EGG Summer School 2014 – Debrecen
The syntax of relative clauses
Analyses of relative clauses

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1   Readings: overviews and introductions

- Alexiadou, Artemis, Paul Law, André Meinunger & Chris Wilder (2000). Introduction. Artemis Alexiadou, Paul Law, André Meinunger & Chris Wilder (eds.). *The syntax of relative clauses.* Amsterdam/Philadelphia: John Benjamins, 1–51.
- Bhatt, Rajesh. 2005. *Handouts from the LOT summer school.*
                                                    http://people.umass.edu/bhatt/752-s05/
- Bianchi, Valentina. 2002. Headed Relative Clauses in Generative Grammar - I. *Glot International* 6:197–204.
- Bianchi, Valentina. 2002. Headed Relative Clauses in Generative Grammar - II. *Glot International* 6:235–247.
- Salzmann, Martin. 2006. *Resumptive prolepsis: a study in indirect A'-dependencies.* Utrecht: LOT.
                        http://www.lotpublications.nl/publish/articles/001910/bookpart.pdf
- de Vries, Mark. 2002. *The Syntax of Relativization.* Utrecht: LOT.
                        http://www.let.rug.nl/dvries/pdf/proefschrift-mdevries.pdf

2   Fundamental questions

- the modification problem: how is the RC related to the modified phrase:
    - at which level is the RC attached?
    - is the RC a complement or an adjunct?
    - is the RC combined with the head noun or the determiner?

- the connectivity problem: how can the double role of the head noun be captured?
    - is there always a relative pronoun – even if it is not visible?
    - what is the nature of the link between head noun and the relative elements?
    - How is the case of the head noun, the matrix determiner and the relative pronoun licensed?

- is the syntax of restrictive and appositive relative clauses similar?
- How are the main types of relativization (correlative, circumnominal, adnominal and postposed) related?

3   The Head External Analysis

- The earliest generative approaches (e.g. Chomsky 1957) to RCs involved construction-specific transformational rules that combined two independent syntactic objects: a noun phrase + a declarative clause (from Partee 2005)
- There were conditions on identity, substitution rules (relative pronoun for the full NP) and movement rules

(1) S1: X – NP – Y   S2: W – NP – Z
        1   2   3   4   5   6

- a variable can correspond to a string of in principle arbitrary complexity, it can also be zero
  → 1 and 6 = $\emptyset$, 2 = the professor, 3 = resigned, 4 = I liked, 5 = the professor
- Condition: 2=5
- Structural Change: 1 + 2 + *which/who/that* + 4 + 6 + 3

(2) a. Input: The professor resigned. I liked the professor.
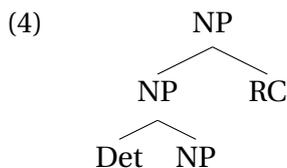   b. Output: The professor that I liked resigned.

3.1 Attachment site of the relative clause

- ambiguity, see Sternefeld (2006: 375)

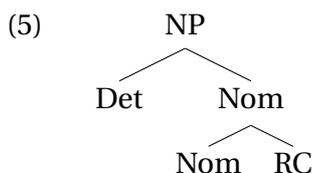 (3) The servant$_i$ of the actress$_j$ [who$_{i/j}$ was on the balcony]

- Ross (1967): the NP-S-theory

  – The (restrictive) relative clause is generated as an adjunct to NP (which contains Det)

  (4)
  ```
          NP
         /  \
       NP    RC
      /  \
    Det   NP
  ```

- Partee (1975): the Nom-S-theory:

  – the RC is attached to a nominal constituent that excludes the determiner

  (5)
  ```
          NP
         /  \
       Det   Nom
            /  \
          Nom   RC
  ```

  – She argues that the NP-S theory of Ross (1967) does not derive the correct semantics: Det has scope over both N and the relative clause in restrictive relatives:

  (6) Every girl [who attended the lectures] passed the test → $\forall x$ [girl (x) $\wedge$ (x) attended lectures] (= every x such that x is a girl x attended the lectures)
       → the determiner selects the set of girls which attended the lectures, only those passed the test
       → head noun and RC are both predicates that combine semantically via intersective modification, then, the determiner is applied to the derived predicate
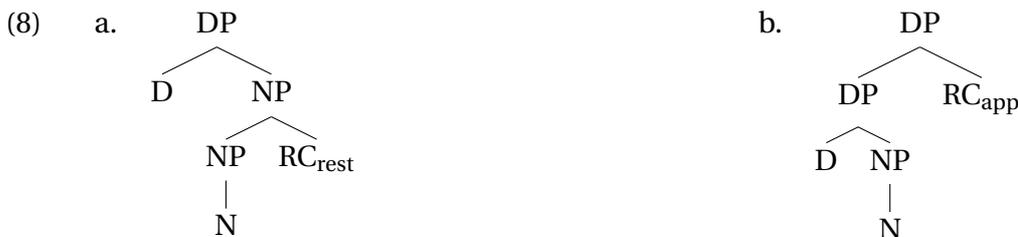
  – The interpretation of the NP-S theory is less straightforward; however, Bach and Cooper (1978) show that a compositional semantics (with the correct interpretation) is possible given certain assumptions

- Jackendoff (1977: 169) the restrictive/appositive distinction is handled configurationally

(7)

$$N'''$$

```
            N'''
          /  |  \
      ART'''  N''   CP_app
       |     /  \
       D    N'   CP_rest
            |
            N
```
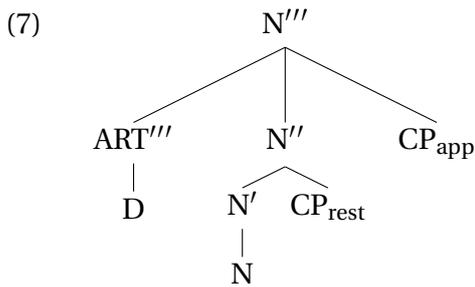
- the restrictive RC is a daughter of N'' and thus in the scope of D (they are not adjoined), appositive relatives are outside the scope of the determiners (they are appositions to the entire D+N complex, like nominal appositions) and thus must be attached higher, to N''' .

- Given binary branching and the DP-hypothesis, the standard analysis until the early 90ies looked as follows, with restrictives adjoined to NP and appositives adjoined to DP (since Chomsky 1986 one tends to assume that adjunction can only target maximal projections):

(8)   a.
```
        DP
       /  \
      D    NP
          /  \
        NP   RC_rest
        |
        N
```
b.
```
        DP
       /  \
      DP   RC_app
     /  \
    D   NP
        |
        N
```

- Note, however, that some, e.g., Sternefeld (2006: 444), believe that the difference need not be encoded configurationally

- Hydras (Link 1984): the RC modifies two conjoined

(9)   [the man and the woman] who were arrested

- since the Rel-pro is plural, it must have a plural antecedent, which given two singular DPs arguably results from DP-coordination; it seems that the RC must be adjoined to DP (but the interpretation is restrictive ...)

3.2   Complementation or adjunction?

- Traditional assumption
  - relative clauses are not selected by the noun
  - relative clauses are optional (can always be omitted)
  - → relative clauses are adjuncts, adjuncts must be adjoined

- Counter-arguments
  - omissibility does not show anything: complements of nouns can generally be omitted

    (10)   the destruction (of Rotterdam)

  - Adjectival modifiers are usually not adjoined (they appear in specifiers of N or perhaps in their own functional projection)
    → it is thus not clear that complementation should be ruled out

- complementation analyses combined with the HEA have indeed been proposed:
  - RC = complement of N: Platzack (2000)
  - RC = complement of Det: Smith (1964)

- as we will see, the D-complement hypothesis became particularly prominent among proponents of the Head Raising Analysis

3.2.1 RC as a complement of N

- Platzack (2000): RC as a complement of N, DP-hypothesis:

(11)
```
        DP
       /  \
      D    NP
          /  \
         N    RC
```
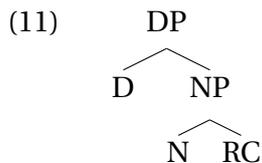
- motivation: i. antisymmetry (see below); ii. restrictive RCs in Scandinavian are transparent for extraction (Platzack 2000: 275)

(12) [Den här teorin]$_1$ känner jag [mann-en som uppfann __$_1$]
      this here theory know I   man-DEF that invented
      'This theory, I know the man who invented.'   *Swedish*

3.2.2 RC as a complement of D

- Smith (1964), Chomsky (1965): The D-complement hypothesis + extraposition

  - RC originates as the complement of D and is subsequently extraposed (in English) so that the correct surface structure obtains (simplified, the original format does not use movement but rather rewrite rules, adjunction and deletion)

(13) a.
```
          NP
         /  \
       DET   N
      /  \
     D    RC
```

b.
```
          NP
         /  \
       NP    RC$_1$
      /  \
    DET   N
    / \
   D   __$_1$
```

- Sternefeld (2006: 377): the RC is a second complement of D (D = ditransitive)

(14)
```
        DP
       /  \
      D'   RC
     /  \
    D    NP
```
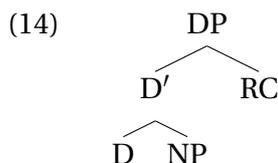
- RC is a complement of D, head noun is in SpecC while the relative operator/pronoun moves to the spec of a lower CP, see e.g., Aoun and Li (2003), Boef (2012a: 130):

(15)

```
            DP
          /    \
         D     CP₁
              /    \
            NP      C₁′
            |      /    \
        head noun C₁     CP₂
                        /    \
                      DP      C₂′
                      |      /    \
                     Op_rel C₂    TP
                            |
                          dat/of
```
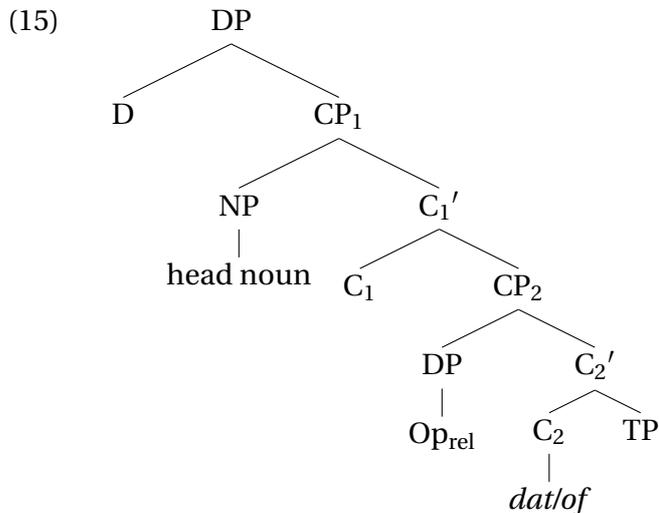
- motivation for D-RC complementation:

A Det determines whether something can be a restrictive or an appositive relative clause (in English) → compatibility can be handled by means of selection (sisterhood)

(16) a. The book (,) which is about linguistics, is interesting.   [restrictive/appositive]
      b. Any book (*,) which is about linguistics, is interesting.   [restrictive/*appositive]

B D cannot co-occur with certain Ns in simple noun phrases, but can co-occur with them in RCs (see also Carlson 1977, as discussed in Alexiadou et al. 2000: 11)

(17) a. We made (*the) headway.
      b. The headway we made, was great.

(18) a. She is that kind of person.
      b. She is the kind of person *(that is always helpful).

(19) a. He did it in that way.
      b. He did it in a way *(that annoyed me).

(20) The Paris *(that I love)

   – note that such examples also become grammatical if an adjective/PP-modifier is added: *We made the necessary headway; she is the most dangerous kind of person; I did it in a clever way, The Paris of my youth* → suggests that this is not c-selection

C German *derjenige* requires a RC but not an NP

(21) derjenige (Mann), *(der dort sitzt)
      the.that   man   who there sits
      'the man who is sitting over there'

   – cautionary note: While the examples introduced so far certainly show that there is an interpretive dependency, it is not fully clear whether this should be equated with syntactic selection; the following type of example is arguably stronger:

D comparatives/equatives/degree constructions: Alexiadou et al. (2000: 5)

    (22)   a.   more books [than John can read]
                b.   as many books [as John can read]
                c.   too many books [for John to read]

– very similar to RCs: the entire construction functions as a DP, the clause shows signs of movement (locality: *??I read more books [than John wonders whether I can read]*), can be extraposed; semantically, the clauses are in the scope of the degree word (*-er, as, too*)
– the clauses seem to be selected by the determiner (*more ... than* etc.), which can be directly expressed by means of complementation/sisterhood
– **perhaps best captured under the theory by Smith (1964), see above, where the RC is merged with D and undergoes extraposition later on**

E Some German dialects have two types of determiners: clitic vs. full; only the full form is compatible with RCs, see Sternefeld (2006: 379f.)

    (23)   a.   Alle Kinder   hom **n/den** Arm ghobn
                    all   children have the   arm raised
                    'All children raised their arm'
                b.   Alle Kinder   hom ***n/✓den** Arm, der   dreckat woa, ghobn
                    all   children have the   arm which dirty   was raised
                    'All children raised the arm that was dirty.'   *Bavarian*

F circumnominal relatives: D takes the RC-CP as its complement overtly:

    (24)   [$_{DP}$ [$_{CP}$ Hatčoq ʔavi:-m   ʔ-u:ta:v]-n^y-č]   n^{y}əʔi:l^y-pč.
               [[dog   stone-INST SUBJ.1-hit]-DEF-NOM] black-REAL
               'The stone with which I hit the dog was black.'
               (or 'The dog which I hit with the stone, was black.')   *Mohave* (Hokan)

G intransitive determiners + restrictive RCs are problematic for NP-adjunction (at least if there is no silent NP), but follow directly under D-complementation (Sternefeld 2006: 381):

    (25)   Jeder/keiner,   der mich kennt, hasst mich
               everyone/no.one who me   knows hates me
               'Everyone/no one who knows me hates me.'   *German*

– Note further that such determiners tend to be incompatible with the relative pronoun *welch-* 'which', another sign of selection

H Agreement in appositive RCs to pronominal heads:

    (26)   I, who **am** tall, was forced to squeeze into that VW.

