

On relative clause extraposition in Italian (vs. English)

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FOR1783 – Relativsätze Workshop
University of Frankfurt, May 2017

Roadmap

- A “late merge” approach to RC extraposition in English (Fox & Johnson 2016)
- Italian: Extraposition only from weak non-presuppositional NPs
- A base-generation approach (with rightward adjunction)
- *Intermezzo*: Adjunction and labeling
- Extraposition from strong NPs in English: a base-generation approach (without rightward adjunction)
- Comparison of the two approaches

Restrictive RC extraposition raises a problem for the syntax-semantics interface: the nominal HEAD and the RC appear in non-adjacent positions (for general discussion, see de Vries 2002, 233-303 and Baltin 2005):

- (1) I saw [a man] yesterday [whom I knew in high school].
- ⇒ Derivational approaches (since Guéron & May 1984, (14)): At some point of the derivation, the HEAD and the extraposed RC are (re)united.
- ⇒ Non-derivational approach (e.g. Culicover & Rochemont 1990, Koster 2000, de Vries 2002): The extraposed RC does not form a constituent with the HEAD at any step of the derivation.

Some properties to be explained

- a) RC extraposition is impossible when the HEAD is an idiom chunk and the idiomatic verb is contained in the RC (Hulsey & Sauerland 2006, (8)-(10)):
- (2) a. Mary praised the *headway* [that John *made* t]. (idiomatic HEAD)
b. *Mary praised [the *headway*] last year [that John *made* t].
- (3) a. Mary praised the pot roast [that John *made* t]. (non-idiomatic HEAD)
b. Mary praised [the pot roast] yesterday [that John *made* t].
- b) RC extraposition is impossible when the HEAD contains an anaphor that is bound by an antecedent internal to the RC (Hulsey & Sauerland 2006, (12)-(13)):
- (4) a. I saw the picture of himself_i [that John_i liked t].
b. *I saw [the picture of himself_i] yesterday [that John_i liked t].
- ⇒ *Hulsey & Sauerland's generalization*: Extraposition is incompatible with full reconstruction of the HEAD in the relative clause.

c) RC extraposition forces the HEAD to take scope above the selecting verb: in (5b), *anything* cannot be licensed in the scope of the intensional verb (Fox & Nissenbaum 1999, (5a-b)).

(5) a. I looked very intensely for [anything [that would help me with my thesis]].

b. * I looked for [anything] very intensely [that would help me with my thesis].

d) Extraposition licenses Antecedent-Contained Deletion (Fox 2002; Fox & Johnson 2016, (12)):

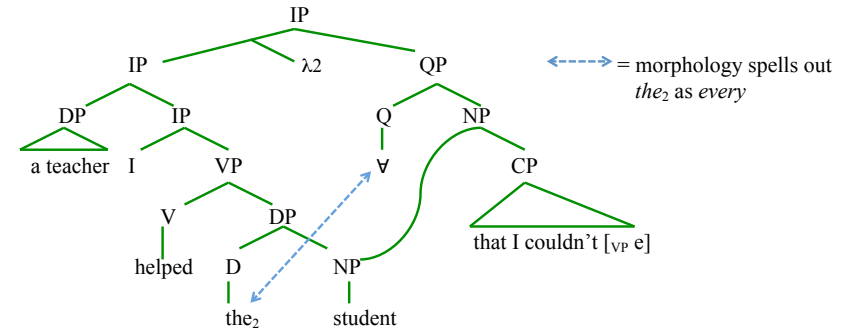
(6) a. * I_[VP1] said_[CP] that_[DP] everyone you did_[VPe e] [VP2 arrived]. (*VP_e=VP₁)

b. I_[VP1] said_[CP] that_[DP] everyone_[VP2 arrived] [that you did_[VPe e]]. (VP_e=VP₁)

⇒ Fox & Nissenbaum's generalization (see also Fox 2002): The extraposed relative is attached to VP/IP and the HEAD must take scope at this level.

