Introduction*

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This volume presents a cross-section of recent generative research into the syntax of relative clause constructions. Interest in this topic has been revitalized by Kayne's recent proposal to handle relative clauses in terms of determiner complementation and raising of the relativized nominal (Kayne 1994: ch. 8). Most of the papers collected here react in some way to Kayne's ideas. With this in mind, Part I of this introduction centres on a discussion of these proposals, their background and motivations, arguments for and against.[1] In Part II, we introduce each of the papers, positioning them in the wider theoretical context.

Part I. The theoretical context

1. Relative clauses: two approaches

Advances in syntactic research of the past decades, leading to the minimalist program, are due largely to the investigation of complex structures arising

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through 'canonical complementation', whereby a clause (or other extended projection) functions as the complement of a higher lexical predicate. The most studied simple and complex structures are, respectively, the simple clause (CP), with its internal processes of phrasal (A-/A′-) and head movement; and verb-clausal complement structures, with associated interclausal processes such as Raising, Exceptional Case Marking and Restructuring. Less progress has been made in understanding complex structures which do not arise through canonical complementation, as Chomsky (1995: 382, fn.22) notes: "… we still have no good phrase structure theory for such simple matters as attributive adjectives, relative clauses, and adjuncts of many different types".

An important subclass of complex constructions involves finite subordinate clauses that show properties (1)–(2):

(1) 'Noncanonical complementation':
the clause is not an argument of a lexical predicate.

(2) 'Noncanonical *wh*-movement': the clause contains a *wh*-dependency which
   a. is not associated with interrogative semantics.
   b. serves to link a position inside the clause and an item outside that clause.

The best studied case of (1)–(2) cross-linguistically is the relative clause (RC) construction, in which the clause is embedded inside a nominal expression (DP) which it modifies:

(3) a. [the book [which John has read]]
   b. [das Buch, [das Hans gelesen hat]] [German]
   the book-NEUT.SG REL-NEUT.SG Hans read has
   'the book which Hans read'

The fronted relative pronoun (*which* / *das*) in the RC heads an internal *wh*-dependency of a noncanonical type (not associated with interrogative semantics). The pronoun enters an external dependency with the containing noun phrase (*the book… / das Buch…*), reflected by morphosyntactic agreement between the head noun (*book* / *Buch*) and the pronoun (*which* vs. **who* / *das* vs. **den* [MASC.SG], **die* [FEM.SG], etc.). This dependency is instrumental in determining the construction's interpretation — in (3), restrictive modification by the RC.[2]

Properties (1) and (2) define two basic issues in the syntax of relative clauses: (a) the structural relation of the clause to the DP containing it — whether the clause is a complement or an adjunct, and where it is located; (b) the nature of the relation between the *wh*-dependency and the head noun — whether

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the noun is generated outside the clause, or originates from inside the clause. (1)–(2) are common to (virtually) all proposals. However, there are two competing approaches to relative clause syntax which diverge according to their view on the syntactic expression of each relation.

The semantic distinction between a complement and a relative clause, respectively 'argument' and 'modifier' of the head noun, is generally assumed to be encoded in the syntactic configuration. The argument relation is encoded as sisterhood — in (4a), the clause is sister to the lexical head N^0 ('canonical' complementation):

(4) $[_{DP}$ the $[_{NP}$ claim $[_{CP}$ that John left]]]

The view on (1) that was standard in work of the 1980's and early 1990's is that the modification relation is encoded structurally via adjunction of the clause to a higher projection of the modified head. In (5), the RC is a sister of a higher projection of NP/DP to which it is adjoined:

(5) $[_{DP}$ the $[_{NP}$ $[_{NP}$ $\text{claim}_j]$ $[_{CP}$ OP_j (that) John made $t_j]]]$

On (2), the standard view is that the N-head is base-generated outside CP, and is linked to the *wh*-dependency in CP by an interpretive (predication, binding or 'construal') relation (Chomsky 1977; Safir 1986; Browning 1991). The *wh*-movement dependency may be headed by a *wh*-pronoun (3a), a [−wh] pronoun (as in German (3b)), or a null operator (5). The standard view is summarized in (6):

(6) a. *Adjunction hypothesis*
Relative clauses are adjoined to NP
b. *Base-generated head hypothesis*
The head noun of a relative clause is base-generated outside that clause.

Alternatives to both hypotheses have existed for a long time. On (1), an early proposal was that relative clauses are sisters (complements) to determiners (Smith 1969). In the framework of the time, the determiner was a daughter of NP and left sister of the head noun. The surface 'head N-RC' order was analysed as the product of a movement rule extraposing the clause in NP — schematically:

(7) a. $[_{NP}$ $[_{Det}$ the + S] N] → b. $[_{NP}$ $[_{Det}$ the] N S]

On (2), according to the 'head-raising' ('promotion') hypothesis (Vergnaud 1974), the external N-head originates inside CP, and so is directly linked with a CP-internal position by syntactic movement. These alternatives are summarized in (8):

(8) a. *Determiner Complement hypothesis*
The relative clause is syntactic complement of the determiner head of DP.
b. *Head-raising hypothesis*
The noun phrase raises from inside the relative clause

The alternatives in (6) and (8) are independent of one another. Smith's version of (8a) is proposed in conjunction with (6b); (8b) is logically compatible with (6a). Moreover, the raising hypothesis is compatible with a landing site for the noun phrase outside of the relative clause, as in Vergnaud's version of (8b).