– Where does the agreement on the verb come from? it is unlikely that the relative pronoun bears the relevant phi-features. See Heck and Cuartero (2012) for a proposal where agreement results from feature-sharing between D, C and T. → requires complementation (there is no N unless pronoun spells out non-terminals)

3.3 The internal structure of relative clauses

- Chomsky (1977): relative clauses show diagnostics of A'-movement: displacement of the relative pronoun is subject to locality constraints, just like *wh*-movement:

  (27) a. *the chair [which$_1$ Mary killed [the teacher who liked __$_1$]]   CNPC-island
       b. *[Which chair]$_1$ did Mary kill [the teacher who liked __$_1$]?   CNPC-island

- Locality effects also obtain in the absence of a visible relative pronoun:

  (28) *the chair [that Mary killed [the teacher who liked]]   CNPC-island

- Early analyses posited deletion of the relative pronoun, in the 80ies, deletion was replaced by the null operator hypothesis (which is independently needed for *tough* movement and parasitic gaps):

  (29) a. *the chair [~~which~~$_1$ Mary killed [the teacher who liked __$_1$]]
       b. *the chair [Op$_1$ that Mary killed [the teacher who liked __$_1$]]

- the left periphery of relative clauses:

  - at least a head position and a specifier position even though in most familiar languages only one of them is overtly realized; but cf. Southern German dialects, Bayer (1984: 213):

  (30) Die Frau **dera**   **wo** da Xaver a Bussl g'gem hod
       the woman who.DAT REL the Xaver a kiss   given has
       'the woman who Xaver kissed'   *Bavarian*

  - evidence for a more complex left periphery comes from several languages, e.g., Slovene and Icelandic, where two head positions have to be assumed, one for the relative marker and one for the declarative complementizer, see Boef (2012*a*: 131) (more arguments can be found in Bianchi 1999 and Zwart 2000):

  (31) a. človek, [$_{CP1}$ ki [$_{CP2}$ (da) pride   ]]
       the.man   C$_{rel}$ that is.coming
       'the man who is coming'   *Slovene*
       b. manninn [$_{CP1}$ sem [$_{CP2}$ (að kom hingað]]
       the.man   C$_{rel}$ that came here
       'the man that came here'   *Icelandic*

- trigger for the movement

  - some uninterpretable/unvalued operator feature on C (Attract)
  - an *u*F on the relative operator triggers the movement (Greed, Bošković 2007)
  - Heim and Kratzer (1998): movement is not syntactically triggered, it takes place for interpretive reasons: movement of the Rel-pron derives a predicate; the Rel-pron is not interpretable in-situ; see Sternefeld (2006: 366ff.)

3.4   The relationship between the head noun and the relative pronoun

- Earliest generative approaches: deletion under identity

  - the RC is a full clause and contains a full NP which is deleted under identity with the head noun → double role captured by two coreferential NPs
  - Under the Nom-S-structure, the identity condition cannot be stated straightforwardly because the relative clause is part of its antecedent (it is embedded within NP) → infinite regress
  - Under the NP-S theory (cf. above), identity can be stated easily given the constituency (the relative clause is NOT a subpart of the head noun). But identity conditions become difficult (often: impossible) to state with quantifiers, see Partee (2005):

    (32)   No fish that John caught was happy. (No fish was happy – John caught no fish???)

- Montague (1973), Partee (1975):

  - The relative clause itself is a predicate formed by λ-abstraction on the variable corresponding to the wh-word.
  - The embedded NP position is just a variable, bound by the lambda-abstractor
  - The identity relation results from predicate modification (the head noun is a predicate and the RC is, too), see Heim and Kratzer (1998)

- GB: the Rel-pro is directly inserted into the argument position (does not replace an NP)

  - co-indexation between the relative pronoun/operator and the head NP (not the DP), (probably not needed according to Bhatt 2005)

- Agreement between head noun and the relative pronoun: syntactic or anaphoric agreement? See arguments from case attraction for a syntactic relationship (last class)

4   The Head Raising Analysis

- Basic idea: the external head originates within the RC and is moved (raised) during the derivation to its surface position:

  (33)   a.   I only like [my granny has cooked *potatoes*]
          b.   I only like [*potatoes*$_1$ my granny has cooked __$_1$]

- head-raising is in principle independent of adjunction/complementation (even though on most approaches it is combined with complementation)

  - adjunction: Vergnaud (1974)
  - N-complementation: de Vries (2002: 85ff.)
  - D-complementation: Kayne (1994)

4.1 Arguments for head raising

- Strongest argument: circumnominal relatives:

(34) [Nuna bestya-ta ranti-shqa-n] alli bestya-m ka-rqo-n.
man horse-ACC buy-PFV-3 good horse-EVD be-PST-3
'The horse that the man bought was a good horse.'   *Ancash Quechua*

  - they overtly show the base structure that is posited in the raising analysis
  - to obtain the correct interpretation, one can assume raising at LF (cf. *wh*-in-situ)
  - adnominal and circumnominal relatives receive basically the same analysis, the difference being whether raising takes place overtly or covertly
  - It is completely unclear how the Head External Analysis can handle such data

- selection effects suggest a RC-internal representation of the head noun:

  - Dutch: the quantifier *al* can only be used if modified by a relative pronoun → suggests that they are merged together: [wat + al], see Zwart 2000: 352:

(35) a. Ik heb alles/*al.   b. Ik heb alles/al wat ik wil
      I have all   I have all/all what I want
      'I have everything.'   'I have everything I want.'   *Dutch*

  - German: certain head-nouns require a different relative pronoun: while neuter nouns normally require *das* 'that', superlatives require *was* 'what'

(36) das schöne Erlebnis, das/??was vs. das Schönste,   ??das/was
      the beautiful experience that/what   the most.beautiful.thing that/what
      'the beautiful experience that'   'The most beautiful thing/ which ...'

- The Raising Analysis directly expresses the pivot function of the external head
- reconstruction (first noted in Schachter 1973:[1]

  A collocations: verb + head noun form a unit at Merge/LF:

(37) a. The [headway$_1$ we made __$_1$] was sufficient.
      b. The [we made headway] was sufficient   Merge/LF

  B Binding: anaphor contained in the head noun is interpreted inside the relative clause

(38) a. De [[verhalen over zichzelf$_i$]$_1$ die   Paul$_i$ __$_1$ hoorde], waren pure
      the stories   about himself   which Paul   heard   were   pure
      leugens.
      lies
      'The stories about himself that Paul heard were pure lies.'
      b. De [die Paul$_1$ [verhalen over zichzelf$_1$] hoorde]   *Dutch*

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[1]Reconstruction is limited to collocations; it is blocked with completely opaque idioms because in such cases it would be necessary to relate two meanings to the same noun, an idiomatic one inside the RC and a literal one in the matrix clause, see de Vries (2002: 79):
i. *The bucket that he kicked was full.

C Scope: quantifier within the HN is interpreted in the scope of an RC-internal quantifier:

(39)   I telephoned the [two patients] [that every doctor will examine] $\forall > 2$

D Variable binding

(40)   The [period of his$_i$ life] [that nobody$_i$ talks about __] is his adolescence.

→ reconstruction under the Copy-Theory of Movement (Chomsky 1995): movement is copying, an explicit reconstruction operation (moving a constituent downward at LF) is replaced by means of interpretation of lower copies:

(41)   a.   [Which book about himself$_1$] does John$_1$ like [which book about himself$_1$]?
        b.   [Which x] does John$_1$ like [x, book about himself$_1$]?

- Preference Principle (Chomsky 1995: 209): Minimize operators → restriction deleted in operator position, but retained in the theta-position
- (given the more recent models of syntax, binding can also be handled derivationally)
- the Head External Analysis runs into difficulties w.r.t. the reconstruction facts: if there is co-indexing between the head noun and the relative pronoun, there may be some kind of feature transmission from the matrix clause into the embedded clause; but without extra assumptions this will not make the anaphor available for binding within the RC
- reconstruction is limited to the NP, the external D does not reconstruct, as is suggested by the following pair where there is no definiteness effect inside the RC:

(42)   a.   The men that there were __ in the garden
        b.   *There were the men in the garden.

4.2 Vergnaud 1974

- an NP containing a *wh*-feature, Det and the head noun N raises to comp (Spec, CP)
- Then NP (comprising Det + N) moves out of the clause and reprojects
- The index of N is transferred to the maximal projection → produces an adjunction structure, the RC is now right-adjoined to NP
- The trace of NP is realized as a relative pronoun (because the wh-feature stays behind)

(43)   a.

```
            CP
         /      \
      NP_1       C'
     /    \     /  \
 wh-det    N   C    TP
                   /  \
                  ...  —1
```

b.

```
              NP
           /       \
        NP_1        CP
       /   \      /     \
      D    NP   NP_1     C'
                  |     /  \
               D-rel   C    TP
                           /  \
                          ...  —1
```
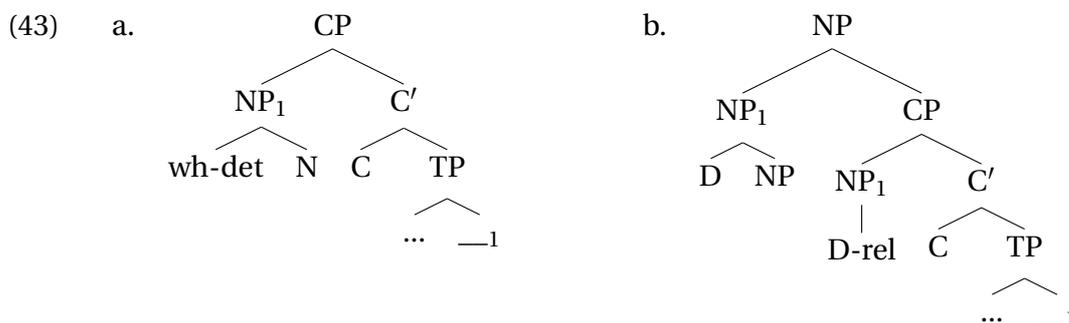
- problems from a 2014 perspective:
    - Reprojection (but see Bhatt 2002 and Donati and Cecchetto 2011 below)
    - How can a part of a moved constituent by left behind and spelled out?
    - The NP does not c-command its trace, since CP is not excluded from (the higher segment of NP)
    - The determiner in NP does not take scope over the relative clause, neither before nor after raising. → the example should have the semantics of an appositive clause, quod non

4.3 Kayne (1994)

4.3.1 The proposal

- Antisymmetry hypothesis: hierarchical structure fully determines linear order

  (44) Linear Correspondence Axiom (LCA)
  For any two non-terminals X, Y, if X asymmetrically c-commands Y, then all terminals x dominated by X precede all terminals y dominated by Y

  – the relevant consequence of this is that right-adjunction is prohibited:
  – A RC adjoined to NP asymmetrically c-commands NP so that it would automatically precede NP (c-command is restricted to categories → NP does not c-command RC because NP is a segment. The adjoined XP however does c-command into the YP it is adjoined to, see Kayne 1994: 16)

  (45) X c-commands Y iff *X and Y are categories* and X excludes Y [= no segment of X dominates Y] and every category that dominates X dominates Y.

  (46)
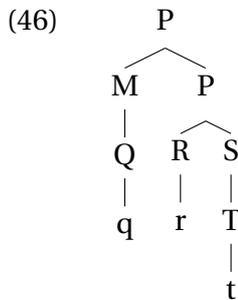
  – c-command pairs: <M,R>, <M,S>, <M,T>, <R,T> → <q,r>, <q,t>, <r,t>
  – P ≈ NP; M ≈ RC; R ≈ N → RC precedes terminals dominated by N

- Postnominal restrictive relatives

  – D-CP-complementation: compatible with Antisymmetry
  – head NP moves to Spec, CP
  – *that*-relatives vs. *wh*-relatives: *that*-relatives move NPs to SpecCP, *wh*-relatives move DPs and involve movement of NP to Spec, DP:
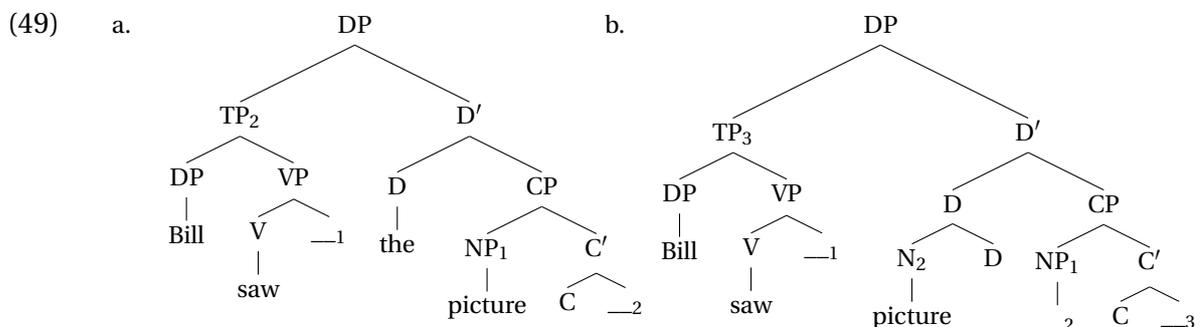
  (47)
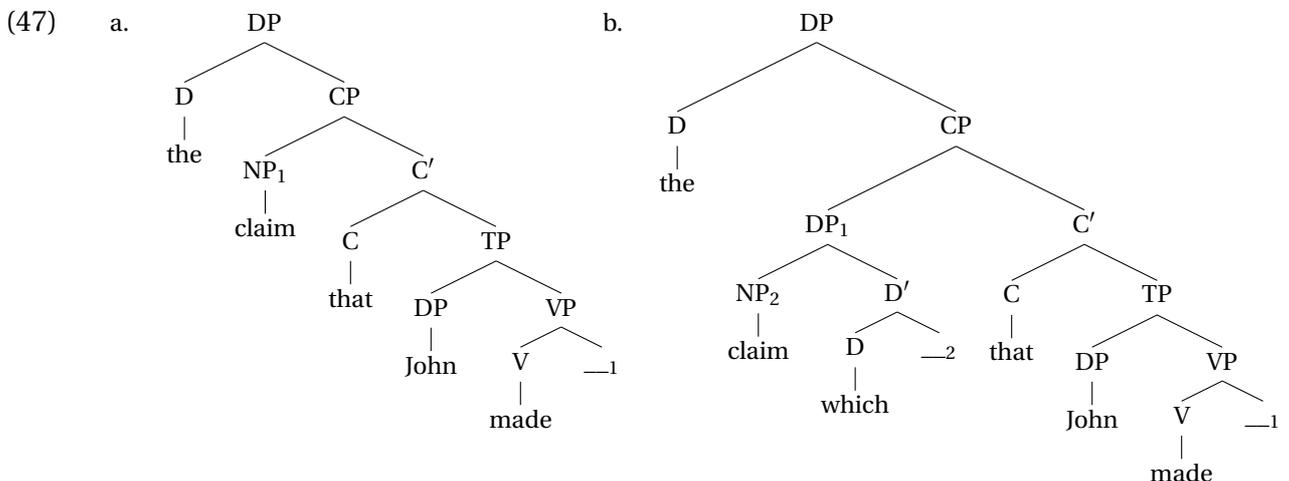
– a more complex example with a possessive relative:

(48)

```
                        DP                                        ]
              ┌─────────┴─────────┐
              D                   CP
              │          ┌────────┴────────┐
             the        PP₁               C'
                 ┌───────┴──────┐     ┌────┴────┐
                NP₂            P'     C         TP
                 │        ┌─────┴────┐      ┌────┴────┐
                boy       P         DP      DP        VP
                          │     ┌────┴───┐  │     ┌────┴───┐
                         with  DP       D'  I     V       __1
                            ┌───┴──┐  ┌──┴──┐     │
                           who  __2 D    NP     spoke
                                    │     │
                                    's  mother
```
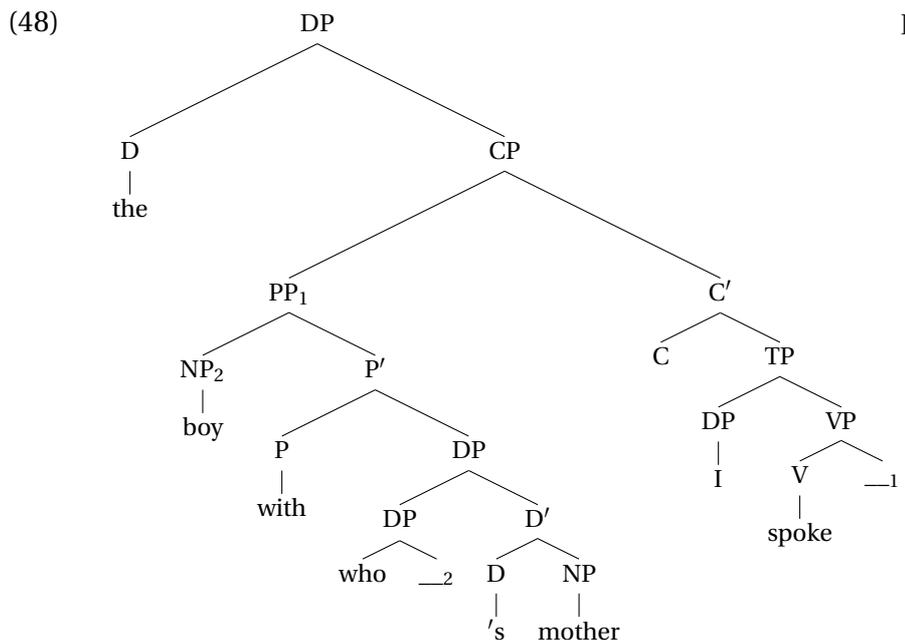
– case checking between the external D and the raised N: movement of N to D at LF, see Kayne 1994: 154, note 9)

– case of the relative pronoun vs. case of the head noun: "the fact that in Russian the wh-word shows the Case determined by the lower predicate and the 'head noun' the Case of the upper can be accounted for as follows. In *which picture* Case is assigned/licensed within the embedded sentence to *which*. In Russian, if *picture* remains a complement to *which* (in a nonrelative structure), an additional mechanism copies/licenses the same Case on *picture*. If *picture* moves to Spec, *which*, then it is Case-licensed in Spec, CP via the upper D° instead." (Kayne 1994: 155, note 15)
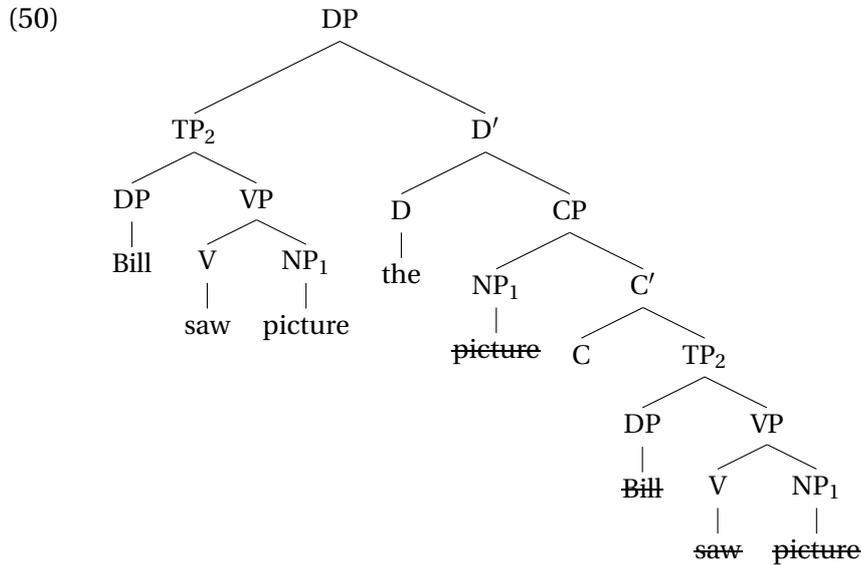
- N-final (= prenominal) RCs

  – N-final (= prenominal) RCs and postnominal RCs are based on the same structure
  – Amharic: RC – D – N: derivation: as in English, but at the end, TP is moved to Spec, DP:
  – languages with RC - N - D order involve additional raising/adjunction of N to D, see Kayne (1994: 158, note 27)
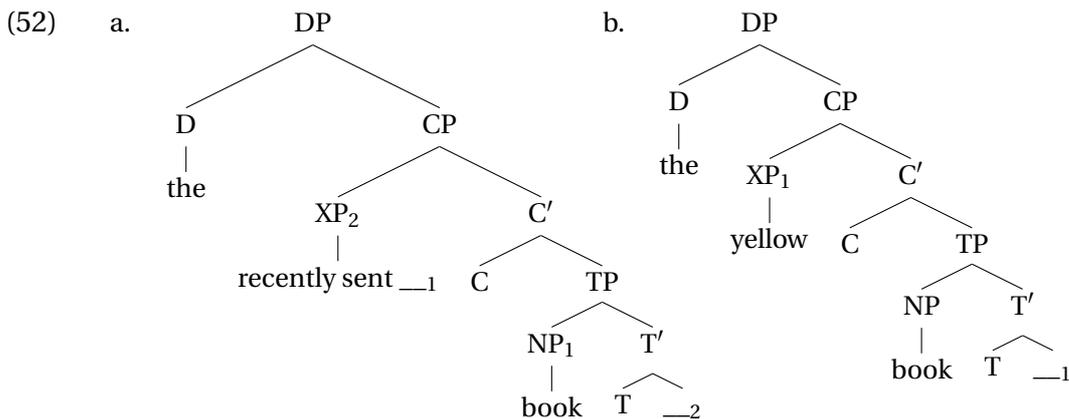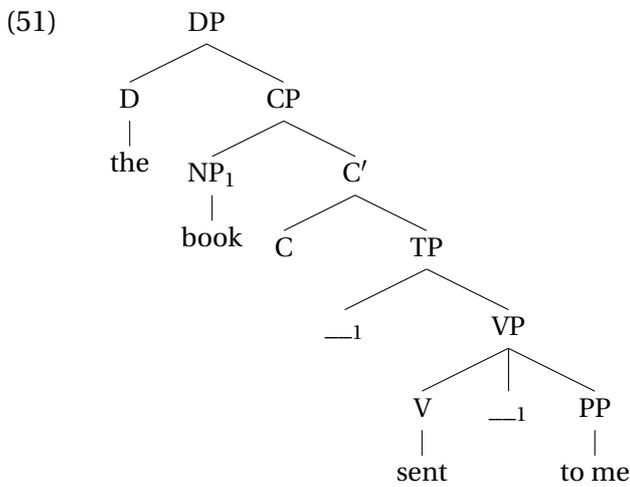
(49) a.

```
                     DP                          b.                   DP
          ┌──────────┴──────────┐                          ┌─────────┴──────────┐
         TP₂                    D'                         TP₃                   D'
     ┌────┴───┐          ┌──────┴─────┐              ┌──────┴───┐        ┌───────┴────────┐
    DP        VP         D           CP             DP         VP        D               CP
     │     ┌───┴──┐      │        ┌───┴───┐          │      ┌───┴──┐  ┌───┴──┐      ┌──────┴─────┐
    Bill   V    __1     the      NP₁     C'         Bill    V    __1 N₂    D   NP₁         C'
           │              │       │   ┌───┴──┐              │       │        │       ┌───┴───┐
          saw          picture  C    __2               saw    picture     __2   C       __3
```

– since the prenominal RC is just a TP, the following facts (tend to) follow:

  ∗ prenominal relatives have neither relative pronouns nor
  ∗ a (relative) complementizer that is identical to the normal complementizer of sentential complementation (like e.g. English *that*)
  ∗ prenominal RCs are often not fully finite

12

- head-internal relative clauses
  - only occur in head-final languages according to Kayne (which is incorrect, see de Vries 2002: 36)
  - the structure is the same as in prenominal relatives, the only difference being that the copy of the head noun in the fronted TP is realized and not the one in Spec, CP:
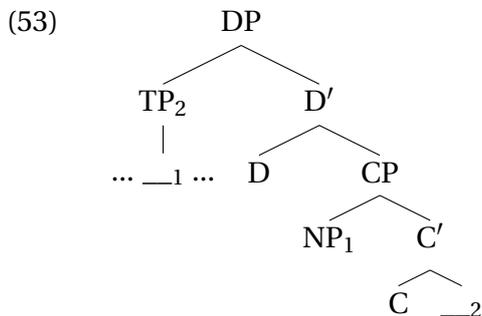
(50)

```
                              DP
                    ┌─────────┴─────────┐
                  TP₂                     D′
              ┌────┴────┐           ┌─────┴─────┐
            DP          VP          D            CP
            │        ┌───┴───┐      │       ┌─────┴─────┐
          Bill       V      NP₁    the     NP₁          C′
                     │       │            │        ┌────┴────┐
                    saw   picture       picture    C        TP₂
                                                        ┌────┴────┐
                                                      DP          VP
                                                      │        ┌───┴───┐
                                                     Bill       V     NP₁
                                                                │      │
                                                               saw   picture
```

- reduced relatives and adjectives are also assigned an RC clause structure (this holds both for postnominal and prenominal modifiers):

(51)

```
              DP
          ┌───┴───┐
          D        CP
          │    ┌───┴───┐
        the   NP₁       C′
              │    ┌────┴────┐
            book   C         TP
                        ┌────┴────┐
                       —₁         VP
                              ┌────┼────┐
                              V   —₁    PP
                              │         │
                            sent      to me
```

(52) a.

```
                    DP
              ┌─────┴─────┐
              D            CP
              │      ┌─────┴─────┐
            the     XP₂          C′
                     │      ┌─────┴─────┐
              recently sent —₁ C        TP
                                   ┌────┴────┐
                                  NP₁        T′
                                   │      ┌──┴──┐
                                 book     T    —₂
```

b.

```
                    DP
              ┌─────┴─────┐
              D            CP
              │      ┌─────┴─────┐
            the     XP₁          C′
                     │      ┌─────┴─────┐
                  yellow    C           TP
                                   ┌────┴────┐
                                  NP         T′
                                   │      ┌──┴──┐
                                 book     T    —₁
```

- appositive relative clauses

  - appositives are based on the same structure, they differ from non-restrictives in that TP moves to Spec, DP at LF:

  (53)

  ```
                   DP
             ╱          ╲
         TP₂             D′
          │          ╱      ╲
     ... __₁ ...    D        CP
                         ╱      ╲
                      NP₁       C′
                              ╱   ╲
                             C     __₂
  ```

  - it is assumed that TP-movement is triggered by some syntactic feature which if present at PF leads to an intonational break; since movement is covert in English, the feature survives until PF, which accounts for the break in appositives; in languages with prenominal appositives (e.g. Japanese, Basque), the feature is deleted in overt syntax so that it is no longer present at PF and cannot trigger an intonational break

- RC extraposition

  (54)   Something just happened [that you should know about].

  - right-adjunction (to e.g. vP/TP) is not an option given the LCA
  - instead: "extraposition" is reanalyzed as stranding:

  (55)   Something₁ just happened [__₁ that you should know about].

  → Since stranding cannot involve the external D as it does not form a constituent with the head noun given the raising analysis, extraposition is predicted to be restricted to indefinites (the indefinite article must then be different from the external D, it must be part of the NP in SpecCP:

  (56)   [A/??the man] just walked in [who we knew in high school]

  - accounts for

    A the right Roof Constraint [rightward mvt is clause-bound]: the N+RC is not an argument of *irrelevant* and movement would have to be downward:

    (57)   *The fact that somebody$_i$ walked into the room is irrelevant [who$_i$ I knew].