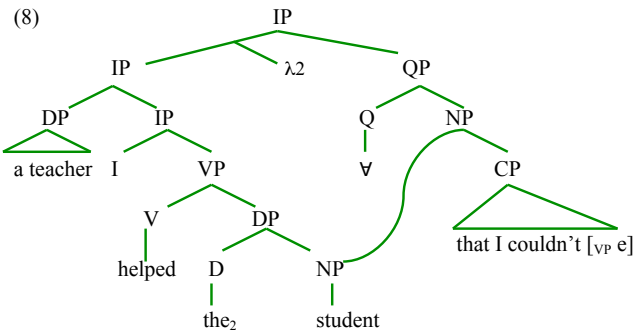
Fox & Nissenbaum (1999), Johnson (2012), Fox & Johnson (2016): The actual quantifier is generated in the scope position. What is QR-ed is just the NP restriction, resulting in multi-dominance. The extraposed RC is then attached to NP in the *scope position*.

(7) A teacher helped every student that I couldn't [VP e].



⇒ Fox & Nissenbaum's generalization is derived:

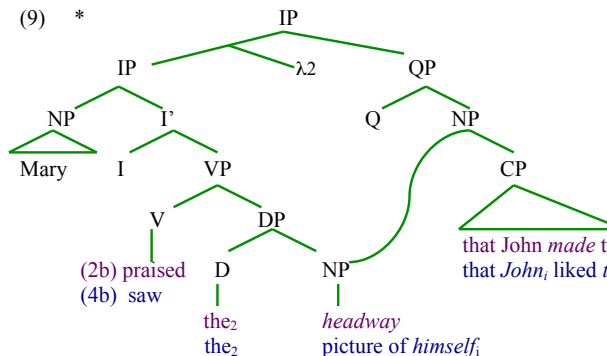
- The extraposed RC does not occur in the argument position at any derivational step (→ ACD)
- The quantifier takes scope at the compositional level where the RC is attached.



(9) $[[\text{then NP}]]^g = [[\text{then}_i]]^g ([[NP]]^g \cap \{x: x=g(n)\})$ (Fox & Johnson 2016, (9) a.o.)

⇒ Hulse & Sauerland's generalization derived: The occurrences of the HEAD in the argument position and in the QP restriction

- are not selected by the idiomatic verb in (2b)
- are not c-commanded by the RC subject in (4b).



- ⊖ The QP is linearized to the right. (See Johnson 2012 for an account based on the assumption that the linearization algorithm applies to two objects that have not yet been merged.)
- ⊖ Internal Merge of the NP as the Quantifier's restriction is counter-cyclic.
- ⊖ External Merge of the RC with the occurrence of NP in the scope position is counter-cyclic.
- ⊖ The λ -operator is not inserted by movement (contra current versions of QR): in fact, the λ -operator is not attached to the sister node of the target position of QR. Some special mechanism (which one?) must be invoked to guarantee that the λ -operator gets coindexed with the relevant DP (Fox & Johnson 2016, fn. 1).

R1. RC extraposition is possible only if the HEAD is a *weak NP*. (Cf. also Cardoso 2010 on contemporary European Portuguese.)

- (10) a. Ho incontrato [dei ragazzi] ieri sera [che avevo conosciuto alle superiori].
 have.1SG met some boys yesterday night that had.1SG met in-the high-school
 'I met some boys yesterday night whom I knew from high school.'
- b. Consiglierò [un libro] ai ragazzi [che parla del loro periodo storico preferito].
 recommend.FUT.1SG a book to-the kid that is-about of-the their period historical favourite
 'I will recommend a book to the kids that is about their favourite historical period.'
- c. Ho comprato [due scatole] dal ferramenta [in cui metterò i chiodi e le viti].
 have.1SG bought two boxes at-the ironmonger's in which put.FUT.1SG nails and screws.
 'I bought two boxes at the ironmonger's in which I will put nails and screws.'
- d. Non ho trovato [nessuno] in quell'ufficio [che sapesse aiutarmi con la pratica].
 not have.1SG found anybody in that office that was-able.SBJV to-help-me with the file
 'I didn't find anyone in that office that was able to help me with the file.'