Developments in X′-theory and the introduction of the DP-hypothesis have altered background assumptions about constituent structure within which proposals are framed. In the context of current models, Kayne (1994) proposes that both alternatives (8) to the standard approach (6) are correct. Given the binary branching hypothesis, this has the unorthodox consequence that the head noun phrase in (3) cannot be the complement of D, even in derived structure. In Kayne's variant of the 'head raising' hypothesis (8b), the head noun raises to the specifier of the complement of D (i.e. SpecCP):

(9) a. $[_{DP}$ the $[_{CP}$ that John made $[_{DP}$ claim]]]]
b. $[_{DP}$ the $[_{CP}$ $[_{DPj}$ claim] that John made t_j]]]

Examples with relative pronouns (analysed as transitive determiners) have a more complex derivation, involving an initial step in which the NP complement of D raises to SpecDP:

(10) a. $[_{DP}$ the $[_{CP}$ that John made $[_{DP}$ which $[_{NP}$ claim]]]]]
b. $[_{DP}$ the $[_{CP}$ that John made $[_{DP}$ $[_{NPj}$ claim] which t_j]]]]
c. $[_{DP}$ the $[_{CP}$ $[_{DP}$ $[_{NPj}$ claim] which $t_j]_k$ C^0 John made t_k]]]

From the standpoint of the state of research of the early 1990's, each of the approaches (6) and (8) has its specific problems, which, moreover, appear to a large extent to be complementary, the weakness of one approach being the strength of the other.

1.1 *Adjunction to external head*

1.1.1 *Constituency*

The adjunction hypothesis rests on the assumption that the semantic distinction between a complement and a relative clause is encoded in the syntactic configuration — sisterhood to head (complement) vs. adjunction to a higher projection (modifier relation):

(11) a. $[_{DP}$ the $[_{NP}$ claim $[_{CP}$ that John left]]]
b. $[_{DP}$ the $[_{NP}$ $[_{NP}$ claim] $[_{CP}$ that John made]]]

While there is no consensus about the adjunction site of relative clauses (N′, NP, D′, DP are all suggested in the literature; cf. Browning 1991: 56), under the DP-hypothesis various considerations converge on NP for restrictive relative clauses at least. If maximal projections may only adjoin to maximal projections (Chomsky 1986), then only NP and DP are available. A restrictive relative is interpreted within the scope of the determiner, most clearly when this is a quantifier, as in (12). Assuming semantic scope reflects c-command, then restrictive relatives cannot be adjoined to DP:

(12) a. every girl that Mary saw
b. $\forall_x$ [girl(x) $\wedge$ Mary saw(x)]

Appositives (ARCs) differ in not being interpreted within the scope of the determiner. Jackendoff (1977) proposed that the restrictive/non-restrictive distinction is reflected configurationally, non-restrictives being adjoined higher than restrictives; Demirdache (1991) suggests specifically that non-restrictives are DP-adjuncts.

The analysis (11b) fulfills basic requirements in capturing surface distribution and 'constituency facts'. The DP (D^0+NP) exists as a constituent independently of the 'optional' adjunct. The string corresponding to CP correctly appears right-peripherally and forms a constituent that can be displaced from DP (via extraposition).

Questions about the adjunction analysis arise when comparatives, equatives and degree constructions are considered.

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

The bracketed clauses in (13) are very similar to RCs. The whole construction functions externally as a DP. The degree word (*-er*, *as*, *too*) in combination with a cardinal determiner (*many*) functions like a determiner, governing N and heading the construction (Corver 1990). Syntactically the clause displays internal *wh*-movement. Semantically, too, the clause is like a restrictive relative in that it is interpreted in the scope of the determiner. The positioning of the clause is identical to that of an RC; it appears right-peripherally in DP or may undergo extraposition. To analyse the clauses in (13) as adjuncts to NP seems equally motivated, except that the selection of the clause by the degree word fails to be

captured. The optimal expression of selection relations is in terms of a head directly selecting its complement; it is conceptually unattractive to have a head select an adjunct to its complement. Such considerations give rise to analyses similar to the determiner complement analysis with extraposition in (7) above (cf. Bresnan 1979):

(14) a. $[_{NP}\ [_{Det}$ Deg + S] N] $\rightarrow$ b. $[_{NP}\ [_{Det}$ Deg] N S]

While right-adjunction may be the correct surface analysis, for both degree complement clauses and relatives, this does not entail that the adjunction structure is base-generated. For the constructions in (13), the selection relation suggests this is not so. Since it is known independently that RRCs are susceptible to extraposition in the same way as comparative clauses, surface order is no compelling argument for base-generating RRCs in right-adjoined position.

