The syntax of relativization

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Appendix III  Compendium of syntactic analyses of relative clauses

This appendix contains a list of previous syntactic analyses of relative clauses. It is divided into three sections: (A) for restrictive and appositive adnominal relatives, (B) for circumnominal relatives, and (C) for correlatives. As far as I can see, a line of theory concerning prenominal relatives seems to fail.

Some important analyses concerning free relatives are included in section A. With some exceptions, the list does not contain the literature concerning relative elements or cleft constructions, since these do often not concern the structure of the relative construction as such.

In each section the analyses are presented in historical order. I will not consider analyses older than Smith (1964). The list cannot be complete, but I have tried to capture all important developments. I have added some explanatory comment, but a thorough review of all the analyses below is not possible here. The essential ideas underlying these proposals are discussed more coherently in the main text; see especially Chapters 3, 4 and 6.

A. Restrictive and appositive adnominal relatives

*Smith (1964):*

Structure: 

\[
[np \text{ [Det \ldots R A] N}] \rightarrow [np \text{ [Det \ldots] N R A}] \rightarrow [np \text{ [Det \ldots] N RC}_{\text{rest}} RC_{\text{app}}]
\]

Here RC_{\text{restrictive}} and RC_{\text{appositive}} are relative markers that are replaced by actual relative clauses in the last step of the derivation. The first step involves obligatory extraposition of the relative within the NP.

*Ross (1967):*

Structure: 

\[
[np \text{ NP } [s: RC_{\text{rest}}]]
\]

Restrictive relatives are right-adjointed to NP. (This is known as the NP-S theory of relatives.) Appositives, however, are derived from conjoined sentences; see Emonds (1979) for details.

*Thompson (1971):*

Appositives and restrictives are derived from coordinated sentences. Thompson does not formalize the idea, but cf. Emonds (1979) on appositives.
Schachter (1973):

Schachter discusses cleft constructions and suggests a raising analysis of relative clauses; the restrictive relative is a complement of Nom:

\[ \begin{align*}
[S \text{ [NP the [Nom [Nom e] [S ... NP ...]]] Aux VP}] & \rightarrow \\
[S \text{ [NP the [Nom [Nom N_i] [S ... [NP t_i] ...]]] Aux VP}] & 
\end{align*} \]


Vergnaud presents a raising analysis for restrictive relatives:

\[ \begin{align*}
[S' \text{ [comp [NP, wh-det N] [S ... t_i ...]]}] & \rightarrow \\
[NP, NP_i \text{ [S' [comp } D-rel_i \text{ ] [S ... t_i ...]]}] & 
\end{align*} \]

Here S' is a restrictive relative. Within the subordinate clause an NP containing a wh-determiner is moved to COMP. Subsequently this NP is raised, stranding a relative pronoun in COMP. The raised NP projects, thus giving rise to an adjunction structure.

Partee (1975):

Structure: \[[NP Det [Nom Nom S_{rel}]]\]

Partee defends the Nom-S theory of restrictive relatives on a semantic basis, and attacks the NP-S theory as described in Ross (1967).

Jackendoff (1977):

Structure: \[[N'' [Art'' D] [N'' [N'' [S' RC_{restr}] [S' RC_{app}]]]]\]

Restrictives are daughters of N'', appositive of N'''' (=NP) in Jackendoff's system. (This is not Chomsky-adjunction to the highest NP projection.)

Chomsky (1977):

Chomsky is concerned with the similarities of wh-movement in relative clauses and other constructions.

Carlson (1977):

Carlson discusses the syntax and semantics of amount relatives (also called degree relatives by other authors), which he argues to be a separate class of relatives. The analysis involves raising, the D-complement hypothesis and NP-internal extraposition:

\[ \begin{align*}
[NP1 \text{ [Det D [S' ... [NP2 [Det Q [Nom N]]] [Nom e]]]}] & \rightarrow \\
[NP1 \text{ [Det D t_i] [Nom N_i] [S' ... [NP2 [Det THAT-AMOUNT] [Nom t_i]]_i]]} & 
\end{align*} \]

The Quantifier Phrase contains an abstract quantification that is deleted.