R1. RC extraposition is possible only if the HEAD is a *weak NP*.

- (11) a. * Ho incontrato [i ragazzi] ieri sera [che avevo conosciuto alle superiori].
 have.1SG met the boys yesterday night that had.1SG met in-the high-school
 'I met the boys yesterday night whom I knew from high school.'
- b. * Consiglierò [ciascun libro] ai ragazzi [che parla del loro periodo storico preferito].
 recommend.FUT.1SG each book to-the kid that is-about of-the their period historical favourite
 'I will recommend each book to the kids that is about their favourite historical period.'
- c. * Ho comprato [entrambe le scatole] dal ferramenta [in cui metterò i chiodi e le viti].
 have.1SG bought both the boxes at-the ironmonger's in which put.FUT.1SG nails and screws.
 'I bought both the boxes at the ironmonger's in which I will put nails and screws.'
- d. * Ho trovato [ogni impiegato] in quell'ufficio [che doveva aiutarmi con la pratica].
 have.1SG found every employee in that office that had-to help-me with the file
 'I found every employee in that office that I needed for my file.'

R2. No RC extraposition from the preverbal subject position (cf. Cardinaletti 1987, fn. 4):

- (12) a. ?*[Una lettera] è arrivata ieri [che era indirizzata a Maria].
 a letter is arrived yesterday that was addressed to Mary
- b. ?*[Due studenti] hanno telefonato poco fa [che cercavano il Preside].
 two students have phoned some time ago that were-looking-for the Dean
- (13) a. E' arrivata [una lettera] ieri [che era indirizzata a Maria].
 is arrived a letter yesterday that was addressed to Mary
 'A letter arrived yesterday that was addressed to Mary.'
- b. Hanno telefonato [due studenti] poco fa [che cercavano il Preside].
 have phoned two students some time ago that were-looking-for the Dean
 'Two students called some time ago who were looking for the Dean'.

R2. Why not preverbal subjects?

⇒ In Italian, preverbal subjects take wide scope (unless they are focused).

- (14) a. Every player didn't score. (\checkmark not $>\forall$)
- b. Ogni giocatore non ha segnato. (?* not $>\forall$)

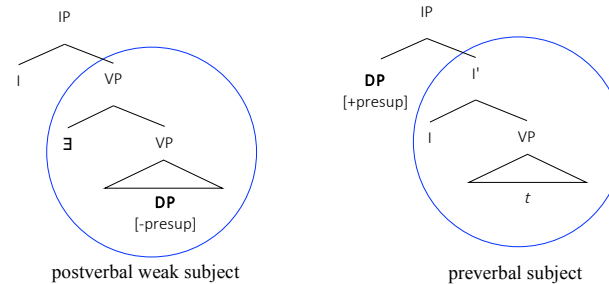
- (15) a. A unicorn seems [*t* to be in the garden]. (\checkmark seem $>\exists$)
- b. Un unicorno sembra [*t* essere in giardino]. (?* seem $>\exists$)

(English examples from McCloskey 1997: 207)

- (16) a. A marble filled every hole. (\checkmark $\forall>\exists$; Johnson 2012, (2))
- b. Una pedina occupava ogni casella. (?* $\forall>\exists$; cf. Pulicani 2016)

Bianchi & Chesi (2014), building on Ladusaw (1994): In Italian, preverbal subject are interpreted as presuppositional quantifiers outside the predicative nucleus of the clause. (Cf. also Guéron 1980, 672-673, on PP extraposition.)

Postverbal weak subjects are non-quantificational: weak determiners are predicates of cardinality.



⇒ Generalization (R1+R2): In Italian, RC extraposition is possible only if the HEAD is a *non-presuppositional weak NP*.

