this pattern of CP-internal position with CP-external interpretation in regular restrictive relatives, but to block it in overtly matching and nonmatching relatives.

In fact, a structurally relevant distinction can be made between the head in a raising structure and the internal NP in an overtly matching or nonmatching structure. This raises the prospect of a raising analysis that captures the nonrestrictiveness of externally headed *which NP*-relatives. The account we envisage has two components. The first is a characterization of the appropriate structural difference between the internal NP in the Middle English structures and the head in a raising structure, which will allow the raising head to count as 'external' in a regular *wh*-relative, but not in a *which NP*-relative. The second is a principle of Minimize Reconstruction, stating that only elements which need to be reconstructed are reconstructed. We expand on these two options below, but we must note at this point that our aim is not to enthusiastically adopt these proposals, but to illustrate the only viable analysis of *which NP* relatives that we are aware of, other than the adjunction analysis.

Our first task is to explain how the head in a raising structure can count as external in some sense, even if contained within CP. There is significant precedent for this in an antisymmetric framework such as that of Kayne (1994) and Bianchi (1999). According to Kayne's set of definitions, D and Spec,CP in a configuration like (45) have the same c-command relations as sisters (recall that all specifiers are adjuncts for Kayne).

(45)

```
                        DP1
                      /     \
                   D1        CP
                           /    \
                        DP2       CP
                       /   \     /  \
                     NP    DP2  C    IP
                          /  \      /  \
                        Wh   N̶P̶   …D̶P̶2̶…
```
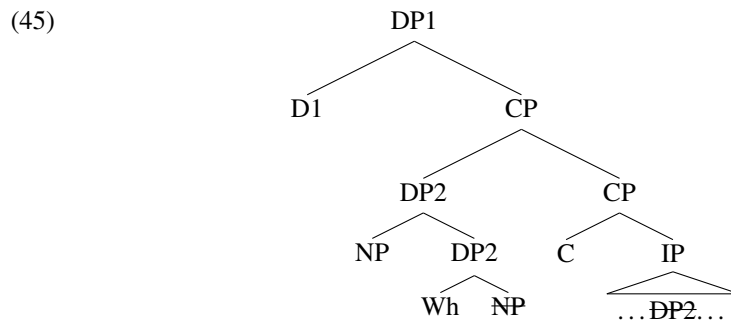
For Kayne, *X* c-commands *Y* iff *X* does not dominate *Y* and every node that dominates *X* dominates *Y*. Crucially, CP in (45) does not dominate DP2 in (45) — only one segment of CP dominates DP2. The only node that dominates DP2 is DP1, which is also the only node that dominates D1. So, indeed, D1 and DP2 mutually c-command each other in (45), just as if DP2 were the complement of D1.
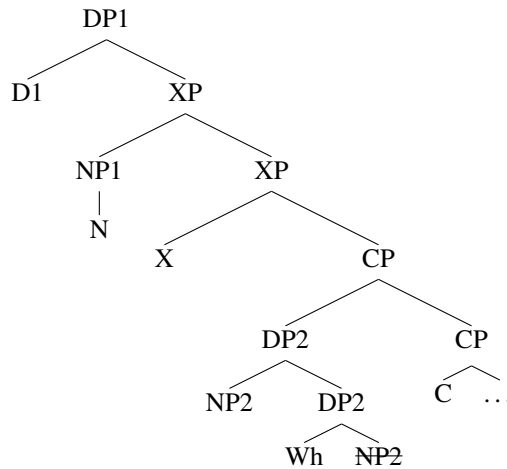
The same logic then applies a second time. DP2 does not dominate NP (and neither does CP), so NP and D in (45) mutually c-command each other.

The same is arguably not true for an overtly matching or nonmatching relative, regardless of precise assumptions about the phrase structure of overtly matching or nonmatching relatives. Two reasonable antisymmetric structures for such examples are in (46).

(46)   a.

DP1
- D1
- NP1
  - N
  - CP
    - DP2
      - NP2
      - DP2
        - Wh
        - ~~NP2~~
    - CP
      - C …

b.