Bach & Cooper (1978):

Bach & Cooper show (contra Partee 1975) that the NP-S theory of restrictive relatives – \[[NP [NP Det N] S_{rel}]] – can be accounted for with a compositional semantics. The same technique is necessary to establish the meaning of circumnominal relatives such as in Hittite; see section C.
Bresnan & Grimshaw (1978):

Bresnan and Grimshaw propose the 'head hypothesis' for free relatives:

$$[\text{NP} \{\text{NP wh} \} \{S \ldots \text{pro} \ldots \}] \text{ or more generally: } [\text{XP} \{\text{XP wh} \ldots \} \{S \ldots \text{pro} \ldots \}]$$

The wh-word is base-generated as the head of the relative construction, hence there is no wh-movement. The relative S — not S* (!) — is right-adjointed to NP, as in Ross (1967). The gap in the relative is filled by a pronoun which is deleted by a rule of Controlled Pro Deletion. (Other authors have proposed variants of the head hypothesis using wh-movement instead.)

Emonds (1979):

Emonds discusses appositive relatives. They are derived from conjoined main clauses, hence the term Main Clause Hypothesis:

$$[E \{E \{S \ldots \text{XP} \ldots \} \{E \{E \{S \ldots \text{XP} \ldots \} \} \{E \{E \{S \ldots \text{XP} \ldots \} \} \}]$$

(Here E is "the initial symbol of the base which cannot be subordinated"). Appositives arise by Parenthetical Formation, S'-attachment and Appositive Wh Interpretation. A conjoined main clause is enclosed within the first main clause by extraposing an XP from the first clause. Then relative clause formation applies to the parenthetical. The original conjunction may involve and or a zero coordinator. (Emonds's analysis is based on unformalized ideas in Ross 1967.)

Perzanowski (1980):

Perzanowski attacks the Main Clause Hypothesis for appositive relatives as described in Emonds (1979), and argues in favour of the Subordinate Clause Hypothesis as in Jackendoff (1977).

Groos & Van Riemsdijk (1981):

Groos & Van Riemsdijk defend the COMP hypothesis for free relatives:

$$[\text{NP} \{\text{NP e} \} \{S \text{wh} \ldots \text{t} \ldots \} \ldots ] \text{ or more generally: } [\text{XP} \{\text{XP e} \} \{S \text{ [comp wh} \ldots \text{t} \ldots ] \} \{S \ldots \text{t} \ldots \}]$$

The overall structure is like the NP-S theory (cf. Ross 1967). There is wh-movement to COMP within the relative. The empty category is largely ignored: it seems to have no properties. Van Riemsdijk (2000) notes that it is arguably pro or PROwh from a more recent perspective.

Kaisse (1981):

Kaisse discusses cliticization of the pronoun who in English. If who is phonologically reduced to [ha], it must be cliticized on the preceding word — often followed by a reduced auxiliary verb which is in turn enclitic on [ha]. This process is subject to the Head Condition: "who may cliticize to the head of the $X^{\text{max}}$ whose complement it introduces." Since reduction is possible in restrictive relative constructions (and embedded questions), but not in appositive relatives, Kaisse argues that Jackendoff's (1977) theory is correct for restrictives, but not for appositives. Therefore Kaisse
supports Emonds's (1979) MCH, in which an appositive relative is not a complement of (a projection of) the antecedent.

**Cinque (1982):**

Cinque discusses the relative pronoun system in Italian, French and English. He argues that relative pronouns in general can be used anaphorically or non-anaphorically (which is more marked). The marked option is not always available for a particular pronoun. The structure of both restrictives and appositives can be \([\text{NP NP } S']\), or \(\text{NP } \ldots S'\) (where the relative is a parenthetical). The latter option is marked, at least for restrictives, and in some languages for appositives, too. The anaphoric use of a relative pronoun is excluded in the parenthetical structure. The parameter setting of a language decides which options are available.

**McCawley (1982):**

McCawley claims that dominance and precedence are independent relations. This gives the possibility of a discontinuous constituent structure. As in Emonds (1979), an appositive relative is generated as right-adjoined to the matrix. By an order-changing transformation it is pronounced adjacent to the antecedent:

\[ [s \{s-matr \ldots \text{NP}\ldots]\{s \text{ARC}\}] \rightarrow [[s-matr \ldots \text{NP} \uparrow \ldots]\{s\}] \]

The hierarchy is not changed, just the position where the ARC is pronounced. Hence a tree structure would show crossing branches.