1.1.2 *Null operators and connectivity*

Internal *wh*-movement in relative clauses (15a) differs in crucial ways from interrogative *wh*-movement in argument clauses (15b) or in root clauses. There is no morphosyntactic or referential dependency between the *wh*-phrase and the containing DP in (15b); the clause itself satisfies requirements of the argument position of the lexical head (N = *question*) which selects it.

(15) a. the claim [which John made _]
b. the question (of) [which claim John made _]

The *wh*-pronoun in the RC (15a) displays agreement with the N-head of NP/DP (see above). Its interpretive function is to establish a link between the head NP/DP and some position within CP (via the trace it binds), on the basis of which the semantic modification of the nominal by the RC arises.[3]

Unlike interrogative *wh*-forms, relative pronouns need not be realized in English and many other languages. The early analysis whereby a *wh*-word is moved and subsequently deleted, was replaced by the 'null operator' hypothesis (Chomsky 1980: 1981) — in (16) it is assumed that a null operator is fronted:

(16) the claim [OP that John made _]

Chomsky (1977) demonstrated that a range of constructions involving such a dependency between a gap in a dependent clause and an external 'head' show diagnostics of A′-movement (*wh*-movement) (on (17ii), cf. Chomsky 1982; Browning 1991):[4]

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(17) the dependency between gap and head is (a) governed by Subjacency (i.e. shows the full range of island effects also observed in interrogative *wh*-movement), and (b) licenses parasitic gaps, like interrogative *wh*-movement

Given (17), the base-generated external head hypothesis makes the assumption of a null/deleted element in (16) necessary.

The 'base generated external head' hypothesis raises questions about the proper treatment of connectivity (reconstruction) effects. A reflexive contained in the 'external head' may be interpreted as dependent on a subject commanding the gap (Higgins 1979; Barss 1986). They thus differ from interrogatives, where connectivity effects show up inside the moved phrase:

(18) a. the picture of *himself* [OP_j] that *John* painted t_j
b. [which picture of *himself*]$_j$ did *John* buy t_j?

Chomsky's (1993) account of reconstruction effects in terms of movement chains predicts reconstruction effects will arise only under displacement via movement. However, under the standard approach to RCs, reference to displacement under movement alone is insufficient to account for the syntactic basis of connectivity. 'Reconstruction' of the operator into its trace position in (18a) will not account for binding of the anaphor, since it is not part of the operator (rather, the anaphor is linked to the operator by being contained in a phrase that functions as external 'head').

The head raising analysis on the other hand allows a direct assimilation of (18a) and (18b), since in that analysis, the head does form part of a chain extending into the c-command domain of the antecedent of the anaphor:

(19) the [picture of *himself*]$_j$ that *John* painted t_j

Thus, to the extent that the copy-theory of reconstruction is correct, connectivity effects between the head and items inside the RC provides an argument favouring the head-raising approach.

The null operator thus plays a crucial role in the 'external head' analysis of these constructions. The place of this element in the Government-Binding typology of empty NPs remained unclear during the 1980's (Chomsky 1981 suggests PRO; Browning 1991 suggests *pro*). In the context of Chomsky's (1993) proposal to treat traces as a phonologically silent copies of their moved antecedents, the status of the null operator is questioned anew. Should OP be considered a pronominal element (a phonologically null 'intransitive' D^0)? Or a deleted copy of the external head which binds it? The latter possibility would

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suggest a copy-based approach to connectivity effects in (18a); the movement chain would contain 'copies' of the reflexive (cf. Munn 1994). However, the basic issue remains — the external head is not part of the movement chain.

1.2 *Determiner complementation and head raising*

1.2.1 *Selection effects*

Arguments for alternatives to the standard adjunction analysis of relative clauses have generally taken the form of showing selection of the relative clause by the determiner. Such cases include German *derjenige* 'the (very)', which requires the presence of a relative clause, but not of N/NP:

(20) derjenige (Mann) *(der dort sitzt)
the+that man who there sits
'the very man(/person/one) who is sitting there'

Other cases in which a combination of a noun with an (in)definite article require a relative clause also suggest a close dependency between the relative clause and the (in)definiteness of the determiner (Smith 1969; Stockwell et al 1973):

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

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

However, what such data suggest is some kind of interpretive dependency between determiners and RCs; it is not clear *a priori* that a syntactic selection relation is involved. No specific relation between specific determiners and complementizers such as found in degree constructions (*more-than* etc.) is evident (but see Section 1.2.3 below).

1.2.2 *Binding and scope reconstruction*

A second class of arguments speak against the 'base-generated external head' hypothesis and for the existence of a movement chain between the head noun and the trace position in the relative clause (the head-raising/promotion analysis of Vergnaud 1974).

The main such argument is that the head raising analysis permits connectivity effects in relatives to be assimilated to those of canonical *wh*-movement, both now internal to a movement dependency. It also permits the assumption of a null operator to be given up; but leaves the role of overt relative pronouns in need of clarification.