    B the fact that the RC cannot be moved to the left of the head noun: HN cannot be moved downward, RC cannot be moved leftward because it is not a constituent, just a C′:

    (58)   *[That you should know about], something just happened.

      → This is a general challenge for theories of RCs

    C optionality of extraposition: either movement of NP or movement of NP+RC (= CP)

4.3.2 The problems: Borsley (1997)

- *that*-relatives: trace of the HN behaves like a DP-trace, not an NP-trace:

  (59) a. the man that __$_i$ thought he$_i$ saw an Ufo   trace co-indexed with pronoun
        b. the man that __$_i$ tried PRO$_i$ to fool everybody   trace controls PRO-subject
        c. the book that Bill criticized __ without reading __   trace licenses Parasitic Gap
        d. the book that we wondered [how to afford __]   mvt skips weak island

  – if *that*-RCs involve a DP after all (see Bianchi below), with D = silent, why aren't such silent Ds more widespread and what prevents an overt D in RCs?

    (60) a. *Bill liked [$_{DP}$ e [$_{NP}$ picture]]
          b. *the the picture that Bill liked

  – the analysis of *that*-relatives violates the Doubly-filled-Comp filter

- *wh*-relatives: what triggers movement of NP to Spec, DP (Borsley 1997: 638)?

  – Kayne (1994: 90): to be governed by D – but:
  – why doesn't the relative pronoun suffice?
  – movement is countercyclic (if movement to Spec, DP takes place after the external D is merged) or otherwise involves look-ahead
  – once attributive adjectives/participial phrases are involved, NP is no longer governed by D

- case marking: the raised NP bears the case assigned to the external DP, but if it originates within the RC it should bear the case assigned there (i.e. *Mann* = nom, not *Mannes* = gen)

  (61) Er gedachte   des   [$_{CP}$ [$_{DP}$ Mannes$_1$, der   __$_1$] gestorben war].
         He commemorated the.GEN   man.**GEN** who.**NOM**   died   was
         'He commemorated the man who had died'   *German*

- strong+weak adjectival inflection in German, see Heck (2005):

  – D determines the inflection of A
  – observation: adjectives that modify the head noun are affected by the external determiner, not the internal one (= D$_{rel}$):

    (62) a. mit gut-em   Wein, den   sie gekauft hat (cf. *den gutem)
               with good-STR wine   which she bought has   the   good-STR
          b. *mit gut-en   Wein, den   sie gekauft hat (cf. ✓den guten)
               with good-WK wine   which she bought has   the   good.WK
                                                       German

- constituency [1]: *which* + TP do not form a constituent, rather, NP + *which* do, but coordination suggests otherwise:

  (63) the picture which Bill liked and which Mary hated

  – only possibility: CP-coordination + deletion of *picture*:

  (64) the [picture which Bill liked] and [~~picture~~ which Mary hated]

- constituency [2]: extraposition (Borsley 1997: 641):

  - the wrong constituency for traditional extraposition as you would have to move a C$'$
  - everything that precedes the "extraposed" clause has to have moved across it:

    (65)   [A man]$_1$ [came]$_2$ [into the bar]$_3$ [$_{VP}$ [__$_1$ who we knew in school] __$_2$ __$_3$].

  - It is unclear a) what motivates these movements and b) which positions they would target (the verb cannot move to T because otherwise one would expect it to behave like auxiliaries etc.) → they basically just occur to get the linear order right
  - it is unclear why the RC cannot be stranded in intermediate position (like floating quantifiers):

    (66)   *[One man]$_2$ seemed [__$_2$ who knew the truth]$_1$ to be __$_1$ late

  - the extraposition derivation seems to violate improper movement (A → A$'$ → A) (certainly under Kayne's analysis of *that*-relatives, but arguably also under his analysis of *wh*-relatives)

4.4   Bianchi (1999), Bianchi (2000)

4.4.1   The proposal

- the empty head of *that*-relatives is a D$_{rel}$

  - licensed by the external determiner: D-to-D incorporation, Fusion at PF
  - fusion requires consistency in feature values (D$_{rel}$ is underspecified for definiteness → compatible with definite and indefinite external Ds) → no incorporation into a governing verb as in the ex above
  - incorporation is triggered by economy of representation

    (67)   a.
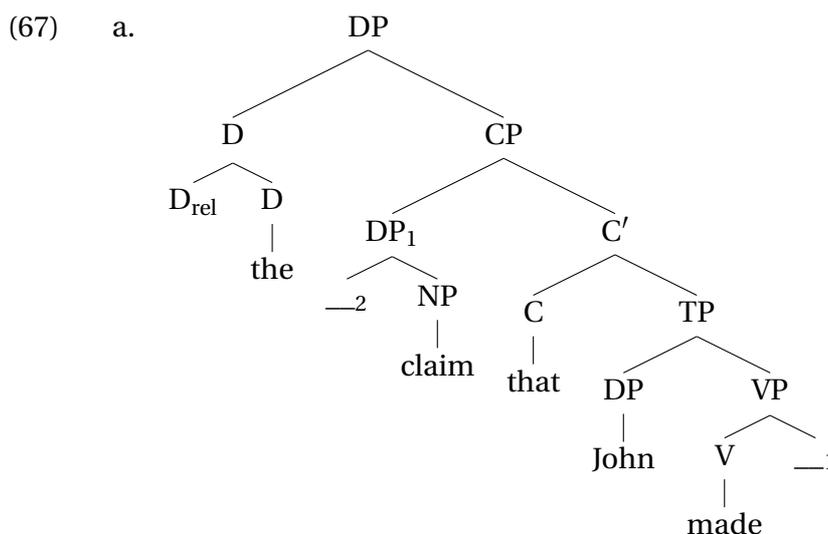
- the trigger for NP-raising in relatives (Bianchi 2000: 127f.)

  - raising of NP checks a selectional/subcategorization feature of the external D (N-feature)
  - incorporation of D$_{rel}$ in *that*-relatives makes government of the head NP possible, movement to Spec, DP in wh-relatives serves the same function

- the case problem (Bianchi 2000: 129f.)

  - being case-marked is a property of D, N° only morphologically agrees with D° by which it is governed (or in whose minimal domain it is included)
  - the case that D_{rel} is assigned inside the relative clause can be erased before the external D is merged

- a different analysis of *wh*-relatives (Bianchi 1999: 190f., Bianchi 2000: 130)

(68)

```
                      DP
                  ┌────┴──────┐
                  D          ForceP
                  │        ┌────┴──────┐
                 the     NP₂         Force′
                          │        ┌────┴──────┐
                        book     Force         TopP
                                           ┌────┴──────┐
                                         DP₁          Top′
                                       ┌──┴──┐      ┌───┴────┐
                                    which  —₂     Top        TP
                                                          ┌───┴────┐
                                                        NP         VP
                                                         │       ┌──┴──┐
                                                       John      V    —₁
                                                                 │
                                                               likes
```
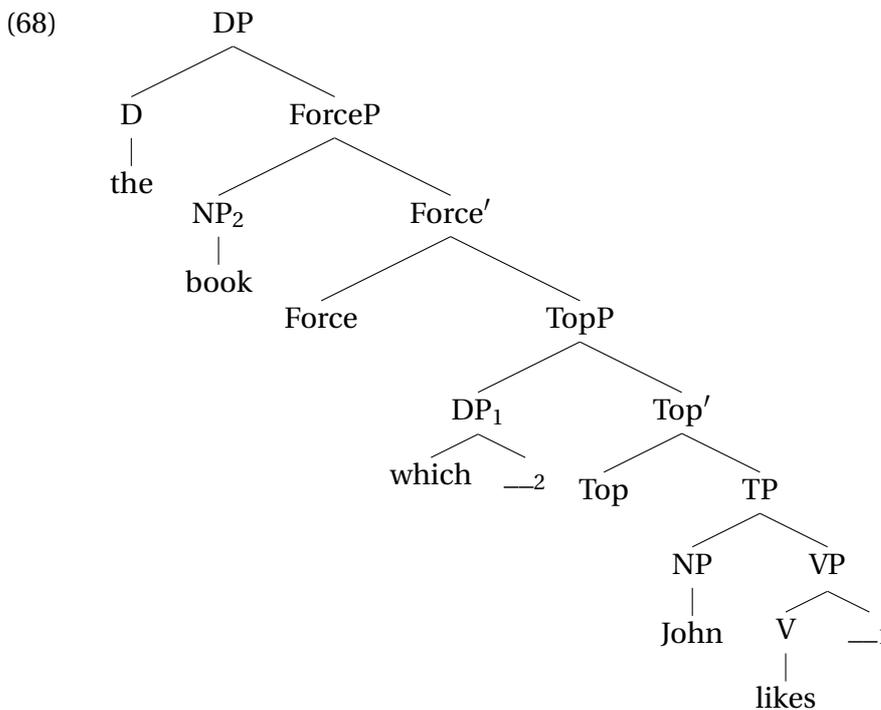
  - advantage: subextraction of NP is no longer counter-cyclic
  - advantage: traditional extraposition possible: movement of TopP
  - empirical motivation: in some languages, a topic can precede the relative pronoun (but follow the head noun), so arguably multiple specifiers of Top:

    (69)   a   könyv, Janos amit   említtet
           the book   John which mentioned
           'the book which Janos mentioned'   *Hungarian*

  - prenominal relative clauses between D and head noun (Bianchi 1999: 190f. → TopP moves to SpecForceP:

    (70)   odorare   hanc   [quam   ego habeo] pallam
           smell.IMP this.ACC which.ACC I   have.1s garment.ACC
           'Come and smell this garment which I am holding here.'   *Latin*

- the coordination problem

  - disappears under the revised constituency of wh-relatives: can be analyzed as coordination of 2 TopPs with ATB-extraction of the head-noun:

(71)

[Tree diagram:
DP
- D: the
- ForceP
  - NP₃: book
  - Force'
    - Force
    - &P
      - TopP
        - DP₂: which —₃
        - TP
          - DP: Bill
          - T'
            - T
            - VP
              - V: liked —₂
      - &'
        - &
        - TopP
          - DP₁: which —₃
          - TP
            - DP: Mary
            - T'
              - T
              - VP
                - V: disliked —₁]
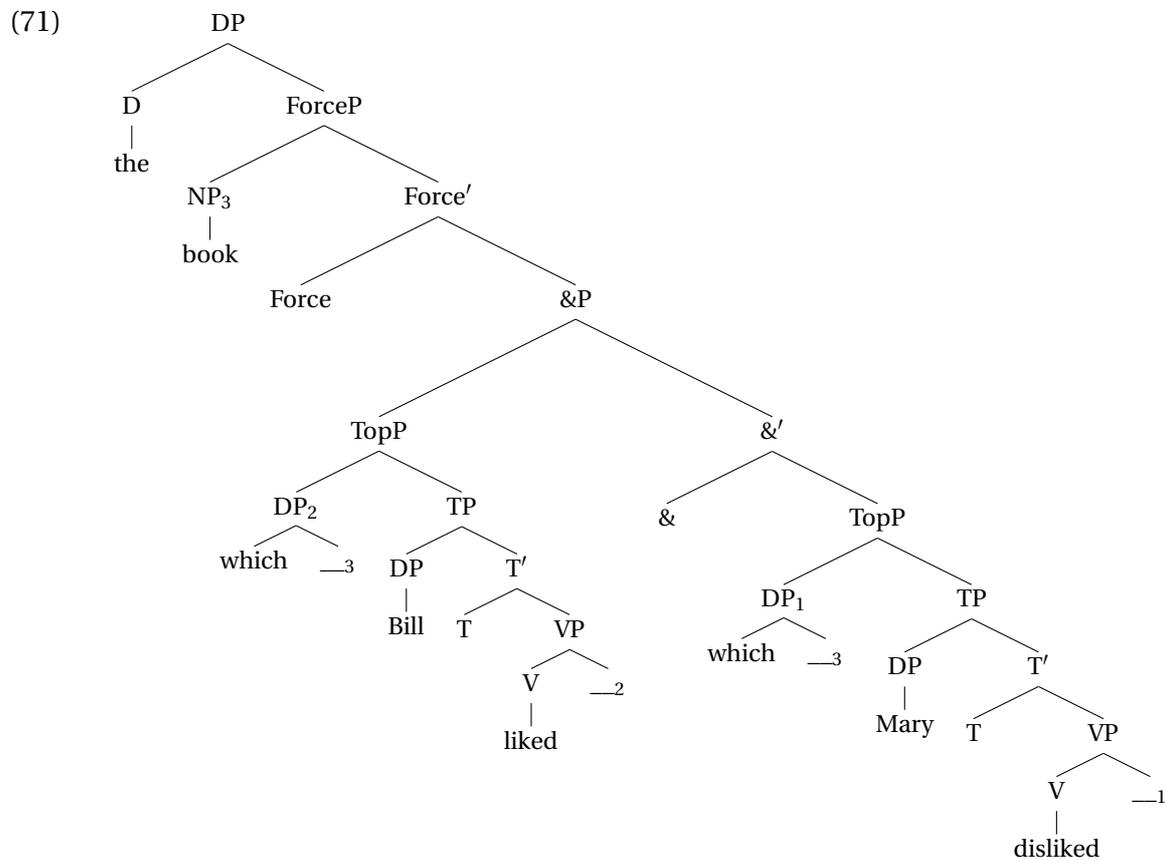
  - coordination of *that*-relatives is more problematic, she proposes a parasitic gap-style analysis of ATB as in Munn (1993) with an empty operator moving in the second conjunct:

(72)