Extrapolated restrictive relatives show the opposite pattern: the relative is hierarchically part of the antecedent NP, and an order changing transformation puts the relative at the end of the matrix.

**Stuurman (1983):**

Stuurman defends the MCH of appositive relatives as described in Emonds (1979) and counter-attacks Perzanowski's (1980) defence of Jackendoff (1977).

**Givón (1984):**

Givón discusses the strategies that languages use to recover the role of the relative gap from a typological point of view. The structure of an English type relative he assumes is simply \([s \text{Det N } S_{\text{rel}}]\). (There seems to be no wh-movement.)

**Lehmann (1984):**

Lehmann's book describes the typology and functions of the relative construction. The syntactic structures that he assumes are the following:

- Postnominal restrictive: \([s-matr \ldots \text{NP } \{\text{Nom Nom } S_{\text{rel}}\} \ldots]\)
- Postnominal appositive: \([s-matr \ldots \text{NP } \{\text{Nom Det Nom } S_{\text{rel}}\} \ldots]\)
- Prenominal restrictive: \([s-matr \ldots \{\text{Nom } \{\text{Nom S_{rel} Nom}\}\} \ldots]\)
- Extrapolated: \([s-matr \{s-matr \ldots \text{Nom+Dem } \ldots\} \{s_{\text{rel}} \ldots \text{rel } \ldots\}]\)

Here Nom is N or N', Dem a demonstrative, Det a determiner. The linear order of Det/Dem and Nom can be interchanged.
Link (1984):

Link discusses the semantics of relative clauses with a multiple head (e.g. a complex plural antecedent), which he calls *hydras*.


Sells (1985):

Sells discusses the semantics of the anaphoric link between appositive relatives and the antecedent within the framework of Discourse Representation Theory. He claims that it can be captured in terms of *cospecification*, which operates on the DRT discourse level.

Safir (1986):

Appositive relatives (and other parenthetical phrases) are attached at a level LF' beyond LF. Restrictives are simply *[NP NP S']*. Safir distinguishes A'-binding (operator binding) from R-binding, which is binding of the relative operator by the antecedent. The Locality Condition on R-Binding states that "if X is locally R-bound, then X is the structurally highest element in COMP." This forces LF-movement of a relative pronoun to the highest position in SpecCP in case there is a pied piped constituent. Furthermore, A'-binding is subject to the Parallelism Constraint on Operator Binding: "If one local A'-bindee of O is [α lexical] and [β pronominal], then all local bindees of O must be [α lexical] and [β pronominal]." The PCOB is operative on LF (not LF'). It follows from all this that appositives are islands for bound readings and parasitic gaps (given that parasitic gaps must be licenced by A'-binding), and that weak cross-over is absent in appositives.

Sturm (1986):

Sturm claims that appositive relative clauses (like appositions) are coordinated to the antecedent, contrary to restrictives.

Smits (1988):

Restrictive: *[NP Det [N' [N' N] RRC ]]  
Appositive: *[NP [NP Det [N' N]] ARC ]  
or, if extraposed: NP ... ARC

Fabb (1990):

Fabb argues that appositive relatives are not syntactically part of the sentence. The structure for restrictives is:

*[NP Det [N' N_i [CP = RRC NP_i [CP_i [CP ... CP_i ...]]]]]

Here the second NP_i is a relative pronoun. There is a predication relation between the head noun N_i and the relative CP_i (which is its complement) hence co-indexing. The index percolates down from CP to C. At the same time the relative pronoun NP and the antecedent N share a referential index, say j. Subsequently, spec-head agreement between the relative pronoun NP and C makes all indices equal.