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Chomsky's (1993) 'copy-trace' analysis of anaphor reconstruction facts in relative clauses is straightforward in a generalized head-raising analysis. The head NP in restrictive relatives displays the full range of BT-reconstruction facts (cf. 'multiple binding possibilities' in (23b) discussed in Barss 1986):

(23) a. the portrait of himself$_j$ that John$_j$ painted. [BT Principle A]
b. the portrait of himself$_{j/k}$ that Bill$_k$ said that John$_j$ painted. [BT Principle A]
c. *the portrait of him$_j$ that John$_j$ painted. [BT Principle B]
d. the portrait of him$_j$ that John$_j$ thinks that Mary painted [BT Principle B]
e. *?the portrait of John$_j$ that he$_j$ (thinks that Mary) painted [BT Principle C]

These facts indicate that copies of the head are present in the movement chain inside the RC (however, Platzack, this volume, casts doubt on the cross-linguistic validity of this paradigm).

Further evidence for head-reconstruction comes from facts about pronominal variables and scope. A pronoun in the head position can be interpreted as a variable bound by a QNP inside the RC (24), and a quantifier in the head position may have narrow scope with respect to a quantifier in the RC (25) (Bianchi 1995: 123–4):

(24) The [period of his$_j$ life] [about which nobody$_j$ speaks *t*] is adolescence.
(25) I telephoned the [two patients] [that every doctor will examine *t*] [$\forall > 2$]
(26) I telephoned two [patients] [that every doctor will examine *t*] [*$\forall > 2$]

If *two* can be part of the raised head when an external overt determiner is present (25), but is itself the external determiner in (26), then the inverse scope reading can be attributed to reconstruction of the raised head into the scope of *every N*.

A priori, it is also possible that scope reversal is due to raising of *every N* out of the relative clause to a position where it takes scope over the head, as in May's (1985) 'inverse linking' cases:

(27) Two senators from every city$_j$ will represent it$_j$ at the convention. [$\forall > 2$]

Such an approach may be plausible for cases like (28), where a pronoun outside a DP may be bound by the RC-internal QNP (Arnim von Stechow, p.c.).

However, examples where this is possible are generally copula sentences, not the case in (25).

(28) The period of his$_j$ life about which nobody$_j$ speaks willingly is his$_j$ adolescence.

Connectivity effects in copula constructions (including pseudoclefts) have been argued to be a different phenomenon to those found in A′-movement constructions (Barss 1986). It is not reasonable to suppose that the clefted XP is generated in the position of the *wh*-trace inside the *wh*-CP in (29a), since the same connectivity effects show up in non-clefted 'equational' copula sentences in which there is no *wh*-trace into which that XP can be reconstructed (29b):

(29) a. *What he$_j$ claimed was that John$_j$ was innocent
b. *His$_j$ claim was that John$_j$ was innocent

There is a lively controversy currently under way over the correctness of the copy-based approach to connectivity, with doubts being expressed especially on the basis of facts such as (28)–(29) (cf. Heycock & Kroch 1996; Boskovic 1997; Sharvit 1997; Den Dikken et al. 1998 for recent contributions). It suffices to note here that the strength of the connectivity argument for head-raising in RCs depends not least on the outcome of that debate.

1.2.3 *(In)definiteness of trace*

The lack of definiteness effects on the trace of *wh*-movement in relative clause with definite heads (tested by relativization of the subject of *there*-constructions) has also been identified as a problem for the base-generated external head hypothesis (Carlson 1977; Heim 1987; Browning 1991). The trace of interrogative *wh*-movement appears to inherit definiteness of the moved *wh*-phrase (Heim 1987):

(30) a. *How many people* will there be __ in the room?
b. **Which three people* will there will be __ in the room

The gap in a relative clause may occur in a position barring definite DP, despite the 'head' DP being definite, indicating that it is not a definite DP that is interpreted in the position of the gap:

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

Browning (1991), assuming an external head / adjunction analysis, sees in such examples evidence for adjunction to NP, claiming that the relative operator-variable chain is construed with the NP (not marked for definiteness) rather than the containing DP.

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Carlson (1977) makes a case for a raising analysis on the basis of similar data. He observes that definiteness effects are often reversed by the addition of relative clauses. Abstract mass nouns generally resist 'strong' determiners (definites, universal quantifiers), as in (32). However, adding a relative clause reverses judgements — a strong determiner is required (33):

(32) a. Americans exhibit much/some/little courage in such situations
b. ??Americans exhibit the/any/all courage in such situations

(33) a. ??Americans exhibit much/some/little courage *that is required* in such situations
b. Americans exhibit the/any/all courage *that is required* in such situations

Similar reversal holds in the case of (31): relative clauses containing 'indefinite trace' resist attachment to nominal heads with weak determiners:

(34) ??Some/three/few men that there were in the garden …

Carlson distinguishes a third type of relative clause — Amount Relatives, alongside the two classes (Restrictives and Appositives) traditionally recognized. He proposes that while restrictives are compatible with cardinal (weak) determiner or strong determiners, amount relatives are compatible with (selected by) a strong determiner only (33).