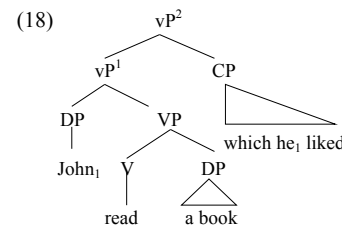
- Working hypothesis: A weak NP HEAD leaves its argument position open, and this allows the extraposed RC to be semantically integrated.
- ⇒ Ergo: the HEAD and the extraposed RC are generated independently of each another.
- Null hypothesis: the extraposed RC has the “usual” denotation (extensional type (e,t))
- ⇒ The simplest type of semantic integration is the “usual” generalized conjunction.

But how?

(NB1: I will ignore the event argument for the sake of simplicity.)
 (NB2: I will use English words as terminals for the sake of readability.)

(17) Predicate Restriction (Chung & Ladusaw 2004): The property *P* denoted by an indefinite restricts the domain of the function denoted by the selecting predicate to the subdomain consisting of elements that have the property *P*.

(NB: The restricted argument position is “flipped inside”, to be saturated last.)



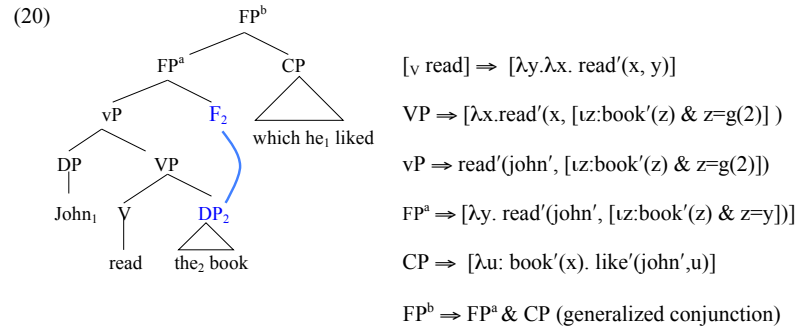
$[v \text{ read}] \Rightarrow \lambda y. \lambda x. \text{read}'(x, y)$
 $[v_P \text{ read a book}] \Rightarrow [\lambda x. \lambda y: \text{book}'(y). \text{read}'(x, y)]$
 $vP1 \Rightarrow [\lambda y: \text{book}'(y). \text{read}'(\text{john}', y)]$
 $CP \Rightarrow [\lambda x: \text{book}'(x). \text{like}'(\text{john}', x)]$ or
 $[\lambda x. \text{like}'(\text{john}', x)]$ (no RC-internal HEAD)

$vP2 \Rightarrow vP1 \ \& \ CP$ (generalized conjunction) $\Rightarrow [\lambda z: \text{book}'(z). \text{read}'(\text{john}', z) \ \& \ \text{like}'(\text{john}', z)]$

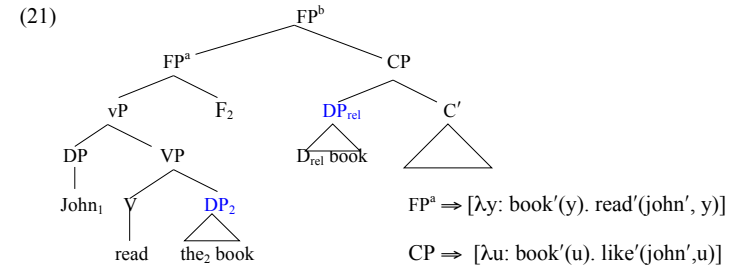
⇒ Then, Existential Closure applies.

(19) $\llbracket \text{the}_n \text{ NP} \rrbracket^g = \llbracket \text{the}_n \rrbracket^g (\llbracket \text{NP} \rrbracket^g \cap \{x: x=g(n)\})$ (Fox & Johnson 2016, (9) a.o.)

\Rightarrow In the spirit of Kratzer (2009), a functional head F probing for DP_2 acts as λ -binder.



\Rightarrow Rightward adjunction of CP remains stipulated.



The external HEAD DP_2 does not c-command the internal DP_{rel} (if anything, the reverse holds...)

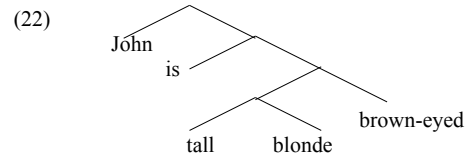
However, DP_2 and DP_{rel} express the same presupposition and, by generalized conjunction, they end up restricting the same function (exactly as in the matching structure).