In pied piping structures the relative pronoun is adjoined to the wh-fronted NP. Then there is adjunct-head agreement with C, instead of spec-head agreement (which would lead to a crash because of conflicting indices). Possessives are grammatical, because movement from a specifier is allowed:
Demirdache (1991):

Appositive relatives are adjoined to the maximal projection of the antecedent (often a DP), and are moved to a right-adjoined position of the matrix clause at LF:

- S-structure: $[[\text{CP}_{\text{matr}} \ldots \text{DP} \: \text{CP}_{\text{ARC}} \: \text{wh} \ldots \text{t}_\text{wh} \ldots]]] \rightarrow$
- LF-structure: $[[\text{CP}_{\text{matr}} \ldots \text{DP} \: \text{t}_k] \ldots] \: \text{CP}_{\text{ARC}} \: \text{wh} \ldots \text{t}_\text{wh} \ldots]$}

Toribio (1992):

- Restrictive: $[\text{DP} \: \text{NP} \: \text{CP}_{\text{ARC}}]$
- Appositive: $[\text{DP} \: \text{NP} \: \text{CP}_{\text{ARC}}]$

Borsley (1992):

Borsley argues that Fabb’s (1990) approach to restrictives and appositives is incorrect.

Kayne (1994):

- Restrictive (that): $[[\text{DP} \: \text{NP} \: [[\text{CP} \: \text{NP} \: \text{CP}_{\text{ ARC}}] \: \text{IP} \ldots \text{t}_\text{IP} \ldots]]]$
- Restrictive (wh): $[[\text{DP} \: \text{NP} \: \text{CP}_{\text{rel}} \: \text{NP} \: \text{D}_{\text{rel}} \: \text{t}_{\text{rel}}] \: \text{CP}_{\text{C}} \: \text{IP} \ldots \text{t}_\text{IP} \ldots]]$
- Appositive: (LF-structure) $[[\text{DP} \: \text{NP} \: \text{IP} \ldots \text{t}_\text{IP} \ldots] \: \text{D} \: \text{CP}_{\text{rel}} \: \text{NP} \: \text{D}_{\text{rel}} \: \text{t}_{\text{rel}}] \: \text{CP}_{\text{C}} \: \text{t}_\text{IP}]]$
- Prenominal: (S-structure) $[[\text{DP} \: \text{NP} \: \text{IP} \ldots \text{t}_\text{IP} \ldots] \: \text{D} \: \text{CP}_{\text{NP}} \: \text{CP}_{\text{C}} \: \text{t}_\text{IP}]]$

Relative CPs are the complement of D. The head noun raises to SpecCP within the relative clause. If there is a relative pronoun, the whole D_{rel} raises (and NP moves to SpecDP_{rel}). In appositive relatives, there is additional movement of the relative IP to SpecDP at LF, in order to get it out of the scope of the main determiner. In prenominal relatives there is overt movement of IP to SpecDP. (Note that specifiers are ‘adjuncts’ in Kayne’s phrase structure.)

Rooryck (1994):

Rooryck claims that free relatives are bare CPs on the basis of similarities with embedded questions.

Afarli (1994):

Afarli discusses restrictive relatives in Norwegian. (Note that a clause is a TP, here.)

- Som-relative: $[[\text{TP} \: \text{NP} \: \text{IP} \: [[\text{CP} \: \text{NP} \: \text{IP} \ldots \text{t}_\text{IP} \ldots]]]]$
- Der-relative: $[[\text{TP} \: \text{NP} \: \text{IP} \: [[\text{CP} \: \text{NP} \: \text{IP} \ldots \text{t}_\text{IP} \ldots]]]]$
- Free relative: $[[\text{TP} \: \text{IP} \: [[\text{CP} \: \text{IP} \ldots \text{t}_\text{IP} \ldots]]]]$

In som-relatives (equivalent to that-relatives in English) there is raising of the head NP. These relatives are bare TPs, comparable to free relatives and embedded questions. (The difference is that T is $+wh$ in free relatives and questions, but $-wh$ in headed som-relatives.) There is no head raising in relatives with a relative pronoun (der-relatives).

Restrictive relatives:
that: \[[DP_{\text{rel}} D_{\text{rel}}; CP_{\text{rel}} t_{\text{rel}} NP_{\text{rel}}]; [CP C [IP ... t_i ...]]]\]
wh: \[[DP D [CP NP_{\text{rel}}]; [CP C [IP D_{\text{rel}} t_{\text{rel}}]]; [CP X [IP ... t_i ...]]]\]

(The complete functional projection line is Force – Top – Focus/wh – Top – Fin. As in Kayne (1994) specifiers are ‘adjuncts’. ) There is head raising, and the relative is the complement of D. In appositive relatives there is additional LF-movement to SpecDP, as in Kayne (1994). Bianchi acknowledges that there is a subset of appositives that cannot be derived in this way (e.g. those with a non-DP antecedent). She assumes that these are parenthetical clauses that are generated separately from the antecedent.