It is proposed that the relativized NP in Amount Relatives contains a phonetically null indefinite determiner AMOUNT designating a quantity or amount, equivalent to overt *much/many* (and related to the zero determiner involved in comparatives). Assuming that this determiner is reconstructed into the trace position inside the relative yields a plausible representation for interpretation (crucially, the external strong determiner is not reconstructed):

(35) the$_x$ [[x AMOUNT courage] is required] [cf. (33b)]

The restriction of relatives with 'indefinite' trace to relatives headed by strong determiners suggests that such relatives are generally Amount Relatives.

This analysis thus provides two arguments against the standard analysis, at least for Amount Relatives, one favouring a determiner complementation analysis — selection of relative clause type by a class of determiners; and one favouring head-raising (we return to these facts in Section 3.5 below; see also Schmitt, this volume, for discussion).

1.2.4 *Idioms*

Perhaps the most well-known argument against the assumption of base-generated external heads concerns idiom expressions (Schachter 1973; Vergnaud 1974):

(36) a. How much headway did they make?
b. *The headway was insufficient
c. The headway that we made was insufficient
d. *We made the headway that was insufficient

The standard assumption is that nominal parts of an idiom expression (*headway*) must be generated as the complement of the verb of the expression (*make*), and cannot be generated independently, hence the illformedness of (36b). Displacement of an idiom N from its verb arises from movement of the nominal away from its verb (36a). The base-generated head hypothesis requires that in RCs, the nominal can be generated independently, while under the head-raising hypothesis, the idiom N head of the relative has raised from the object position of *made* in the relative clause, allowing (36c) to be assimilated to (36a).

The contrast (36c) vs (36d) (Carlson 1977) is particularly suggestive. Not only may the idiom chunk be licensed internal to the relative clause and not externally (36c), it appears that it must be licensed internally — if it is not, the example is bad despite being licensed externally.

However, on closer inspection the evidence from idioms turns out to be equivocal. On the one hand, in cases involving idiom chunk displacement that support head-raising, i.e. those where the head NP must be licensed inside the relative (36), the displaced noun is an abstract mass noun, so that such constructions count as Amount Relatives. Thus, arguments for a head-raising analysis of Amount relatives might suffice to account for those data, without reference to the idiom status of the head noun. On the other hand, cases exist in which the idiom is not licensed in the RC (McCawley 1981):

(37) a. John pulled the strings that got Bill his job
b. *The strings / Strings got Bill his job

Such facts raise new questions concerning how the relative clause is interpreted; and more generally, the status of idiom chunk displacement as an argument for reconstruction.[5]

1.2.5. Head internal relatives

Cross-linguistically, the determiner-complementation hypothesis derives support from the existence of internally headed relative clauses (IHRCs) in languages such as Japanese, Quechua and Lakhota.

The nominal head of the relative clause is contained within it, rather than external to it. The clause itself joins with a determiner to form a constituent that functions externally as a DP, indicating a relative clause that is complement to

D (Lakhota example from Williamson 1987):

(38) [$_{DP}$ [$_{CP}$ Mary [$_{DP}$ owiza wa] kage] ki] he ophewathu
Mary quilt a make the I-buy
'I bought the quilt that Mary made'

The internal DP in this construction must be indefinite even if, as in (38), reference is to a definite entity ('the quilt…'), indicating that the noun is construed with respect to the upper determiner, definite in (38).

Under the base-generated external head hypothesis, the existence of constructions like (38) is mysterious. Adopting a head raising approach permits them to be analyzed as an ordinary relative construction in which head-raising takes place after S-structure. Head-internal and head-external relatives can then be viewed as instances of essentially the same construction. Languages with head-internal relatives can be related to those with head-external relatives via an overt/covert movement parameter, paralleling the result established for interrogative *wh*-movement (Huang 1982).

1.3 *Coordination: a problem for both approaches*

Problems for both approaches arises with respect to two sets of coordination facts — multiply-headed RRCs (Link's (1984) 'hydras'); and relative clauses taking split antecedents (Perlmutter & Ross 1970).

From the point of view of the adjunction/external head approach, the 'hydra' in (39) appears to underly contradictory requirements. The plural relative modifies the plural conjunction of singular DPs, which seems to require a DP-adjunction analysis (39b). If the RC were adjoined to NP inside the second DP, then it would be contained in one of the DP conjuncts, i.e. inside the constituent it modifies. On the other hand, scope requirements dictate NP-adjunction (39c). That such relative clauses can be restrictive modifiers of the conjoined DP is clear from (40):

(39) a. the man and the woman who were arrested
b. [$_{DP\text{-}PL}$ [$_{DP\text{-}PL}$ DP_{SG} and DP_{SG}] [$_{RC}$ who_{PL} …]]
c. [$_{DP\text{-}PL}$ [$_{DP\text{-}SG}$ the [NP *RC*]] and [$_{DP\text{-}SG}$ the [NP *RC*]]

(40) a. every man and every woman who was arrested
b. $\forall_x$ [(man(x) $\vee$ woman(x)) $\wedge$ was-arrested(x)]

The RC in (39a) or (40a) cannot be simultaneously c-commanded by both determiners, without recourse to additional assumptions (such as across-the-board raising). Such examples pose as much a problem for the syntax and semantics of

coordination as of relative clauses; but they serve to show that the adjunction analysis is by no means straightforwardly correct.