DP1
- D1
- XP
  - NP1
    - N
  - XP
    - X
    - CP
      - DP2
        - NP2
        - DP2
          - Wh
          - ~~NP2~~
      - CP
        - C …
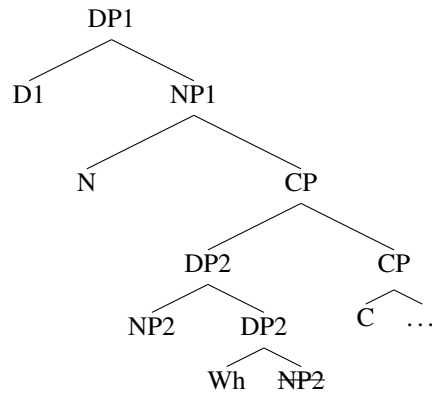
In neither of these does NP2 c-command D1. That means that the internal NP in overtly matching relatives or nonmatching relatives cannot stand in the same c-command relation to D as a regular NP complement to D, whereas the head of a raising structure as in Kayne (1994) or Bianchi (1999) plausibly can. Proponents of the raising analysis could build on this distinction to argue that an internal NP in a regular headed *wh*-relative is structurally distinct from the internal NP in an overtly matching or nonmatching relative.

The second task would be to ensure that DP2 in (45), the regular structure for a headed *wh*-relative is interpreted as a sister of D1, rather than internal to CP (in the overtly matching and nonmatching structures in (46), DP2 is structurally too remote from D1 to be interpreted as D1's sister). A natural approach to this would be to propose a principle like (47).

(47)   **Minimize reconstruction**
Interpret constituents no lower than their surface position, unless well-formedness conditions on syntactic dependencies (Principle A, Proper Binding Condition, idiom chunks, etc.) force interpretation in a lower position.

This principle, spelled out more explicitly, would of course directly conflict with the 'preference principle for reconstruction' proposed by Chomsky (1993) to deal with apparent patterns of grammaticality such as (48).

(48)   a.   John wondered which picture of him Bill took __.
           b.   John wondered which picture of Tom he liked __. (Chomsky 1993:208)

Chomsky claims that coference between *Bill* and *him*, or *Tom* and *he*, is impossible, and notes that this is explained if reconstruction to the gap site is forced by the preference principle: if *him* and *Tom* are interpreted in the gap sites, they are c-commanded by their respective antecedents *Bill* and *he*, yielding violations of Principles B and C respectively.

However, the results from Adger et al. (2016) reported above cast doubt on this explanation, at least for (48a). Reconstruction for Principle C is not obligatory, across a wide range of cases. If coreference is indeed impossible in such configurations (a claim which also merits empirical scrutiny), it must be for some other reason. We conclude that there is no obvious obstacle to Minimize Reconstruction, at least for syntactic phenomena like reflexive binding or idiomatic interpretation.[11]

6.3 Matching

The main difference between the raising and matching analyses is that the raising analyses posits multiple copies of a single NP, while the matching analysis contains two distinct (if very similar) NPs. The overtly matching, and to a lesser extent the non-matching, relatives discussed here are clearly problematic for the matching structure, as the two NPs in these constructions are identical in relevant respects to the two NPs in the matching structure. This is particularly problematic as clearly restrictive relatives can be constructed, which require a matching analysis according to Hulsey & Sauerland (2006). The extraposition in (49) forces a matching analysis, according to Hulsey & Sauerland, but modification of an opaque antecedent forces a restrictive interpretation.

(49)   No man showed up yesterday who knew anything about origami.

However, we note that a major piece of evidence for the matching structure Hulsey & Sauerland (2006) is tied up with reconstruction for Principle C. Hulsey & Sauerland claim that there is a contrast between (50a) and (50b).

(50)   a.   Which is the picture of John$_i$ [that he$_i$ likes __]?
           b.   *Which picture of John$_i$ does he$_i$ like __? (Hulsey & Sauerland 2006:113)

They then argue that the lack of a Principle C effect in (50a) reflects a semantic interpretation of a matching structure as in (51a), as opposed to the interpreted raising structure in (51b), which violates Principle C.

(51)   a.   the picture of John$_i$ λx. he$_i$ likes the$_x$ picture of him$_i$

---

b.   the λx. he $_i$ likes the$_x$ picture of John$_i$ (Hulsey & Sauerland 2006:113–4)

(51a) is derived by interpreting the external head, but replacing the internal head with a coreferential personal pronoun (similar to 'vehicle change' in Fiengo & May 1994). This option is unavailable in the raising structure in (51b), because there is only a single copy of *John* to interpret.

However, as discussed above, Adger et al. (2016) have demonstrated that Principle C reconstruction is optional across a much wider range of structures than previously considered, and particularly that the adjunct/complement distinction is not determinative of reconstruction to the extent claimed by Lebeaux (1988) or Chomsky (1993). This vitiates the argument from Principle C specifically for the matching structure.