De Vries (1996):

Restrictive: \[[DP D [CP [DP_{\text{rel}} NP_{\text{rel}}]; [CP C [IP ... t_i ...]]]\]
The analysis is an elaboration of Kayne (1994). The derivation is similar for all postnominal restrictive relatives. The relative CP is the complement of D, and there is raising of DP_{rel} within the relative CP. Depending on the language, D_{rel} and/or C are pronounced.

Canac-Marquis & Tremblay (1997):

An appositive is a free relative in apposition: DP_{rel} , [DP pro_0 CP_{rel}]. Therefore restrictives are the only (independent) type of relative. Appositive DPs are “unmerged objects”, i.e. inserted at a discourse level, and not visible for structure-dependent relations. As for binding, Canac-Marquis & Tremblay refer to Safir (1986). Finally, English relatives are [+wh] – hence involve wh-movement – whereas French relatives are [-wh] and have a base-generated operator in SpecCP_{rel} (except if there is pied piped material).

Borsley (1997):

Borsley argues that Kayne’s (1994) promotion theory of relatives is incorrect.

Platzack (1997, 2000):

Restrictive: \[[DP spec [D+ D ... [NP spec [N' N [CP OP]; C; C [AgrSP ... t_i ...]]]]]\]
Appositive: \[[DP spec [D+ D ... [NP DP N' \emptyset [CP OP]; C; C [AgrSP ... t_i ...]]]]]\n
In Swedish
Restrictive: \[[DP spec [D+ N+D ... [NP spec [N' t_N [CP OP]; C; C [AgrSP ... t_i ...]]]]]\]
Appositive: \[[DP DP [D+ C+D ... [NP t_DP N' t_C [CP OP]; C; C [AgrSP ... t_i ...]]]]]\n
An appositive is the complement of an empty N, the specifier of which is the antecedent DP. In Swedish C contains the relative particle som, which is equivalent to English ‘that’ in this respect. D has a strong δ-feature. It attracts N overtly, also in restrictive relatives. In appositives there is no lexical N head below D, hence C (that has both φ-features and δ-features due to spec-head agreement with the operator) raises to D via the empty N. (DP in SpecNP is a closed domain in which N-to-D raising takes place.) Finally, DP in SpecNP must move to the main SpecDP because of word order. This creates a structure similar to possessives.
Wilder (1998):

Wilder discusses Transparent Free Relatives. A true FR is structured as follows:

Free relative: \[ [\text{DP }_0 \text{ e}] \rightarrow \text{CP w/h} \rightarrow \text{TP} \rightarrow \text{IP} \rightarrow \text{CP} \rightarrow \text{DP} \rightarrow \text{NP} \rightarrow \text{S}] \]

A transparent FR involves parenthetical placement and backward deletion at PF. In the syntax there are two independent phrase markers: one of the matrix and one of a normal free relative. The following example shows what this means:

TFR: (syntax) \:[\text{he bought [DP a guitar]}] \rightarrow \text{[what he took to be [DP a guitar]]} \)

(phonology) \: \text{John bought < [what he took to be a guitar] > a guitar} \]

Liptáč (1998):

Restrictive: \[ [\text{DP }_0 \text{ D} \rightarrow \text{NP [CP rel-proj \rightarrow CP C [IP ... t_i ... ]]]}] \]

Appositive: \[ \text{[SC XP [CP rel-proj C [IP ... t_i ... ]]]}} \]

A restrictive relative CP is the complement of N. An appositive is a small clause predicate. The antecedent XP can be of any category.

Grosu & Landman (1998):

Grosu & Landman discuss the semantics of relative constructions. They also propose a syntactic analysis for degree relatives, which involves the promotion theory:

\[ [\text{DP }_0 \text{ D [Num }_0 \text{ Num [NP NP [CP NP \rightarrow CP C [S ... t_i ... ]]]]} \]

the three books \( \{ \text{many-books} \} \) (that) there were \( \{ \text{many-books} \} \) on the table

The degree phrase is raised to SpecCP. From there the head noun is moved out of the relative to the external head position in the dominating NP. The lower two copies are phonologically null.