[Tree diagram:
DP
- D: the
- &P
  - CP
    - DP₂
      - D_rel
      - NP: picture
    - C'
      - C: that
      - TP
        - DP: Bill
        - T'
          - T
          - VP
            - V: liked —₂
  - &'
    - &
    - CP
      - Op₁
      - C'
        - C: that
        - TP
          - DP: Mary
          - T'
            - T
            - VP
              - V: disliked —₁]
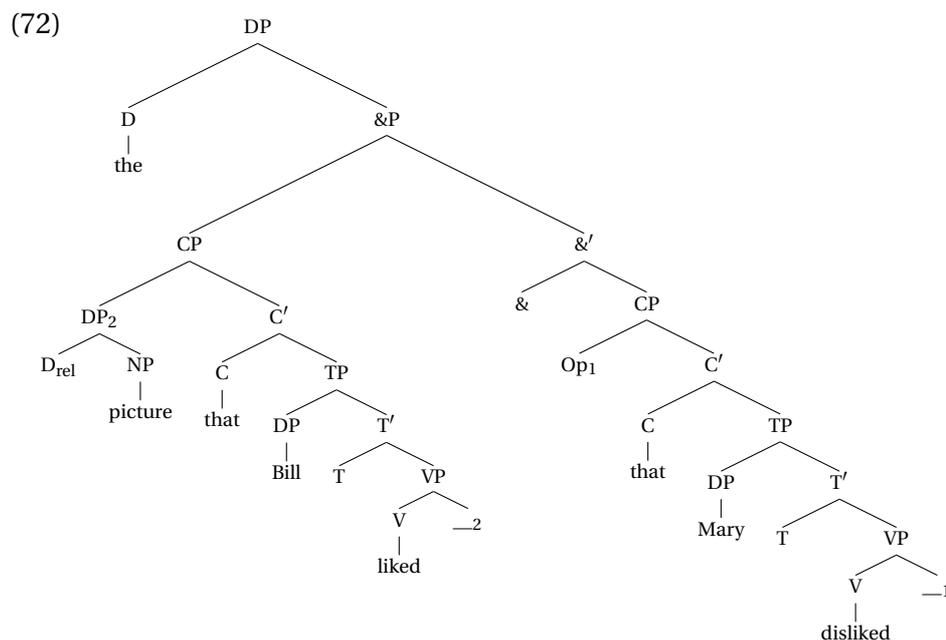
- the extraposition problem

  - the ban against stranding in intermediate position is argued to follow from the fact that the extraposed clause is headed by a silent D, which can only be licensed in its theta-position (like the silent head of [e *de livres*], see Bianchi (2000: 134):

  (73)   [A man]$_1$ came into the bar [$_{DP}$ e [$_{CP}$ __$_1$ who we knew in school]].

  - the movement of constituents across the extraposed clause is argued to be prosodically-driven as in Zubizarreta (1998); the only evidence Bianchi provides is the fact that in Italian a heavy PP can apparently follow the relative clause
  - the improper movement problem is argued not to obtain because the extraposed relative is headed by a silent D so that spec, CP counts as L-related (i.e. counts as an argument = A-position)

4.4.2   The problems

- The trigger for movement of the NP

  - it violates cyclicity: movement after the external D is merged
  - Bianchi (1999: 78f.) an AgrD head above CP (part of matrix DP) → NP moves to that head, so that the cyclicity problem can be avoided;
  - but: is there any independent evidence for this head (see also Bhatt 2002 below)? And more importantly, if what drives the movement is a selectional/subcategorization feature of D, it is unclear why this should trigger movement to an agreement projection, whose normal purpose is the check phi-features ... → but phi-feature checking cannot be at stake because that could be done between D$_{rel}$ and NP ...
  - selectional features are normally checked under sisterhood
  - See Zwart (2000) for an alternative under the raising analysis: head noun subextracts so that HN and RC are to independent constituents that can be combined by predicate modification $_1$, i.e., to derive the intersective interpretation

- Case + strong/weak adjectival inflection

  - incompatible with the Agree framework of Chomsky (2000) et seq. It seems that genuinely syntactic processes are moved to the post-syntactic component – not because they have post-syntactic properties but to repair a problematic syntactic derivation
  - if case features can be erased, how can we make sure that, say, a *wh*-phrase bears the correct morphological case; how to rule out default case after erasure? See Borsley (2001)

  (74)   Qual-em   vir-um   ama-s?
         which-ACC man-ACC love.2s
         'Which man do you love?'   *Latin*

  - PF case-concord has to be quite elaborate in that it also has to apply to various modifiers within DP
  - the PF-approach has to extend to the strong/weak inflection of the adjective as well

- coordination
  - coordination receives two different analysis (and: what is ATB?) → the ATB-analysis (for *wh*-relatives) cannot easily be replaced by a PG-analysis, unless one assumes ForceP-coordination with an empty operator moving from the complement position of *which* – but: the extractee is arguably not an operator
  - Bianchi's PG-derivation will involve a violation of the Coordinate Structure Constraint if the silent D incorporates into the external D
  - what argues against C′-coordination for *that*-relatives with ATB-mvt?

- extraposition
  - nesting: [SU – [Non-SU ... RC-Non-SU] – RC-SU], see Bianchi (2000: 136f.)
  - Objects are predicted to c-command into the stranded "extraposed" subject RC, which they do not, see Büring and Hartmann (1997)
  - extraposition is possible with definite articles in German:

    (75) Gestern stand wieder **der** Mann vor der Tür, [von dem ich dir erzählt
         yesterday stood again the man in.front the door of who I you told
         habe]
         have
         'Yesterday, the man I told you about was standing in front of the door.'

  - since D+NP do not form a constituent on the raising analysis, it is unclear how this can be derived – moving just NP (to a complement position of D) would violate cyclicity

- Locality (see also Heck 2005)
  - fronting the head noun to the spec of some category often violates the Condition on Extraction Domains (Huang 1982): extraction takes place from a derived position so that one would expect freezing effects
  - in languages like German where PPs are islands (e.g. they prohibit preposition stranding), the following relatives would be expected to be ruled out:

    (76) der [$_{ForceP}$ [Mann]$_1$ [$_{TopP}$ [$_{PP}$ mit [$_{DP}$ dem __$_1$]] ich geredet habe]]
         the man with who I talked have
         'the man with whom I spoke' *German*

  - the same holds, of course, for possessive relatives, which involve an LBC violation:

    (77) [$_{DP}$ the [$_{ForceP}$ boy$_1$ [$_{TopP}$ [$_{DP}$ [$_{DP}$ who __$_1$]'s mother]$_2$ I saw __$_2$]]]

- extraction asymmetry, see Bianchi (1999: 54ff.):

  (78) a. ?Questo è l'autore [di cui]$_2$ non conosco [$_{DP}$ i [$_{CP}$ [libri __$_2$]$_1$ che hai
          this is the.author of who not know.1s the books that have.2s
          comprato __$_1$]].
          bought
          'This is the author of whom I don't know the books you bought'
       b. *[A quale ragazzo]$_2$ non conosci [$_{DP}$ i [$_{CP}$ [libri]$_1$ che ho consigliato
          to which boy not know the books that have.1s recommended
          __$_1$ __$_2$]]
          lit.: 'To which boy don't you know the books that I recommended?' *Italian*

  - it is not obvious that subextraction from a DP moved to SpecCP is better than extraction across a DP moved to SpecCP

- prenominal APs, see Borsley (2001)

  – If, as in Kayne and Bianchi prenominal adjectives involve movement of AP to SpecC while the head noun remains in a lower position (e.g. SpecT), it is unclear how the empty D_{rel} of the head noun can be licensed:

  (79)   the $[_{CP} [_{XP}$ yellow$]_1$ C° $[_{TP} [_{DP}$ D_{rel} book] T $\_\_\__1]]$

  – Bianchi (2000: 129, fn. 10) proposes that the head noun is not a DP in this case, but it remains unclear why and how this should be possible

  – once the adjective moves to Spec, CP (to check the N-feature of the external D), it is no longer clear how to derive examples that involve D-AP-HN-RC – for instance, why does the head noun move at all in these examples?

  (80)   a.   the strange picture that Bill painted
           b.   *the strange that Bill painted (the) picture

  – perhaps such examples involve fronting of A+NP to Spec, CP:

  (81)   the $[_{CP} [_{DP}$ e $[_{XP}$ strange picture$]]_1$ that Bill painted $\_\_\_1]$

  – this derives the wrong semantics with adjectives like *best* or *only* since they have scope over the NP and the RC and thus should c-command both:

  (82)   the only/best book that John wrote

- RCs with a D-head only:

  (83)   Jeder/keiner,   der   mich kennt, hasst mich
           everyone/no.one who me   knows hates me
           'Everyone/no one who knows me hates me.'   *German*

  – a silent NP?

- Relative pronouns as determiners

  – Relative pronouns take complements their *wh*-counterpart cannot, see Aoun and Li (2003):

  (84)   a.   the $[boy_1$ who $\_\_\_1] \rightarrow$ [who boy]; but *Who boy was late?
           b.   the $[reason_1$ why $\_\_\_1] \rightarrow$ [why reason] but *Why reason did he leave?

  – Doubling of the relative pronoun in Dutch, see Boef (2012*a,b*):

  (85)   Dat is de man **die** ik denk **die** ze   geroepen hebben.
           that is the man who I   think who they called   have.PL
           'That is the man who I think they called.'   *Colloquial Dutch*

    ∗ Assuming that doubling is the result of the spellout of multiple copies, one would expect the head noun to be spelled out multiply as well as it is part of the same DP, quod non:

  (86)   *de $[_{CP} [_{DP}$ man **die**] ik denk $[_{CP} [_{DP}$ ⟨man⟩ **die**] ze geroepen hebben]]

    ∗ the facts follows directly from the HEA, but would require a number of stipulations under the HRA (or the MA, where deletion under identity would have to affect the entire chain) → relative pronoun does not behave like a determiner

– ordering of German adpositions like *mit* depends on the complexity of their complement (if complement inanimate): prepositional if complement is phrasal, postpositional if complement pronominal, see Boef (2012*a*: 137):

(87) a. Wir hatten [PP <mit> dem Anruf <*mit>] gerechnet.
          we had   with the call with   expected
          'We had expected the phone call.'
      b. Wir hatten [PP <*mit> da <mit>] gerechnet.
   we had   with   it with   expected
          'We had expected it.'

   ∗ Interrogatives respect this generalization, but the HRA does not as the adposition combineds with a phrasal complement at merge, but surfaces as post-positional (one may have to refer to PF to get the right result)

(88) a. [PP <*mit> wo   <mit>] hattet ihr nicht gerechnet?
          with   what with   had   you not   expected
          'What did you not expect?'
      b. Etwas   Schreckliches₁, [PP <*mit> [DP wo   __₁] <mit>] wir nicht
          something terrible   with   what   with   we not
          gerechnet hatten
          expected had
          'something terrible that we had not expected to happen'

→ relative pronoun does not behave like a determiner

4.5 Bhatt (2002)

• the head of the relative clause moves out of the relative CP (cf. Bianchi 1999):

(89)
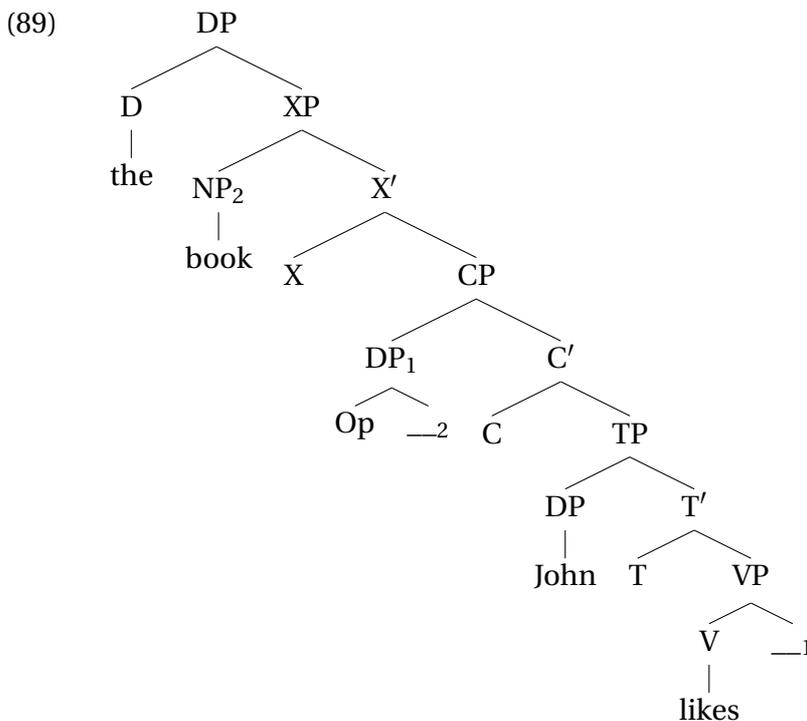
– no problem with cyclicity and constituency (coordination, extraposition)
– accounts for extraction asymmetry in (78)

- New argument for head raising 1: Argument adjunct asymmetries :

(90) a. *[Pictures of anyone$_i$] which he$_i$ displays __ prominently are likely to be attractive ones.
      b. [Pictures of anyone$_i$] [which __ put him$_i$ in a good light] are likely to be attractive ones.
      c. [Pictures on anyone$_i$'s shelf] [which he$_i$ displays __ prom.] are likely to be attractive ones.   Safir (1999: 611f.)

    – The contrast between a and b shows that the position of the trace matters. a is a case of SCO. The contrast between a and c shows the argument adjunct asymmetry (Freidin-Lebeaux Generalization), see Lebeaux (1991)
    – The argument-adjunct asymmetry can be accounted for if it is assumed that adjuncts can be merged late, i.e. after the relative clause has been built. As a consequence, the adjunct *on anyone's shelf* (and thus the quantifier *anyone*) is not represented inside the relative clause, only *pictures* is.
    – The arg-ad asymmetry is difficult to account for under the head-external analysis. Even if there were a way to capture reconstruction, e.g. by some kind of feature transmission via the empty Op, the asymmetry between a and c would be unexpected since in both cases the operator would be co-indexed with an NP containing the quantifier (Of course, this depends on when co-indexing and the reconstruction mechanism takes place; if that applies before the merger of the adjunct, the correct result could still be derived).
    – It is not so clear whether the contrast can be derived under the Matching Analysis (see below): it depends on when the operation matching the external NP with the relative-clause internal NP takes place. If this matching takes place before the late merger of the adjunct, the asymmetry can be derived. If matching takes place thereafter, it cannot since the asymmetry between the external head and the relative clause internal NP that is necessary to account for c would block the deletion/matching operation.