Other parts of Hulsey & Sauerland's argument are untouched by this. Extraposition of the relative does block Principle A reconstruction, as discussed in Section 2.3. This demonstrates that extraposition affects the relationship between relative and external head at LF. Adger et al.'s claims about Principle C reconstruction directly attack the rationale for adoption of the matching structure to account for this difference, though.

6.4   Summary

We have argued that having an NP complement of *wh* inside an externally headed relative clause forces a nonrestrictive interpretation of the relative. This claim leads to a remarkable sharpening of the options available for the analysis of externally headed relatives.

The matching analysis, at least as it has been used in recent years, appears to be incompatible with our generalization, because the matching analysis works by postulating just such an NP complement within a relative clause, for restrictive as well as nonrestrictive relatives.

The adjunction analysis is straightforwardly compatible with the generalization proposed here, as it does not postulate an NP complement of *wh* in the first place. However, this does not move us any closer to a theory of reconstruction compatible with the adjunction structure.

For the raising analysis, things are more complex. The raising analysis is compatible with our generalization, if Chomsky's preference principle for reconstruction is abandoned. In the light of recent work on Principle C reconstruction, there is plausibly no impediment to abandoning that principle. This is then a promising basis for an answer to the maximization challenge. All of this is possible. Nothing is broken.

However, we emphasize that this analysis does not rescue every version of the raising analysis. It requires, at least:

- the collapse of the specifier/adjunct distinction (Kayne 1994);

- the definition of c-command from (Kayne 1994);

- principles for the interpretation of 'ambiguous' structures like (45), where D1, CP, and DP2 all mutually c-command each other (Bianchi 1999).

Without all those assumptions, the analysis doesn't get off the ground. This means that generalization that *which NP* relatives are maximizing sharpens our analytical choices

to a remarkable degree: as far as we can see, the only candidates left standing are a fully Kaynean raising analysis, or the adjunction analysis.

Moreover, even if the raising analysis can capture the basic correlation between an internal NP and nonrestrictive interpretation, in doing so it loses the analysis of reconstruction effects that motivated the raising analysis for Schachter (1973) and Vergnaud (1974). The raising-based analysis of Principle A reconstruction in (52) involves interpreting *stories about herself* as a complement of *which* within the relative clause. And yet this relative-internal complement does not trigger a maximizing interpretation.

(52)   John likes the stories about herself which Mary tells __

We conclude that only two analyses (adjunction and raising) capture the correlation between internal heads and nonrestrictive interpretation, that the raising analysis only does so under quite specific assumptions, and that neither of these two analyses can capture this correlation in a way compatible with the copy-theoretic analysis of reconstruction effects.

7   Conclusion

The empirical core of this paper has been a generalization that, if a *wh*-relativizer has an overt NP as complement, the relative phrase is interpreted as maximizing. This generalization holds across three distinct Middle English constructions, and preliminary investigation suggests that it also holds in related constructions in French and Italian. This generalization implies that the matching analysis of relative clauses is not appropriate for all of the tasks that it was intended for, which in turn implies that the analysis of certain failures of reconstruction in Hulsey & Sauerland (2006) cannot be maintained.

The other two structures considered (the adjunction and raising structures) did not have such direct problems, but the raising analysis can only be maintained if a principle of Minimize Reconstruction supercedes the principle of Maximize Reconstruction proposed by Chomsky (1995). This is possible if the conclusions of Adger et al. (2016) about the distribution of Principle C reconstruction effects are accepted, but it does suggest that the core of an analysis of reconstruction effects is independent of the copy theory.

A recurring theme in this line of analysis is that there is often no analytical advantage in the assumption that drives copy-theoretic research, spelled out in (53).

(53)   If a constituent X is interpreted in position P in some respect, X occupies P at LF.

In the cases discussed here, that assumption has been an active hindrance, because in the constructions in question, there are semantic consequences of interpreting the head within the relative clause which are orthogonal to reconstruction phenomena, and those consequences are frequently not welcome or warranted. Elsewhere, the litany of devices proposed to keep the copy theory afloat (late merger, wholesale late merger, vehicle change, trace conversion) occupies a substantial chunk of the literature on the

syntax–semantics interface. Alternatives to the copy theory, even within the Minimalist Program, have been around for quite some time (Neeleman & van de Koot 2002 is an early example). We would like the constructions examined in this paper to be seen as a contribution to sober reflection on whether the virtues of copy theory actually merit these costs.

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