I assume that this allows for deletion of the RC-internal HEAD, satisfying Recoverability. (Vehicle change phenomena, cf. Safir 1999, show that the external and internal HEAD need not be syntactically identical.)

Intermezzo: Adjunction and labeling

Kayne (1994), Moro (2000): Adjunction creates a symmetric structure which cannot be linearized under the Linear Correspondence Axiom.

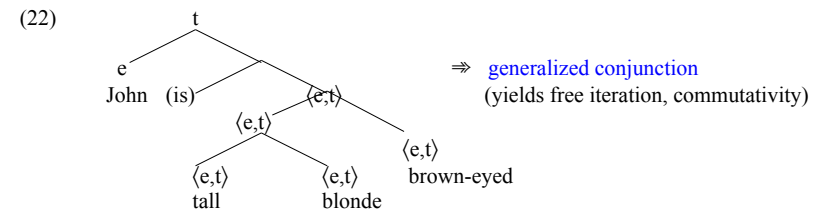
Chomsky (2013): Adjunction creates a symmetric structure which cannot be properly labeled by the Labeling Algorithm (= Minimal Search).



This requires the additional rule of Pair-Merge, which creates an ordered pair instead of a set (Chomsky 2004, 117-118).

Intermezzo: Adjunction and labeling

From the semantic viewpoint, though, the configuration (22) is unproblematic:



\Rightarrow If syntactic nodes were labeled directly by denotational types, adjunction of *predicative categories* would yield proper labeling: the mother node inherits the label of both daughters.

- (23) Hypothesis: Syntactic nodes are labeled by denotational types
 i. For SOs drawn from the lexicon, the type is determined in the **lexicon**
 ii. For SOs created by Merge, it is determined by **type-driven rules**.

... uniform labeling could be a consequence of interpretive principles, which may need labels to properly interpret structure. Intuitively, this makes sense: a DP, a VP and a CP are interpreted differently, and interpretive principles may be sensitive to the “canonical structural realizations” of semantic types.

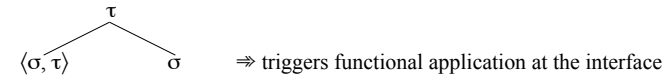
(Rizzi 2016, 105; emphasis mine)

- (24) Labeling principle: At the syntax-semantics interface, every node in a syntactic tree must have a well-formed denotational type. (cf. Rizzi’s 2016 Uniform Labeling)

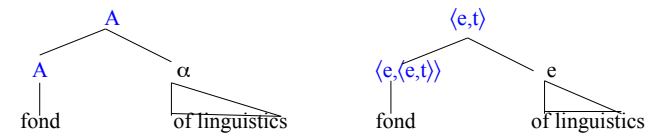
(See von Stechow 2010 for the proposal that at LF syntactic nodes are annotated with denotational types.)

- (25) **Type reduction rule**

Given two sister nodes $\{\alpha, \beta\}$, if the type of α is an ordered pair $\langle\sigma, \tau\rangle$, and the type of β is the first member of that ordered pair (σ), the mother node has the type corresponding to the second member of that pair (τ).



- (26)



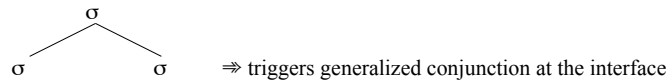
(NB: From this perspective, Chung & Ladusaw’s Predicate Restriction would require an extra labeling rule.)

- (27) Conjoinable types (Partee & Rooth 1983)

- i. t is a conjoinable type
 ii. if b is a conjoinable type, then for all types a , $\langle a, b \rangle$ is a conjoinable type.

- (28) **Conjoinable types rule**

Given two sister nodes $\{\alpha, \beta\}$, if α and β bear the same conjoinable type σ , the mother node is labeled σ as well.