Koster (2000c):

Restrictive: \[ [\text{DP }_0 \text{ D [NP [- : CP_{RRC}]}}] \]

Appositive: \[ [\text{DP }_0 \text{ D NP] [- : CP_{ARC}]}] \]

A relative clause is a specifying conjunct to the antecedent. Specifying coordination is represented by a “colon phrase” \( (:P) \), where the colon is the head. The relative is a CP in which there is \( wh \)-movement. Koster suggests that restrictives are coordinated to NP, and appositives to DP.

Van Riemsdijk (2000):

Free relatives are argued to have a multidimensional tree structure with a shared part. This is an instance of “grafting”:

\[ \text{[CP-matr} \rightarrow \text{CP-rel [TP} \rightarrow \text{C) [IP ... t_i ... ]]} \]

The relative CP is in another dimension. The two sentences share a DP. In a true FR this is a \( wh \)-pronoun in SpecCP (or the pied piped constituent containing it); in a transparent FR, it is not the ‘dummy’ \( wh \), but the pivotal element (the small clause predicate).
Zwart (2000):
Zwart discusses restrictive relatives in (dialects of) Dutch. He assumes a 3-layer CP, based on work by Eric Hoekstra. $C_{1,2,3}$ correspond to *als* ‘if’, *of* ‘whether’ and *dat* ‘that’, respectively. The analysis follows Bianchi (1999) closely:

$$[\text{DP } D [\text{CP} [\text{NP} [\text{CP} [\text{C} [\text{DP}_{\text{rel}} [\text{t} = \text{t}_2] ] [\text{C}_{\text{2/3}} [\text{IP} \ldots \text{t}_1 \ldots ]])]])]
$$

$\text{DP}_{\text{rel}}$ originates within the relative CP, which is a complement of the matrix D. In a $wh$-relative there is raising to SpecCP$_2$, in a $d$-relative to SpecCP$_3$. The Head NP is moved to Spec$\text{DP}_{\text{rel}}$ and subsequently to SpecCP$_1$.


Murasugi (2000):
Restrictive relative clauses in Japanese are prenominal. The proposed analysis is antisymmetric and at the same time traditional:

$$[\text{DP } \text{IP} [\text{D} [\text{NP} [\text{N} \cdot \text{t}_1 ]])]$$

Here the relative IP originates as the complement of the head N, and moves to SpecDP.

Murasugi claims that Japanese does not have circumnominal relatives (contra work by Kuno and e.g. Itô 1986); rather, apparent circumnominal relatives are adverbal adjuncts. Moreover, Murasugi argues that Japanese prenominal relatives are IPs in which there are no further movements. (This may be viewed as an indication that Japanese does not have true relatives at all.)

Schmitt (2000):
Schmitt discusses some consequences of the D-complement analysis, especially with respect to definiteness/indefiniteness. For restrictive relatives she proposes the following structure in order to explain the hybrid behaviour concerning definiteness:

$$[\text{DP } D [\text{Agr} [\text{NumP} [\text{Agr} [\text{CP} [\text{OP} [\text{C} [\text{IP} \ldots \text{t}_1 \ldots ]])]])]])$$

There is operator movement within the relative. The antecedent is base-generated as a NumP in SpecAgrP; it is co-indexed with OP. The D-complement analysis is extended to “wrong-type adjectives” and demonstratives.

B. Circumnominal relatives

Wilson (1963): [as described in Culy (1990)]

Two sentences are combined to form an adnominal relative construction. Consequently, the external head moves to a position inside the relative clause.

Hale & Platero (1974) and Gorbet (1976): [as described in Culy (1990)]

Structure: $$[\text{NP} [s \cdot \text{NP}_1 \cdot ]]$$

There is no movement. The inner and outer NP are co-indexed.

Structure: \[NP [S \_ NP] \]  
There is both an internal and an external (right-hand) head. These are co-indexed. The external head is deleted.

Peterson (1974): [as described in Culy (1990)]

Structure: \[NP \_ NOM [S \_ NP] \_ Det])  
There are a co-indexed external and internal (left-hand) head. The external head is deleted. In addition, there is an external (right-hand) determiner.