- New argument in favor of head raising 2: Low readings of superlative adjectives (and adjectives like *only*)

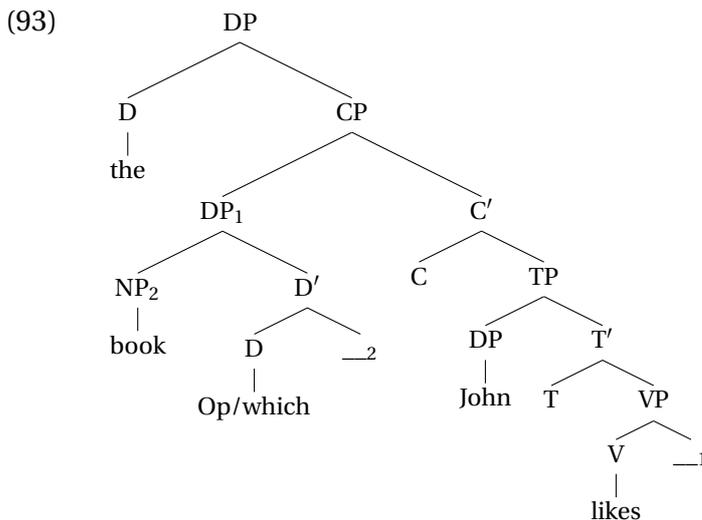(91)   the **first** book that John said that Tolstoy had written

    – ambiguous: *first* can refer to the first actual book that Tolstoy wrote (low reading) or it can refer to the first book about which John said that Tolstoy wrote it (high reading).
    – Evidence that A$'$-movement is involved comes from two facts: First, if an additional clause is involved, one can get intermediate readings (Bhatt 2002: 61); second, negation and negative verbs like *doubt* or *deny* block reconstruction, the movement is then assimilated to reconstruction of wh-quantifiers like *how many* with non-referential/amount interpretations (an assimilation that is, however, by no means obvious, cf. p. 62, fn. 11).
    – Heycock (2005: 362) shows, however, that low readings can also arise in the absence of reconstruction (if the judgment is *Siouxsie's*, we are dealing with a low reading, as the b-example shows, they occur outside of RCs [requires scare quote intonation]):

(92)   a. the **wonderful** books that Siouxsie said that Lydia had written.
        b. Siouxie was always going on about the books that Lydia had written. But I've read those **wonderful** books and they're complete rubbish.
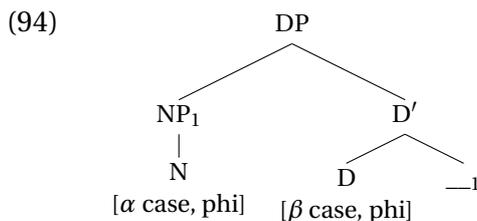
23

- The problems that remain under Bhatt's analysis
  - the problem with case and adjectival inflection
  - the locality violations (CED, PP-islands)
  - the unclear trigger for NP-raising out of the relative clause
  - the cases where the relative pronoun does not behave like a determiner

4.6   de Vries (2002)

- de Vries (2002: 123f.): at first sight very similar to Kayne (1994)

(93)

```
                    DP
            ┌────────┴────────┐
            D               CP
            │         ┌──────┴──────┐
           the       DP₁           C′
                 ┌────┴────┐    ┌───┴────┐
                NP₂       D′    C        TP
                 │      ┌──┴──┐      ┌────┴────┐
                book   D     __₂    DP        T′
                       │          │       ┌───┴───┐
                    Op/which     John    T       VP
                                             ┌───┴───┐
                                             V      __₁
                                             │
                                           likes
```

- trigger for NP-to-SpecDP movement:
  - mvt of NP to Spec of the rel pronoun takes place cyclically (at the beginning of the derivation) to check phi-features between N and D. Normally, this mvt is blocked by economy, instead, feature movement of N to D/Agree applies; NP-mvt is possible when the relative pronoun and the NP do not agree in case because head-movement/incorporation is (by assumption) incompatible with conflicting case features

(94)

```
                    DP
            ┌────────┴────────┐
          NP₁               D′
           │            ┌────┴────┐
           N            D        __₁
       [α case, phi]  [β case, phi]
```

  - The case of N: checked when formal features of N incorporate into the external D
  → cyclicity and trigger are no longer a problem

- remaining problems
  - the constituency problem for coordination and extraposition → de Vries assumes a very different analysis of extraposition (some kind of coordination)
  - the locality problems and the extraction asymmetry noted in (78) above
  - case: why no crash if D fails to check case with N?
  - two types of feature checking between D and NP with different results. the dissociation between case- and phi-feature-checking is incompatible with Agree (in its strict implementation ...). This exceptional checking mechanism does not seem to be necessary anywhere outside relativization
  - this special checking mechanism is also necessary for adjectival inflection
  - cases where the relative pronoun does not behave like a determiner

4.7 Henderson (2007)

- interesting paradox: wh-phrases modified by an RC where the restriction of the RC must reconstruct into the RC while the RC itself does not reconstruct together with the wh-phrase (Henderson 2007: 214):

  (95) a. [What headway [that John$_i$ made]]$_1$ did he$_i$ later regret [what headway]$_1$?
        b. [Which picture of himself$_j$ [that John$_j$ gave to Mary$_i$] did she$_i$ take home [which picture of himself$_j$]?

  – *headway* and *picture of himself* require a representation within the RC. The lack of Condition C suggests that the RC does not reconstruct
  – lack of reconstruction of the RC can be handled by means of late merger, see Lebeaux (1991). However, reconstruction requires the raising analysis, which involves complementation, thereby ruling out late Merger
  – the puzzle can be solved by means of sideward movement, which simultaneously allows Late Merger AND reconstruction

- derivation of a simple RC: raising + adjunction combined

  1. a head-raising relative is constructed:

     (96) [$_{CP}$ book$_1$ that John read book$_1$]

  2. sideward movement of the head in Spec, CP to an unconnected D:

     (97) [$_{CP}$ book$_1$ that John read book$_1$]   the + book$_2$
            └──────── Sideward Movement ────────↑

  3. The two constituents are combined and a chain is formed between the copies of book:

     (98) [$_{DP}$ [$_{NP}$ [$_{NP}$ book$_2$] [$_{CP}$ ~~book$_1$~~ that John read ~~book$_1$~~]]]
            └──────────┴──────────────────────────┘
                    chain formation + reduction

- derivation of the paradoxical example:

  1. a head-raising relative is constructed:

     (99) [$_{CP}$ headway$_1$ that John made headway$_1$]

  2. sideward movement of *headway* to the *wh*-determiner:

     (100) [$_{CP}$ headway$_1$ that John make headway$_1$]   what + headway$_2$
             └──────────── Sideward Movement ────────────↑

  3. merger of *what headway* as a complement of *regret*

     (101) regret + [what headway]

  4. construction of the root clause + *wh*-movement:

     (102) [what headway] did he$_i$ later regret [what headway]

5. Late Merger of the RC (adjunction to NP):

(103)   [What [headway [headway$_1$ that John$_i$ made headway$_1$]]]$_3$ did he$_i$ later regret [what headway$_2$]$_3$]?

6. Chain formation and reduction: the *wh*-movement chain is regularly reduced, leading to the deletion of *what headway* in the theta-position. Within the head-noun, there is chain formation between the external head and the two copies inside the RC, deleting both RC-internal ones

- Advantages:

  - solves constituency problem (coordination, extraposition)
  - can probably explain asymmetry in (78) if extraction takes place from the RC-external copy

- problems

  - the problem with case and adjectival inflection remains unsolved (under the standard assumption that case assignment takes place cyclically)
  - locality violations can probably not be avoided once a *wh-*/PP-relative is involved (CED, PP), i.e. the resulting chain of the HN would contain a link in a CED-violating position
  - chain reduction is probably not possible (cf. fn. p. 212, fn. 16): the head noun does not c-command into the relative clause on standard assumptions ...
  - there is a representation of *headway* and *picture of himself* in the bottom copy (argument of *regret*), but they are not licensed there ...
  - cases where the relative pronoun does not behave like a determiner

- Takahashi and Hulsey (2009: 408ff.): even complements can sometimes be merged late:

(104)   a.   *[Which corner of John$_i$'s room] was he$_i$ sitting in?
            b.   [Which corner of John$_i$'s room [that Mary repainted]] was he$_i$ sitting in?

  - since the R-expression is contained inside a complement of N, traditional late Merger of adjuncts would not help, the R-expression appears in the theta-position, c-commanded by the pronoun so that a Condition C violation should ensue.
  - they argue that late Merger is possible here because the complement of N is actually part of a CP containing a raising relative:

(105)   a.   [$_{CP}$ He was sitting in [which]]
            b.   [$_{CP}$ [$_{DP}$ which [$_{CP}$ [corner of John$_i$'s room]$_1$ that Mary repainted __$_1$]] was [$_{TP}$ he$_i$ sitting in]]

  - Henderson's data from above can be derived this way as well
  - advantage: complements of the wh-word need not be represented in the theta-position, thereby avoiding Henderson's problems
  - the contrast in (105) is contested, see Takahashi and Hulsey (2009: 409, fn. 19)

4.8 Donati & Cecchetto (2011)

- the head noun reprojects:

(106)

```
                        DP
                 ┌───────┴───────┐
                 D              NP
                 │        ┌──────┴────────┐
                the      N₂              CP
                         │         ┌──────┴──────┐
                        book      DP₁           C′
                             ┌─────┴─────┐  ┌────┴────┐
                             D          NP C         TP
                             │          │      ┌──────┴──────┐
                           which       —₂    DP           T′
                                             │        ┌────┴────┐
                                            John     T        VP
                                                          ┌─────┴─────┐
                                                          V          —₁
                                                          │
                                                         read
```
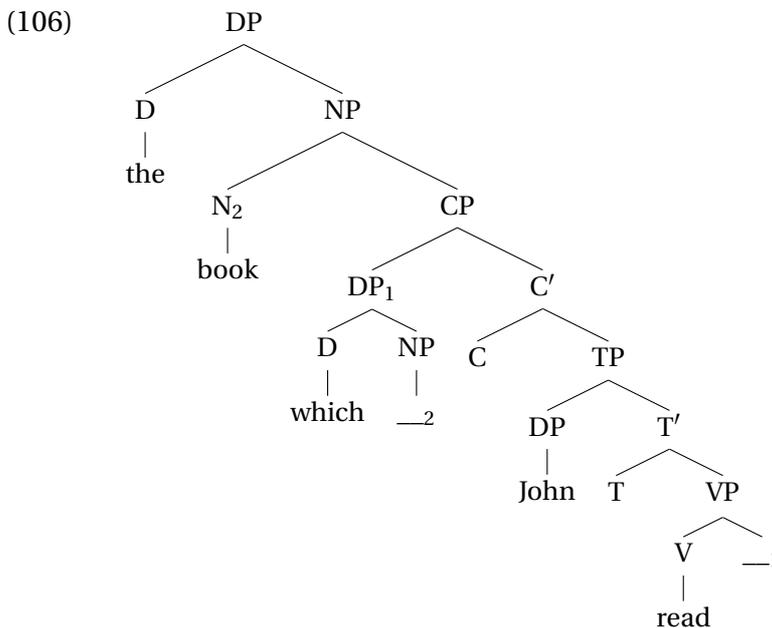
(107) **Probing algorithm**
The label of a syntactic object {α, β} is the feature(s) that act(s) as a probe of the merging operation creating {α, β} (Cecchetto and Donati 2010: 245)

- probing algorithm applies to internal and external Merge
- every lexical item is endowed with a feature, the edge feature, that forces the lexical item to merge with other material, viz. the categorial feature
- → any time a lexical item is merged, it qualifies as a probe by virtue of its edge feature → activates the probing algorithm, and its categorial feature can provide the label
- system derives two empirical generalizations: the target of movement ususally projects and a lexical item (a head) projects when it is merged with a complement XP
- labeling conflicts arise when there is more than one probe involved in a merge operation, i.e. two heads, e.g., Free relatives:

(108)

```
              ??
        ┌─────┴─────┐
        D          C′
        │      ┌────┴────┐
      what    C         TP
                         │
                    you read
```
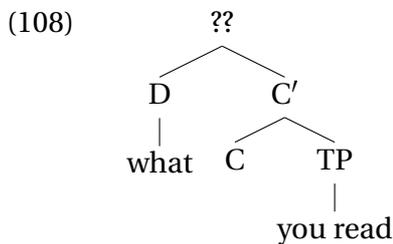
- structure can be labeled in two ways: CP (indirect wh-CP) or DP (free relative):

(109) a. I read [DP what you read].
       b. I wonder [CP what you read].

- no ambiguity when phrasal movement is involved: phrases do not activate the probing algorithm → CP = the only possibility:

(110) I wonder [CP which book you read]

- trigger for N-raising (*that*- and *wh*-relatives): reprojection triggered by the selectional features of D in the numeration (note that selection under external Merge also involves an element from the numeration and a syntactic object in the workspace)

  – selection as the trigger arguably accounts why no relabeling happens with wh-movement or A-movement

- *that*-relatives involve stranding of a D-element which in some languages is realized as a resumptive pronoun (alternatively, *that* is reanalyzed as a relative pronoun):

(111)

```
                    DP
            ┌────────┴────────┐
            D               NP
            │         ┌──────┴──────┐
           the       N₁            CP
                      │         ╱───────╲
                    book    that you saw D b̶o̶o̶k̶₁
```
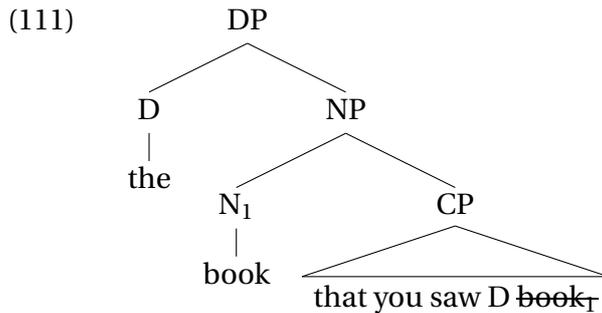
  – given that N-raising is driven by selection by D (i.e. no *wh*-features are involved unlike in *wh*-relatives), it is not fully clear whether N makes a stopover at the left periphery of the RC ... – locality?