If the conjoinable types rule (28) takes care of all adjunction configurations, this automatically yields two constraints on adjunction:

- i. A phrase bearing a non-conjoinable type cannot host adjunction.
 ii. An adjunct must bear the same conjoinable type as its sister node.

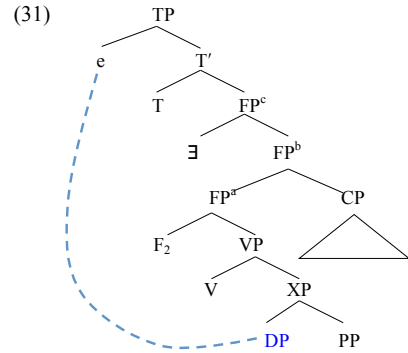
- (29) a. John worked [with his father] [in Rome] [for three years]
 b. John worked [in Rome] [for three years] [with his father]
 c. John worked [for three years] [in Rome] [with his father]

Another potential application: depictive predicates (Bianchi 2016a). I refer to Bianchi (2016b) for more general discussion. (NB: QR would fall under rule (25).)

⊗ Linearization is not accounted for.

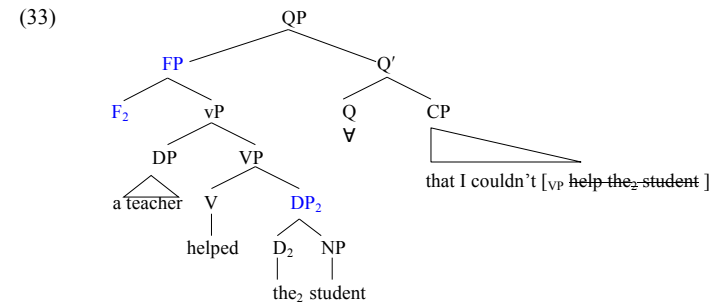
(30) *A man came into the bar who we knew in school.* (Borsley 1997, (54))

Bianchi & Chesi (2014): In English, preverbal subjects can be reconstructed in the scope of \exists :



An elaboration

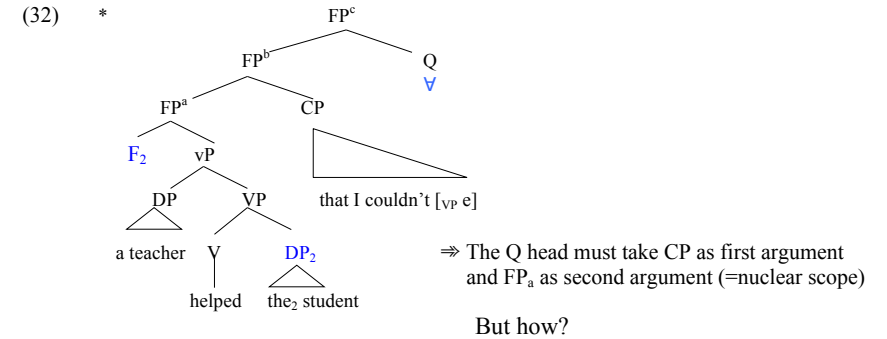
- Assume that $\forall Q$ can be a clausal head (Dist in Beghelli & Stowell 1997, Kayne 1998: 176-180, Szabolcsi 2010: 121-122); *every NP* marks an indexed D in the scope of $\forall Q$.
- The relative CP is directly selected by Q (\Rightarrow hence rightward)
- The nuclear scope (=FP) sits in Spec,QP (\Rightarrow hence leftward)



$[\lambda P. [\lambda R. (\forall x)P(x) \rightarrow R(x)]] ([\lambda u. \text{student}'(u). \neg \diamond \text{help}'(c_s, u)]] ([\lambda y. \text{student}'(y). (\exists z)\text{teacher}'(z) \& \text{help}'(z, y)]])$
 $= (\forall x: \text{student}'(x) [\neg \diamond \text{help}'(c_s, x) \rightarrow (\exists z)[\text{teacher}'(z) \& \text{help}'(z, x)]]]$