The problem raised for the adjunction analysis by (39)–(40) applies in equal measure to the determiner complementation analysis, which also has the RC c-commanded by the determiner. Such examples pose an additional problem for the head-raising analysis. Interpretation indicates a coordinated head (as does agreement in the RC in (39)). If the determiners (*the*, *every*) are external to the raised head, then these examples appear to involve a discontinuous raised head (*man … woman*).

A similar issue is raised, only in a more extreme form, by the existence of relative clauses taking split antecedents (Perlmutter & Ross 1970). In (41), a plural RC appears at the edge of conjoined main clauses, modifying two singular 'heads', one in each clause:

(41) John saw *a man* and Mary saw *a woman*
[who were wanted by the police].

Such examples were used to argue against the original head-raising approach to relative constructions (Andrews 1975); this is one argument that Kayne (1994) does not address. While it is feasible for an RC to be linked to multiple antecedents by a rule of construal, as in the standard approach, to claim that they are linked by a movement dependency is problematic. It seems rather far-fetched to suppose that the antecedents in (41) could have originated inside the relative clause (say, as a conjoined DP) to then be split and distributed across two clausal conjuncts after raising (a kind of 'reverse' Across-The-Board raising).[6]

1.4 *Summary*

The considerations just reviewed give an idea of the major lines of argument for and against the two approaches (6) and (8) to RCs. The raising hypothesis leads to the expectation that we should find connectivity effects, i.e. syntactic interactions between subconstituents of the head nominal and subconstituents of the RC, not predicted by the external head hypothesis. The determiner complementation hypothesis leads to the expectation of syntactically controlled selection effects between determiner and complementizer, not expected under the adjunction hypothesis. In addition, the head raising analysis makes available a natural way of integrating the account of IHRCs, not available under the external head hypothesis.

In Section 2. we examine Kayne's specific approach in more detail, concentrating on restrictive relatives of English. In Section 3, we present a more

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fine-grained classification of RC types (drawing on Grosu & Landman 1998), pointing to new issues they raise, and reassessing some of the points raised in Sections 1–2.

2. Kayne's proposal

As mentioned above, Kayne's specific variant of the head raising hypothesis (1994: ch. 8) has the head noun raise to the specifier of the CP complement of D, while examples with relative pronouns involving an initial step in which the NP complement of D raises to SpecDP (cf. (9) and (10), repeated here):

(42) a. $[_{DP}$ the $[_{CP}$ that John made [claim]]]] [= 9]
b. $[_{DP}$ the $[_{CP}$ [claim]$_j$ that John made t_j]]]

(43) a. $[_{DP}$ the $[_{CP}$ C^0 John made $[_{DP}$ which $[_{NP}$ claim]]]] [= 10]
b. $[_{DP}$ the $[_{CP}$ C^0 John made $[_{DP}$ $[_{NPj}$ claim] which t_j]]]
c. $[_{DP}$ the $[_{CP}$ $[_{DPk}$ $[_{NPj}$ claim] which t_j] C^0 John made t_k]]]

The derivations of more complex examples with pied-piping and/or stacking are composed of these two processes.

2.1 *Linear order and hierarchy*

Kayne's proposal is developed in the context of his Antisymmetry hypothesis concerning the relation of hierarchical structure and linear order, which claims that hierarchical structure fully determines linear order as in (44), according to the Linear Correspondence Axiom (LCA):

(44) 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

One consequence of the LCA is that right-adjunction is prohibited. Since Y adjoined to X asymmetrically c-commands X, the terminals of Y may only precede those of X in the string. The adjunction analysis is thus excluded for postnominal relatives (as in English), where the RC follows the rest of the DP it is supposed to be adjoined to. The D-CP complementation analysis is consistent with the LCA; D precedes its complement CP, whose daughters it asymmetrically c-commands.

The main conceptual motivation for the proposal therefore hinges on the fact that it enables a restrictive theory of phrase structure and of the order-

hierarchy relation to be upheld; but even if that theory proves not to be correct, the approach to RCs may well be, and it certainly merits consideration independently of the LCA.

2.2 *Other advantages*

The proposal inherits specific advantages of the determiner complementation and head-raising hypotheses discussed above. Supposing the determiner complementation hypothesis to be correct, the analysis (42) provides a structure in which D selects CP directly, thus avoiding the extension of selection to adjuncts, while preserving binary branching. The head-raising analysis is able to capture connectivity effects within a restrictive (copy theory) approach — reconstruction effects can be attributed to movement chain formation in relatives, as in interrogatives. A basis is also provided for capturing the facts of § 1.2.3 — the definiteness of the trace in the RC is linked to the definiteness of the raised NP/DP, not to that of the external determiner. We return to these cases, and to the possibility for an integrated approach to externally headed RCs and IHRCs (and other RC types) in Section 3.[7]

2.3 *Problems*

The D-CP + head-raising approach faces basic issues of descriptive adequacy having to do with the unorthodox constituency it imposes on the head-relative nexus, of which we mention a few here (cf. Borsley 1997 for more extensive discussion).