- advantages

  – C-selectional properties of D are respected: D is merged with an NP
  – no constituency problem for extraposition and coordination
  – no cyclicity problem[2]
  – NP and CP are two independent constituents so that one can apply predicate modification to get the intersective interpretation

---

[2]Strict Cycle Condition:
No operation can apply to a cyclic domain α in such a way as to affect solely a proper sub-domain of α that is also cyclic (adapted from Chomsky 1973).

- what about complex heads?

  (112)   the [book about Obama] [which you bought]?

    – given the probing algorithm, the complex NP cannot relabel the structure (recall that this is restricted to heads)
    – proposal: modifiers of the head noun must be late-merged!
    – evidence proform can replace determiner+noun without replacing the alleged complement of the noun:

      (113)   a.   Ho   visto [il   padre di Gianni]
                   have.1s seen the father of John
                   'I saw the father of John.'
              b.   Ho   visto **quello**   di Gianni.
                   have.1s seen the.one of John
                   'I saw John's.'   *Italian*

    – no evidence for right-dislocation of the PP
    – but which node does it target? if it targets NP, the PP should follow the RC, which it does not, but a phrase cannot be adjoined to N ...
    – the extraction asymmetry in (78) arguably cannot be derived because extraction from the head would take place from/would involve a late-merged constituent; overt movement after late Merger is logically impossible (depending on when late Merger takes place). Donati and Cecchetto (2011: 538, fn. 8) use late merger as an explanation for the inextractability of a modifier of the RC-head, but this clashes with Bianchi's data above and data like the following:

      (114)   [Über welchen Politiker]$_1$ hast du   schon mal ein [Buch __$_1$] gelesen, [das
              about which   politician have you once   a   book   read   which
              dir   gefallen hat]?
              you.DAT pleased has
              'Which politician have you ever read a book about which you liked?

    – if late merger can take place as soon as its attachment site becomes available, then the late merger approach could in fact derive the asymmetry in (78)
    – however, if all complements are merged late, the asymmetry in (90) no longer follows, there should never be any Principle C effects
    – the facts that all complements of N are merged late, implies that reconstruction involving such elements CANNOT be derived by this approach, only simple SCO-cases and idiom cases can be captured:

      (115)   a.   *the professor that he always praises   SCO
              b.   the headway we made was fantastic

- other problems that remain

    – *that*-relatives: resumption is often insensitive to islands
    – *that*-relatives: locality of the movement of N?
    – case, strong/weak adjectival inflection (the authors claim that the presence of 2 DPs is sufficient, it remains unclear how transmission of the internal case onto the raised N can be avoided given cyclicity)
    – locality violations (CED, PP), at least with *wh*-relatives
    – the cases where the pronoun does not behave like a determiner

5 The Matching Analysis

- origins: Lees (1960), Lees (1961), Chomsky (1965)
- recently revived in Munn (1994), Sauerland (1998), Sauerland (2003), Cresti (2000), Citko (2001), Salzmann (2006)
    - the relative operator takes an instance of the external head as its complement
    - this NP is PF-deleted under identity with the external head → there is no movement relationship between the external head and its relative-clause internal representation

    (116) a. $[_{DP}$ D $[_{NP}$ $[_{NP}$ N $]$ $[_{CP}$ Op$_1$ ... V $\_\_\_1$ $]]]$ HEA
           b. $[_{DP}$ D $[_{NP}$ $[_{NP}$ N $]$ $[_{CP}$ $[_{DP}$ Op ~~NP~~$]_1$ ... V $\_\_\_1$ $]]]$ MA

5.1 Motivation: non-reconstruction

5.1.1 Principle C

- While reconstruction for idioms, anaphor and variable binding is systematic in both wh-movement and relative clauses, there tends to be an asymmetry with respect to Principle C: Condition C effects are often judged to be absent in relativization, cf. Munn (1994), Sauerland (1998), Bianchi (1999), Citko (2001), Bhatt (2002), Salzmann (2006):

    (117) Principle C in relativization
           a. The [picture of John$_i$] which he$_i$ saw $\_\_$ in the paper is very flattering.
           b. I have a [report on Bob's$_i$ division] he$_i$ won't like $\_\_$.
           c. The [pictures of Marsden$_i$] which he$_i$ displays $\_\_$ prominently are generally the attractive ones.

    (118) Principle C in *wh*-movement
           a. *[Which picture of John$_i$]$_1$ did he$_i$ see $\_\_\_1$ in the paper?
           b. *[Which picture of Marsden$_i$]$_1$ does he$_i$ display $\_\_\_1$ prominently?
           c. *[Which report on Bob's$_i$ division]$_1$ will he$_i$ not like $\_\_\_1$?

- but care is needed: there are also claims in the literature that reconstruction for Principle C is not exceptionless with *wh*-movement either (even with R-expressions contained in arguments), cf. Heycock (1995), Fox (1999), Safir (1999), Fischer (2002), Fischer (2004):

    (119) a. [Which biography of Picasso$_i$]$_1$ do you think he$_i$ wants to read $\_\_\_1$?
           b. [Which witness's attack on Lee$_i$]$_1$ did he$_i$ try to get $\_\_\_1$ expunged from the trial records?
           c. [Whose criticism of Lee$_i$]$_1$ did he$_i$ choose to ignore $\_\_\_1$?
           d. [Whose criticism of Lee's$_i$ physical fitness]$_1$ did he$_i$ use $\_\_\_1$ when he applied to NASA for space training?
           e. [Whose allegation that Lee$_i$ was less than truthful]$_1$ did he$_i$ refute $\_\_\_1$ vehemently?
           f. [Most articles about Mary$_i$]$_1$ I am sure she$_i$ $\_\_\_1$ hates.
           g. [That Ed$_i$ was under surveillance]$_1$ he$_i$ never realized $\_\_\_1$.
           h. [That John$_i$ had seen the movie]$_1$ he$_i$ never admitted $\_\_\_1$.
           i. [Which picture of John$_i$]$_1$ does he$_i$ like best $\_\_\_1$?

    - Safir (1999) and Henderson (2007) argue that there is no relevant difference between *wh*-movement and relativization with respect to Principle C (even though they concede that they are often felt less strongly with relatives)

- but: suppose that there is no reconstruction for Principle C only in relatives, what are the implications?

    – the facts are unproblematic under the head external analysis where there is no representation of the external head inside the relative clause

    – under the head-raising analysis, non-reconstruction is unexpected because there would be a representation of the external head inside the relative clause:

    (120) a. The [picture of John$_i$] which he$_i$ saw __ in the paper is very flattering. →
           b. The [~~picture of John$_i$~~] [$_{CP}$ which [~~picture of John$_i$~~] he$_i$ saw [x picture of John$_i$] in the paper is very flattering].

    – assuming that unlike in *wh*-movement reconstruction is simply optional in relatives (unless forced by binding/idiom interpretation) is not sufficient because of Principle C effects with quantifiers as in (90) above where an RC-internal copy is needed (*Pictures of anyone$_i$ which he$_i$ displays __ prominently ...*)

- Without further qualifications, the same problem obtains under the Matching Analysis. Two types of solutions have been proposed under the matching analysis:

    – Munn (1994), Citko (2001): the relative clause-internal copy can be deleted since there is still a copy inside the external head (deletion is recoverable; note that for wh-movement the Preference Principle must be taken to be obligatory so that the restriction is retained only in the lower copy); → reconstruction as such is optional

    (121) The [picture of John$_i$] [$_{CP}$ which [~~picture of John$_i$~~] he$_i$ saw [x ~~picture of John$_i$~~] in the paper is very flattering].

    – Sauerland (1998), Salzmann (2006): vehicle change: the matching operation is analyzed as an ellipsis operation. Consequently, properties of ellipsis are expected. One of these are mismatches between R-expressions and pronouns (a vehicle change effect, cf. Fiengo and May (1994) → pronoun can count as identical to an R-expression:

    (122) a. *John likes Mary$_i$ and she$_i$ does (~~like her$_i$~~), too.
           b. John likes Mary$_i$, and she$_i$ knows that I do (~~like her$_i$~~), too.

    → the same mismatch is supposed to explain the absence of Condition C:

    (123) The [picture of John$_i$] [$_{CP}$ which [~~picture of him$_i$~~] he$_i$ saw [x picture of **him**$_i$] in the paper is very flattering].

    – such sentences are thus equivalent to

    (124) He$_i$ saw the picture of him$_i$.

    – the vehicle change solution has advantages because it gives us a handle on Principle C effects with quantifiers as in (90): according to Safir (1999: 605ff.), VC of quantifiers is impossible: a should get the interpretation of b under vehicle change, which is not the case (the set of chorus girls recommended can be different in a but not in b)

    (125) a. Jones recommended several chorus girls to the producer and then Smith did too.
           b. Jones recommended several chorus girls to the producer and then Smith recommended **them** to him too.

5.1.2 Obligatory non-reconstruction

- In some cases, reconstruction must be blocked because an idiom chunk or an anaphor is only licensed inside the external head but not inside the relative clause, see Bhatt (2002: 47, fn. 1), Heck (2005: 14, ex. 53), Salzmann (2006: 40ff., 117ff.) (for Dutch data, see Boef 2012*a*: 139):

(126) a. John **pulled the [strings]** that __ got Bill the job.
       b. Gloria: He$_i$'s just got a [confident air about himself$_i$] that I think __ matches Leo's.

<div align="right">allmychildren.about.com/cs/recaps/a/bl20040312d.htm</div>

(127) a. Er **schwingt** [**große Reden**], die   keiner __ hören will.
           he swings   grand speeches which no one   hear   wants
           'He gives grand speeches no one wants to hear.'
       b. Schicken Sie$_i$ uns ein [Foto   von sich$_i$], das   __ beweist, dass Sie ein
           send   you us a picture of   self   which   proves that you a
           wahrer Ferrari-Anhänger sind.
           true   Ferrari-fan   are
           'Send us a picture of yourself which proves that you are a true Ferrari-fan.'

<div align="right">www.vodafone-racing.de/pda/f_fancontest.html</div>

- A similar argument is presented in Citko (2001: 134ff.) with respect to NPI-licensing: The following example would be predicted to be ungrammatical if the external head were interpreted within the relative clause because another quantifier would intervene between the negative quantifier and the NPI (thereby violating the Immediate Scope Constraint by Linebarger 1987: 338):

(128)   John didn't give a red cent to *every/✓ charity.

<div align="right">(at LF: *not > every charity > a red cent)</div>

(129) a. Nobody found [a picture of *anybody*] that everybody liked
       b. *Nobody found [a ~~picture of *anybody*~~] that everybody liked [picture of *anybody*]

    – perhaps, NPI-licensing is sensitive to surface structure?
    – Citko (2001), Salzmann (2006) account for these cases of obligatory non-reconstruction by assuming that the relative-clause internal copy can be deleted under identity with the external head:

    (130)   John pulled [the strings] [$_{CP}$ [Op ~~strings~~] that [x ~~strings~~] got him the job]

    – in Salzmann (2006) it is assumed that exceptional deletion under identity is limited to elements with a *positive licensing requirement* (= being dependent on another element), i.e. anaphors, bound pronouns, idiomatic elements, but ruled out for elements with a *negative licensing requirement* such as R-expressions → the Condition C effects with quantifiers in (90) can still be captured
    – Since the NPI in (129) is in principle licensed in the bottom copy (it is c-commanded by *nobody*), exceptional deletion as in Salzmann (2006) is not a possibility. Instead, vehicle change can come to the rescue as ellipsis allows mismatches beween *some* and *any*: *John drank some milk, but Bill didn't <drink any milk>* → the bottom copy of (129) will be *a picture of somebody*

<div align="center">32</div>

5.1.3 No reconstruction under extraposition

- Hulsey and Sauerland (2006: 114ff.) no reconstruction under extraposition:

  (131)   a. *I was shocked by the advantage yesterday [that she took of her mother].

             b. *I saw the [picture of himself$_i$] yesterday [that John$_i$ liked __].

- according to the authors, raising is not a possibility because
  - A under a Kaynian relative structure with the head in SpecC, extraposition (in terms of rightward movement) would require C′-movement, which is generally taken to be impossible (the problem does not arise under Bianchi's or Bhatt's structure where the RC does form a phrasal constituent to the exclusion of the HN)
  - B if extraposition is instead handled as an instance of late merger as in Fox and Nissenbaum (1999) where the relative clause adjoins to the QR-ed object, a raising analysis is ruled out because the CP is a complement so that it has to be merged cyclically
  - – instead they argue that the Matching Analysis is the only possibility here (see Henderson 2007: 215 for a different explanation of (131) on the basis of the raising analysis)

- but:
  - – It is not clear that the Matching Analysis cannot handle reconstruction, cf. the next subsection; once reconstruction is a possibility under the Matching Analysis, the absence of reconstruction in (131) is unexpected
  - – In German, reconstruction seems to be possible in extraposed relatives:

    (132)   a. Die "Zeit" sollte häufiger über die **Fortschritte** berichten, [die

                 the Zeit should more.often about the progresses report which

                 unsere Jungs **gemacht** haben].

                 our boys made have

                 'The "Zeit" (newspaper) should cover more often the progress our boys have made.'

               b. weil er sich über den **Streich** ärgerte, [den wir ihm

                 because he self about the trick was annoyed which we he.DAT

                 gespielt haben]

                 played have.PL

                 'because he was annoyed because of the trick we played on him' *German*
  - – see Heycock (2012) for data showing that extraposition does not always block reconstruction in English either (at least not reconstruction of idioms, perhaps not even of anaphors).