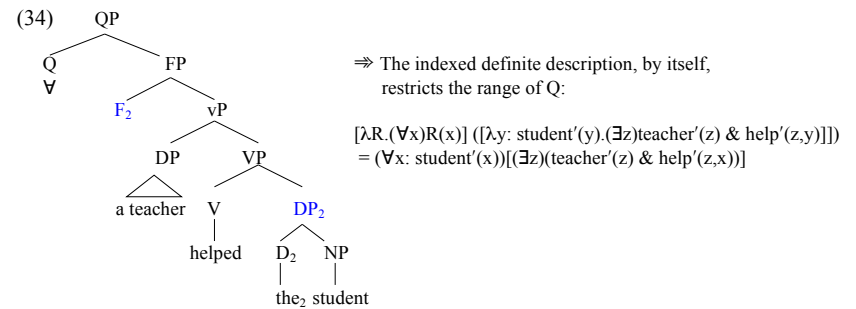
(6) A teacher helped *every* student that I couldn't [_{VP} e].

\Rightarrow An analysis based on generalized conjunction (32) would fail to correctly separate the restrictive term from the nuclear scope:



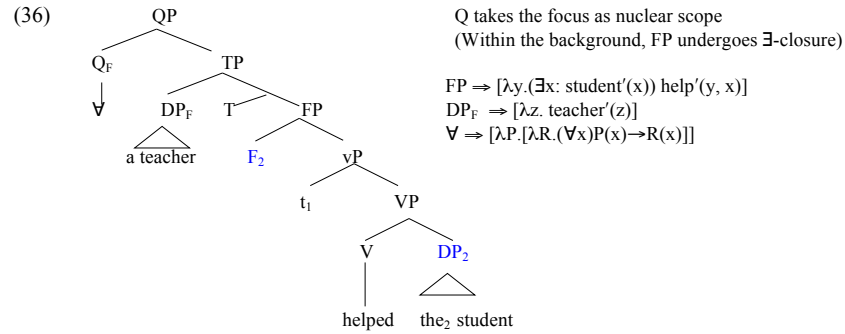
An elaboration

When there is no relative CP, what constitutes the restriction of the Q head?
 Can we have a unary $\forall Q$?



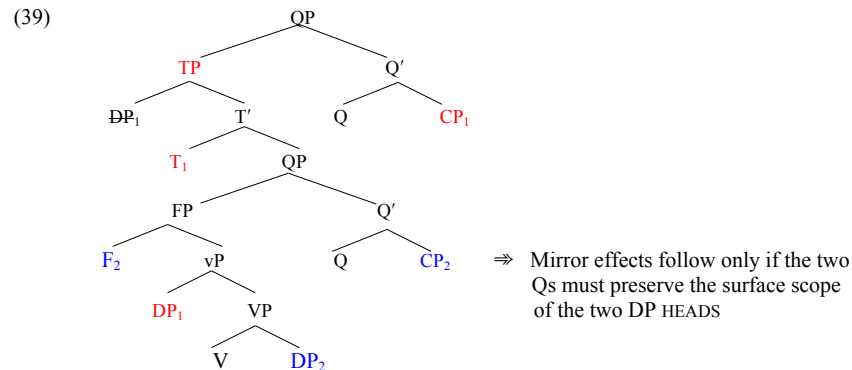
(35) * She_i helped every student of Jane_i's. (Fox & Johnson 2016: (4))

Alternatively, Q takes the focus as its nuclear scope and the background as restriction?