2.3.1 *The nature of the raised constituent*

A descriptive issue arising immediately concerns what constituents may raise to SpecCP. The raised consituent in (42) is a bare count noun *claim*. It is well-known that English singular count nouns may not occur without an overt determiner in other contexts:

(45) John made *(the/a) claim

As pointed out by Borsley (1997: 631 ff.), several generalizations converge on the conclusion that the trace of the relativized element (at least where it corresponds to an argument inside the RC) is not a 'bare' NP but a DP. This suggests that the raised element in RCs lacking a relative pronoun is actually a DP, with covert D. In other words, the null operator of the standard approach (Section 1.1.2) reappears in this analysis in the form of an abstract D.

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Questions arise concerning the first step in the derivation of RCs with a relative pronoun, i.e. raising of NP to SpecDP, cf. (43). While such processes may be attested outside relative constructions in other languages (all languages with DP-final D^0, in Kayne's approach), it is not motivated elsewhere in the grammar of English.

Part of the motivation for taking the head NP to form a constituent with the relative pronoun in SpecCP comes from some recalcitrant facts about relative pronouns in Romance. In Italian (46) and French, while relative pronouns are used in RCs when prepositions are pied-piped (46a), they cannot be used for relativization of direct objects (46b):

(46) a. la persona {*cui / che} Bill ha visto [Italian]
the person {*who / that} B. has seen
'the person who Bill has seen'

b. la persona con cui Bill ha parlato
the person with whom B. has spoken
'the person with whom B. has spoken'

An obvious line on (46a) would be to invoke an "avoid (relative) pronoun" principle (cf. Chomsky 1981), with the overt pronoun forced if pied-piping occurs. Kayne (1994: 88f) rejects this on the basis of (47), which suggests the correct generalization to be that a relative pronoun is possible only if the phrase moved is a PP (i.e. not if pied-piped in a DP).

(47) a. *l'homme la femme de qui tu as insulté [French]
the-man the wife of who you have insulted
'the man whose wife you have insulted'

b. l'homme avec la femme de qui tu t'es disputé
the-man with the wife of whom you argued
'the man with whose wife you argued'

c. $[_{DP}$ le $[_{CP}$ $[_{PPk}$ [homme]$_j$ [avec [la femme de [qui t_j]]]]] C^0 $[_{IP}$ … t_k …]]]

If, as in the analysis (43) above, the head must occupy the highest specifier of the phrase moved to SpecCP, then the head in (46b) and (47b) is in SpecPP (47c). (46a) and (47a) are accounted for if French/Italian D does not tolerate NP in its specifier. English differs from French/Italian in that in the former, SpecDP is available as a landing site for the head NP as in (43), as well as SpecPP.

Crucially, if there were a landing site for the raised NP outside of CP, say a functional specifier between D and CP, this account of the contrast would be lost. On the other hand, the assumption that the head NP and the XP containing

the relative pronoun form a surface constituent, gives rise to conflicts with the constituency indicated by extraposition (cf. Section 2.3.3 below), which would be avoided if it were assumed that the NP raises out of CP, leaving (the phrase containing) the relative pronoun inside CP. A number of proposals are to be found in this volume that reject the assumption that the head and the (XP containing the) relative pronoun form a constituent in surface structure. Kayne's proposal relies on there being 'no extra space' between the external D and the IP of the RC for the head and the relative pronoun — i.e. both must 'fit into' the single specifier of CP. Bianchi (this volume) and Zwart (this volume) each argue for a 'split CP', with different C-heads providing extra such specifier positions.

Another question is raised by the fact that a contrast like the one in (46)–(47) also appears in English infinitival relatives:

(48) a. the person {*who / Ø} to see
b. the person with whom to speak
c. *the person {whose mother / the mother of whom} to see
d. the person {?to whose mother / ??to the mother of whom} to speak

The contrast (48c) vs. (48d) suggests strongly that this is the same fact as found in Romance finite RCs; yet here, an account in terms of D not tolerating NP in its specifier is of no help, as this would lose the account of the contrasts in finite RCs.

Law (this volume) takes a different tack on the paradigm (48), seeking to relate it specifically to the finite/non-finite distinction; though his proposal too leaves open the generalization to Romance finite RCs.

Such facts are just the tip of an iceberg of complex, cross-linguistically varying, and apparently syntactically determined patterns in the realization of relative pronouns and complementizers in RCs, on which little progress seems to have been made beyond the 'filters' account of Chomsky & Lasnik (1977) (but see Section 3.4 below).

2.3.2 *Morphology*

Generally, a noun shows Case-agreement with the determiner with which it forms a constituent / extended projection. In the analysis (42), the head noun, being raised, does not form a constituent with the external determiner, but may form a constituent with an internal relative pronoun/determiner with which it raises, as in (43). Yet in German and other languages with relevant morphology, the head N of a relative construction consistently bears the Case of the external determiner rather than of the internal relative pronoun.