5.2 The matching analysis and reconstruction

- The question now arises whether the Matching Analysis can also be used to account for reconstruction into the relative clause (idioms, anaphors, bound variables, superlative adjectives).
- Sauerland (1998) and Bhatt (2002) claim that it cannot because there remains a copy inside the external head that must also be interpreted, but the elements in question either do not receive the correct interpretation (idioms) or are simply not licensed there (anaphors, bound variables; ex from Bhatt 2002: 52):

  (133)   John generally has an [opinon of **his**$_i$ book] [$_{CP}$ Op ~~opinon of his$_i$ book~~] that every novelist$_i$ respects [x opinon of his$_i$ book]]

- Citko (2001) and Salzmann (2006) argue however, that this can be avoided if it is assumed that the external head can be deleted under identity with the relative clause internal copy:

(134)   John generally has an [~~opinon of his$_i$ book~~] [$_{CP}$ Op ~~opinon of his$_i$ book~~] that every novelist$_i$ respects [x opinon of his$_i$ book]]

5.3   The correlation cases

- A putative argument for the raising analysis: it has been claimed that Condition C effects re-emerge once reconstruction (and thus head-raising) is forced for variable binding, idiom interpretation or scope, cf. Munn (1994: 402, ex. 15), Heycock (1995), Romero (1998: 90ff.), Fox (1999: 168ff.), Citko (2001); the following are from Sauerland (2003: 213ff.):

(135)   a. *The [letters by John$_i$ to her$_j$] that he$_i$ told every girl$_j$ to burn __ were published.
        b. *the [picture of Bill$_i$] that he$_i$ took __
        c. *I visited all [the relatives of Mary's$_i$] that she$_i$ said there are __ left.
        d. *The [headway on Mary's$_i$ project] that she$_i$ had made __ pleased the boss.
        e. *The [many books for Gina's$_i$ vet school] that she$_i$ needs __ will be expensive.

  – but see Salzmann (2006: 35) for arguments that most of these examples are ungrammatical for independent reasons: for b see below on implicit PROs, for c, see Safir (1999: 613, note 22), for d–e: the constituency of the head is simply wrong: PPs are not complements of the noun, head noun consists of 2 constituents :

  (136)   a. ??Much headway on this project was made.
          b. Much headway was made on this project.

  – Heck (2005): no Condition C effects in similar German examples:

  (137)   a. das [Buch von Peter$_i$ über ihre$_j$ Vergangenheit], das er$_i$ jeder
             the book of Peter about her past which he every.DAT
             Schauspielerin$_j$ __ sandte
             actress   sent
             lit.: 'the book by Peter$_i$ about her$_j$ past that he$_i$ sent every actress$_j$'
          b. der [Streit über Marias Kritik an Peter$_i$], den er$_i$ __ vom Zaun
             the fight about Mary's criticism of Peter which he off.the fence
             gebrochen hat
             broken has
             lit.: 'the fight about Mary's criticism of Peter$_i$ that he$_i$ started'

  – If these facts are correct, this may support a matching analysis with Vehicle Change as in Salzmann (2006); note also that in approaches where lack of Principle C effects is considered a general property of A'-chains (Safir 1999, Henderson 2007), the German facts would be expected (it remains to be explained how, on such approaches, a general vehicle change mechanism can be implemented given that normally, vehicle change is limited to ellipsis contexts)
  – see Heycock (2012) for more evidence that reconstruction effects can be dissociated

5.4 Conflicting requirements

- In some cases it seems that the external head (or at least parts of it) must be interpreted in more than one position, i.e. both in the matrix clause as well as relative clause-internally

    (138) a. I will never forget Somi, his sunken eyes, and the way he crawled into my arms as he$_i$ showed me the [picture of himself$_i$] [$_{CP}$ that one of my fellow students took __]. www.textbooksforafrica.org/19438.html?sessionidkey=sessionidval*

    b. Peyton$_i$ bekommt per Email ein Foto von sich$_i$, das Derek gemacht hat
    P. receives by e-mail a picture of self which D. taken has
    'Peyton receives by mail a picture of himself that Derek took.'
    http://www.myfanbase.de/one-tree-hill/episodenguide/?eid=2596, 28.9.2012

    - interpreting both copies is problematic because the anaphor is not licensed RC-internally while the idiom is (probably) not licensed inside the external head
    - perhaps distributed deletion, which is compatible with HRA and MA?
    - the anaphor in the bottom copy could be vehicle-changed to *him → picture of him* so that the lower copy could be retained in full, but is the external head licensed in its surface position?

5.5 Pros and Cons

- Pros:
    - no problem with case/adjectival inflection of the external head
    - it has the right constituency for coordination and extraposition
    - it avoids locality violations (CED, PP-islands)
    - the asymmetry in (78) follows: only in the degraded case is there extraction from CP
    - no problematic movement of the head noun
    - can capture head-internal RCs if it is assumed that the internal head can also be privileged at PF (not just at LF)

- Cons:
    - the cases where the relative pronoun does not behave like a determiner
    - the nature of the matching operation needs to be fleshed out: when does it apply? What kind of identity is at stake (morphosyntactic, semantic?) → what is certainly necessary is that certain morphosyntactic mismatches (case, adjectival inflection) are tolerated, otherwise, the Matching Analysis faces the same problem as the Raising Analysis.

- reconstruction: with vehicle change and optional deletion of internal and external copies:
    - can handle regular reconstruction
    - can handle non-reconstruction
    - can perhaps handle conflicting requirements
    - can handle non-correlation cases (variable binding but no Condition C)
    - the lack of reconstruction under extraposition (131): extraposition involves late Merger and late Merger *follows* Matching, i.e. NP-deletion
    - argument-adjunct asymmetry in (90): late Merger must *follow* NP matching
    - the paradoxical data in (95): late merger has to *precede* Matching

5.6 One or two structures for relativization?

- Bhatt (2002), Sauerland (2003): Because there are cases of reconstruction and non-reconstruction, both the Head Raising as well as the Matching Analysis (without reconstruction)
- Citko (2001), Salzmann (2006), Henderson (2007): one type of derivation is sufficient

5.7 Overview

theory / feature	HEA	Kayne	Bianchi	de Vries	Bhatt	Henderson	D&C	MA (del under ident + VC)
reconstruction normal (37), (38), (39), (40)	−	+	+	+	+	+	+/−	+
non-reconstruction (117), (126), (127), (129)	+	−	−	−	−	−	+/−	+
reconstruction confl. requirements (138)	−	−	−	−	−	−	−	+/−
non-reconstruction under extrap. (131)	+		−		−	−	−	+/−
reconstruction under late Merger (95)	−	−	−	−	−	+	−	+/−
argument-adjunct asymmetry (90)	−	+	+	+	+	+	−	+/−
head-internal RCs (34)	−	+	+	+	+	+	+	+
selection effect (35), (36)	−	+	+	+	+	+	+	+
RPs unlike determiners (84), (85), (87)	+	−	−	−	−	−	−	−
constituency (coordination/extraposition)	+	−	+/−	−	+	+	+	+
extraction asymmetry (78)	+	−	−	−	+	+	+/−	+
obeys cyclicity	+	−	+/−	+	+	+	+	+
good trigger NP-mvt		+/−	+/−	+/−	+/−	+/−	+/−	
respects locality (CED, PP)	+	−	−	−	−	−	−	+
correct case	+	−	−	+/−	−	−	−	+

6 The relevance of reconstruction

- Recent work has used reconstruction effects as the main diagnostic to determine the best analysis of relative clauses, however, there are reasons to be skeptical:
- reconstruction for binding is generally often unreliable:

  A in some languages (e.g. English), anaphors can be bound logophorically, sometimes in the absence of c-command, see Pollard and Sag (1992: 267, 278)

  (139) a. $Bill_i$ remembered that the Times hat printed a picture of $himself_i$ in the Sunday edition.

   b. The picture of $himself_i$ in Newsweek dominated $John_i$'s thoughts.

   → what looks like reconstruction for binding may be logophoric binding without c-command

  B NPs often have implicit PROs (corresonding to the external argument of the noun), especially semi-idiomatic ones (the PRO is postulated on the basis of the ungrammaticality of the pronoun), see Cecchetto (2005) and Salzmann (2006: 24-28) for discussion:

  (140) a. $John_i$ took [a PRO_i picture of *him_i/$himself_i$]

   b. $John_i$ has [a PRO_i favorable opinion of *him_i/$himself_i$]

   c. $John_i$ spread [a PRO_i rumor about *him_i/$himself_i$]

   → this will lead to binding/a Condition C violation without reconstruction:

  (141) the [PRO_i picture of *$John_i$/✓$himself_i$] [that he_i took __]

   → to rule out the possibility of a coreferential PRO (with non-idiomatic cases), one either has to use nouns where the PRO will be disjunct from the anaphor, e.g. a noun like 'rumor', or one resorts to unaccusative nouns (the following examples involve Principle C, but the same holds for Principle A):

(142) Principle C in relatives

 a. die [Nachforschungen über $Peter_i$], die er_i mir lieber __ verschwiegen
    the investigations   about Peter which he me prefer   concealed
    hätte
    had.SUBJ
    'the investigations about $Peter_i$ that he_i would have rather concealed from me'

 b. der [Wesenszug von $Peter_i$], auf den er_i am meisten __ stolz ist
    the trait   of Peter   on which he the most   proud is
    'the trait of $Peter_i$ he_i is most proud of'   *German*

(143) Principle C in *wh*-movement

 a. *[Welche Nachforschungen über $Peter_i$]$_1$ hätte er_i dir   lieber   __$_1$
    which investigations   about Peter had.SUBJ he you.DAT preferred
    verschwiegen?
    concealed
    lit.: 'Which investigations about $Peter_i$ would he_i have preferred to conceal from you?'

 b. *[Welchen Wesenszug von $Peter_i$]$_1$ kannte er_i noch nicht __$_1$?
    which   trait   of Peter knew he still not
    lit.: 'Which trait of $Peter_i$ didn't he_i know yet?'   *German*

- Ordinary pronouns can pick up idiomatic meaning, see, Gazdar (1985: 238), why shouldn't relative pronouns be able to do so? (or does this suggest that ordinary personal pronouns have a silent NP complement, see Elbourne 2001, like relative pronouns under matching/raising?):

  (144) a. We had expected that excellent care would be taken of the orphants, and **it** was taken. → the care [which was taken ...]
         b. I said close tabs would be kept on Sandy, but **they** weren't. → the tabs [which were kept ...]

- reconstruction in relatives, especially for variable binding and scope (but to some extent for binding), is best with equatives (identity sentences), but often degraded in subject-predicate configurations, according to Cecchetto (2005: 19):

  (145) a. [The one accident of his$_i$] [that everyone$_i$ remembers __] is the one that affected him$_i$ first].
         b. *[the one accident of his$_i$] [that everyone$_i$ remembers __] affected him$_i$ first.

  (146) a. I   dieci aerei   che ogni tecnico   ha controllato per ultimi sono quelli
             the ten   planes that every technician has checked   as last   are those
             che hanno rischiato di cadere per primi
             that have   risked   to fall.INF as first
             'The ten planes that every technician has checked last are those that were at risk to crash first'
         b. ??I   dieci aerei   che ogni tecnico   ha controllato per ultimi hanno
             the ten   planes that every technician has checked   as last   have
             rischiato di cadere per primi
             risked   to fall.INF as first
             'The ten planes that every technician has checked last were at risk to crash first'

  – counterexamples in Heycock (2012):

    (147) a. I noticed the [portrait of herself$_i$] that every student$_i$ had pinned up on the wall.
           b. the [books about his$_i$ exploits] that every candidate$_i$ brougth with him annoyed the interviewers.

- the raising analysis does not derive the correct interpretation for variable binding, Hulsey and Sauerland (2006: 121):

  (148) The [picture of himself$_i$] that everybody$_i$ sent in annoyed the teacher.

  – If the external head is reconstructed into the relative clause, we get the interpretation that there is a unique picture that everybody sent (i.e. probably the same picture with all individuals on it), but this is intuitively not the most salient interpretation; rather the sentence is normally interpreted such that every individual sent in a different picture, the one showing himself; this implies that the universal quantifier must have scope over the determiner → this seems to suggest that it QRs out of the relative clause
  – QR out of the relative clause may be independently necessary for cases where it additionally binds a pronoun in the matrix clause:

    (149) The one accident of his$_i$ that everyone$_i$ remembers is the one that affected him$_i$ first.

  – Alternative explanations are found in Sharvit (1999), Cecchetto (2005)

- Reconstruction in the absence of a lower copy, see Boef (2012*a*: 143): reconstruction of the fronted constituent leads to an ill-formed result (perhaps because *do*-support is restricted in Dutch?):

(150) a. [Elkaar$_i$ helpen] dat doen ze$_i$ hier niet __.
          each other help.INF that do.PL they her niet
          'Help each other, they don't do that here.'
    b. *Ze$_i$ doen hier niet [elkaar$_i$ helpen].
          They do.PL here not each other help.INF
          'They don't help each other here.'   *Dutch*

- Finally, reconstruction is also found in resumptive relatives (e.g. Salzmann 2006, Rouveret 2008): If resumption involves base-generation, we need a different mechanism for reconstruction anyway

(151) de [Abschnitt vo sim$_i$ Läbe], won i < d Bhauptig, dass jede Politiker$_i$ stolz
      the period   of his life C I the claim   that every politician proud
      druf   isch > nöd cha   glaube
      there.on is   not can.1s believe
      lit.: 'the period of his$_i$ life that I cannot believe the claim that every politician$_i$ is proud of'   *Swiss German*

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