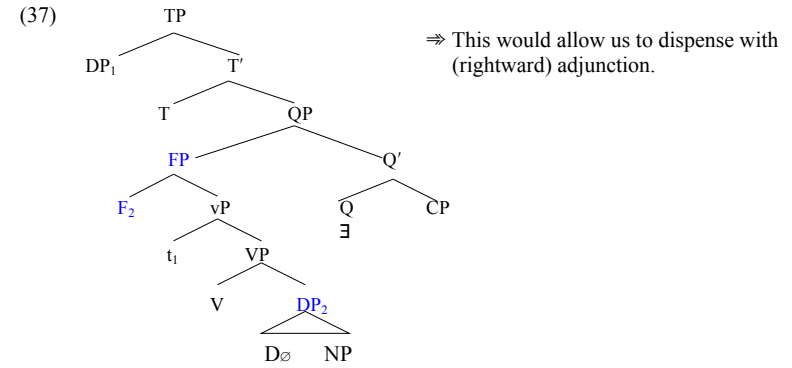


Further properties

- (38) a. *A criminal opened the safe yesterday that contained two hundred diamonds who also killed the guard.* (examples translated from de Vries 2002, 248)
 b. **A criminal opened the safe yesterday who also killed the guard that contained 200...*

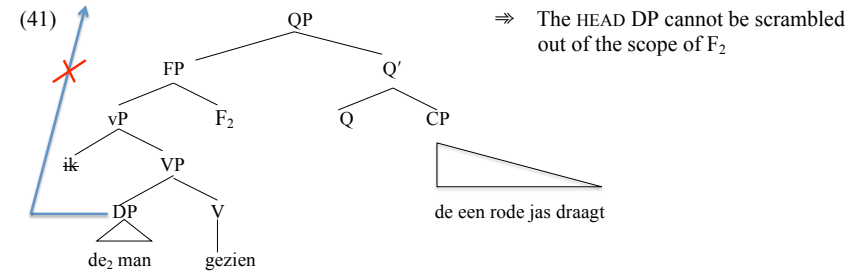


Italian could have the same structure as (33), but limited to the Existential Q head. Non-presuppositional weak determiners are predicates of cardinality. Strong determiners (contrary to English) are quantificational.



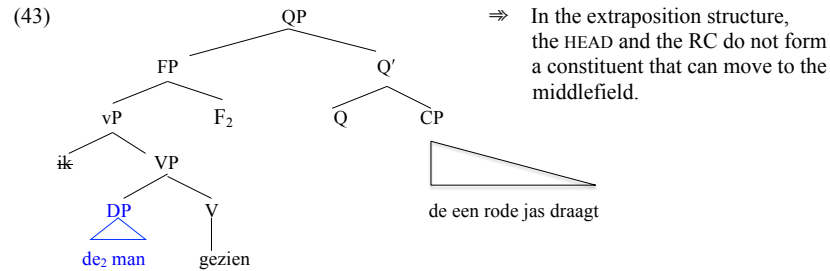
Further properties

- (40) a. *Ik heb de man gezien de een rode jas draagt.*
 I have the man seen who a read coat wears
 b. *[De man gezien] heb ik de een rode jas draagt.*
 the man seen have I who a read coat wears
 c. **[gezien de een rode jas draagt] heb ik de man.* (De Vries 2002, 256)
 seen who a read coat wears have I the man



- The RC cannot be stranded in the middlefield when the HEAD is topicalized:

- (42) a. De man heb ik gesignaleerd die een rode koffer draagt.
 the man have I noticed who a red suitcase carries
 b.* De man heb ik die een rode koffer draagt gesignaleerd.
 the man have I who a red suitcase carries noticed (de Vries 2002, 254)



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- I have tried to pursue a [minimal analysis](#) of RC extraposition in Italian with
 - no special rightward movement rule
 - no counter-cyclic Merge
 - the usual $\langle e, t \rangle$ denotation for the extraposed RC
 - the usual interpretive rule (generalized conjunction) as for other restrictive RCs
- This symmetric analysis, however, cannot be extended to English RC extraposed from a strongly quantified HEAD. English RC extraposition seems to require the RC to be licensed by a Q externally merged in the scope position (à la Fox & Johnson).
- I have sketched a revision of Fox & Johnson’s approach that may avoid counter-cyclic Merge and account for the right-handedness of extraposed RCs. This approach could be extended to Italian, so as to avoid adjunction (and its stipulated rightwardness).
- The symmetric analysis account better for the constraints on extraposition in Italian (and European Portuguese). But it does not cover extraposition from strong DPs in English, and uses rightward adjunction. The clausal Q approach avoids adjunction, but requires a special stipulation for Italian/EP.

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