Lehmann (1984): [induced from the text]

Structure: \[S \_ main \_ [NP \_ [S \_ rel \_ head \_ …] Det] …\]  

Broadwell (1985): [as described in Basilico (1996)]

S-structure: \[S \_ … [NP (lexical)] \_ …\]  
LF-structure: \[NP \_ [S \_ … t* \_ …] \_ [NP (lexical)] \_ ]

Itô (1986):

S-structure: \[NP \_ [S \_ … NP; \_ …] \_ e ]  
LF-structure: \[NP \_ [S \_ … t* \_ …] \_ NP1 \_ ]  
PF-structure: \[NP \_ [S \_ … NP1; \_ …] \_ (no) ]

At LF there is head raising to an empty N position (cf. Cole 1987). For Japanese, Itô assumes PF raising of the particle no from the complementizer position to the empty position. The reason is that no cannot be present in prenominal relatives, where the N position is not empty (at S-structure) because it is filled with the head.


S-structure: \[NP \_ [S \_ … [NP; (lexical)] \_ …] \_ [NP e] ]  
LF-structure: \[NP \_ [S \_ … t* \_ …] \_ [NP; (lexical)] ]

At S-structure there is an empty head noun: a phonologically null pronoun e. At LF the actual head noun N raises to this position. An important condition Cole uses is: “An anaphor cannot both precede and command its antecedent.”

Williamson (1987):

S-structure: \[NP \_ [S \_ … NP] \_ Det]  
LF-structure: \[NP \_ [S \_ … t* \_ …] \_ NP1 \_ Det]  

There is co-indexing at S-structure. At LF the internal head is raised to a position adjoined to the relative clause.
Compagnon of Syntactic Analyses of Relative Clauses


Fontana (1989):  

Structure:  
\[ [s' [NP_{topic} [s-rel ... NP_i ...]] [s ... pro/Dem_i ...]] \]

The structure is like a correlative: there is left-dislocation of the relative construction in the matrix, and a null pronoun or resumptive pronoun at the argument position.

Barss et al. (1990):  

S-structure:  
\[ [\text{CP} [\text{C} [\text{IP} ... \text{NP} ...]]] \]

LF-structure:  
\[ [\text{CP} \text{NP}_i [\text{C} [\text{IP} ... \text{ti} ...]]] \]

There is raising of the head noun at LF. They do not take a determiner position into account.

Culy (1990):  

Culy represents his theory in three frameworks: GB, HPSG and LFG. I refer to his GB account only.

D/S-structure:  
\[ [\text{NP}_i [\text{N'} [\text{S'} \text{COMP} [s' [\text{NP}_i \text{NP}_i \text{wh}_i X] [s' [\text{NP}_i \text{Ni} - _ \_ \_]]]]]] \]

LF-structure:  
\[ [\text{NP}_i [\text{N'} [\text{COMP} \text{wh}_i X] [s' [\text{NP}_i \text{Ni} - _ \_ \_]]]] \]

The head noun is generated in situ, i.e. RC-externally. At LF the \text{wh}-operator moves to COMP. Culy states the Relative Coincidence Constraint (RCC), which generalizes over adnominal and circumnominal relatives:

RCC: (Culy 1990:98)
In a structure of the form \[ [\text{NP}_i X [s' [\text{COMP} \text{wh}_Y Y] S] Z] \] it must be the case that \( m = p \).

The outer determiner is external to \( N' \) (at one of the outer \_ positions). Culy notes that the DP analysis solves the potential problem of exocentricity. Therefore the above structure may be reanalysed as \[ [\text{DP} _ [\text{D'} \text{S'} \text{D} ] ] \].

Bonneau (1992):  

Bonneau’s analysis is a mix of Cole (1987) and Barss et al. (1990): there is an element external to the relative clause and there is an empty operator in SpecCP or NP movement to SpecCP (at LF).


Kayne (1994) and Bianchi (1999):  

Movements as in prenominal RCs:  
\[ [\text{DP} [\text{IP} ... \text{t}_i ...] [\text{D} [\text{CP} \text{NP}_i [\text{C} \text{t}_p ]]]] \]

Copy theory of movement for NP:  
\[ [\text{DP} [\text{IP} ... \text{NP}_i ...] [\text{D} [\text{CP} \text{NP}_i [\text{C} ... \text{CP} \text{e}_i ] [\text{C} ... \text{FF}] \text{deletion:} [\text{DP} [\text{IP} ... \text{NP}_i ...] [\text{D} [\text{CP} \text{e}_i ] [\text{C} ... \text{FF}] \text{deletion:} \text{One of the two copies is deleted. The deleted copy may not c-command the surviving copy (Kayne 1994:96). In this configuration there are two options. Deletion of the upper copy leads to a prenominal relative, deletion of the lower copy to a circumnominal one.} \] \]
Basilico (1996):

S-structure: \[ [D_p \; _D \; [I_p \; [r \; \; [v_p \; ... \; [N_p \; \text{lexical}] \; ... \; I \; ] \; ] \; ] \; D] \]

S or LF: \[ [D_p \; _D \; [I_p \; [N_p] \; I_p \; [r \; \; [v_p \; ... \; e_i \; ... \; I \; ] \; ] \; ] \; D] \] \text{ or }

\[ [D_p \; _D \; [I_p \; [v_p \; N_p] \; [v_p \; ... \; e_i \; ... \; I_i \; ] \; ] \; D] \]

In order to escape existential closure, the head noun moves to AdjIP or AdjVP, overtly or at LF. In the first case NP's index is transferred to the governing head (D) and it percolates up to the maximal projection. D is the operator that binds the indefinite variable. In the last case, I governs NP in AdjVP and gets the index, which percolates to IP. Then, since D governs IP, D (and subsequently DP) receives the index. The procedure is based on three assumptions: the idea that circum nominal relatives involve quantification (see also Williamson 1987; Culy 1990; Srivastav 1991; Jelinek 1995), the prohibition against vacuous quantification (cf. Kratzer 1989), and Diesing's (1992) mapping hypothesis; all built on work by Heim (1982).


C. Correlative constructions

Verma (1966), Junghare (1973), Kachru (1973/78), Wali (1982), Subbarao (1984); (generalized over different frameworks): [as described in Srivastav (1991)]

D-structure: \[ [I_p \; ... \; [N_p \; \text{Det} \; [N_p \; [N_p] \; [C_p \; \text{REL} \; N_p \; ... \; ] \; ] \; ] \; ] \]

S-structure: \[ [I_p \; [C_p \; \text{REL} \; N_p \; ... \; ] \; [I_p \; [N_p \; \text{Dem} \; ( \; \; t_i \; ) \; ] \; ] \; ] \]

All relative clause types are derived from the adnominal construction. The correlative sentence is moved to a left-adjoined position. Pronominalization rules replace the second instance of the head N with a demonstrative. REL is a relative pronoun.


Structure (D and S): \[ [I_p \; [I_p \; \text{REL} \; N_p \; ... \; ] \; [I_p \; \text{main} \; ... \; \text{Dem} \; (s) \; ... \; ] \]

Correlatives differ from adnominal relative constructions syntactically. They are base-generated as sentences left-adjoined to the main clause. Semantically, all relative constructions are similar.


Bach & Cooper (1978):

Structure (D and S): \[ [S \; [S \; \text{rel} \; [N_p \; \text{Det} \; \text{Nom} \; ... \; ] \; [S \; \text{main} \; ... \; [N_p \; ... \; ] \; ] \]

The NP in the main clause contains a referring expression.


Lehmann (1984):
Structure: $[s_{main} [s_{rel} ... head+rel ...] [s_{main} ... Dem ...]]$


Keenan (1985):
Structure: $[s [s_{rel} ... (COREL)+NP_{rel} ...] [s_{main} ... NP_{ms} ...]]$

Srivastav (1991):
Structure: $[IP [CP_{wh} N ...]; [IP ... Dem, ...]]$

The relative CP is left-adjoined to the matrix IP. This CP is a quantifier that binds the demonstrative variable in the matrix clause.

Grosu & Landman (1998):
syntax: $[IP [CP_{wh} (N) ...] [IP ... Dem (N)...]]$
semantics: $[IP [DP [DP Dem N] [CP_{wh} N ...]] \lambda x [IP ... x ...]]$