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(49) der Junge (/*Jungen), den wir kennen
the-NOM boy-NOM (/*boy-ACC) who-ACC we know
'the boy who we know'

This situation is *prima facie* more compatible with the constituency induced by the standard (adjunction) analysis, in which the N-head forms a constituent (extended projection) with the external determiner and never with the relative pronoun (50a). In the standard analysis, this relation between the head NP and the external D is reflected already in the base structure. In the D-CP analysis, the clausal complement of D supplies D with its NP argument during the derivation. Kayne (1994: 88) suggests that the D-NP relation is reflected at logical form by incorporation of N^0 (head of the raised NP) into D (50b):

(50) a. $[_{DP}$ D $[_{NP}$ N] $[_{CP}$ (Rel) … *t* … $_{CP}]$ $_{DP}]$
b. $[_{DP}$ N_j +D $[_{CP}$ $[_{Spec}$ t_{Nj} (+Rel)$]_k$ C $[_{IP}$ … t_k …]]]

This proposal may provide the basis for an account of the Case agreement facts, assuming this agreement is determined by LF-configuration. Cf. Bianchi (1995, this volume) for further discussion.

2.3.3 *Constituency and extraposition*

The derivations of more complex examples with pied-piping yield structures in which the relative pronoun (or a constituent containing the relative pronoun) form a constituent with the raised head, in stark constrast with the constituency imposed in standard adjunction analyses. (51a) exemplifies the standard analysis, (51b), the Kaynian analysis:

(51) a. $[_{DP}$ the [*boy*] $[_{CP}$ $[_{PP}$ with [*whose* mother]] C^0 $[_{IP}$ I spoke $t_{PP}]]]$, ..
b. $[_{DP}$ the $[_{CP}$ $[_{PP}$ boy_j [with [[*who* t_j] 's mother]] C^0 $[_{IP}$ I spoke $t_{PP}]]]$, ..

Crucially, the string *boy with whose mother* forms a constituent within CP in (51b).

When a relative clause is extraposed, the string D+N becomes separated from the remainder of the construction:

(52) a. we will discuss *the claim* tomorrow *that John made yesterday*
b. we will see *the boy* tomorrow *with whose mother I spoke*

The extraposition facts appear straightforwardly compatible with the right-adjunction hypothesis, since the displaced string always corresponds to a maximal constituent (CP), a suitable target for movement.

In combination with the assumption that movement is always to a c-commanding position, the LCA has the consequence that a moved constituent always precedes its trace, i.e. there is only movement to the left. Not only is the right-adjunction analysis of relatives inconsistent with the LCA, so also is the view in which extraposed relative clauses are moved from inside DP, a case of apparent rightward movement, in conflict with the LCA.

Independently of the question of direction of movement, Kayne's analysis provides the 'wrong' constituency for extraposition phenomena. Assuming that the clausal constituent *that John made yesterday* in (52a) is displaced by movement, its status as a submaximal constituent is problematic. In (52b), the displaced string *with whose mother I spoke* does not form a constituent at all (cf. (51b)).[8] See Kayne (1994: ch. 9), Wilder (1995), and Mahajan (this volume) for further discussion.

3. A more fine-grained typology

The discussion of the two approaches in the previous sections concentrated largely on one type of RC, namely restricted relatives with external heads. Once other RC-types found across languages (or even within one language) are taken into consideration, questions concerning the pros and cons of each approach arise in more detailed form, i.e. separately for each type, and with respect to the relations and distinctions between the various types.[9]

3.1 *Relative clause construction types*

The standard typology of relative clause types distinguishes headed relative constructions from non-headed relatives, i.e. free relatives (FRs). In fact, in most currrent accounts (see below), FRs are internally headed, in the sense that the noun contained in the fronted *wh*-phrase, which plays a similar role to the external noun in headed relatives, is generated, and situated at surface structure, within the clause.

Languages like Japanese, Lakhota and Quechua (Cole et al. 1982; Cole 1987; Williamson 1987) have internally headed relative constructions of a different type (cf. § 3.3 above). The nominal head is superficially contained within a clause, in construction with a determiner (in languages with overt determiners), that functions as an argument of the higher clause.

In South Asian languages, e.g. Hindi, Marathi, the form of RCs — known as 'correlatives' — is rather different again. The head is contained inside the

clause, and is related to a pronoun or other expression in the containing sentence (here: *vah* 'he') (Andrews 1975; Lehmann 1984: 133; Srivastav 1991):

(53) [Jo larkaa mere paas rahtaa hai], vah meraa chotaa bjaaii hai. [Hindi]
REL boy me near living is he my small brother is
'The boy who lives near me is my small brother.'

Among the headed relatives, restrictive relatives are distinguished from non-restrictive (appositive) relatives. The semantic distinction (restrictive vs. non-restrictive modification) is reflected in differing syntactic properties in different languages.

Carlson's (1977) proposal to distinguish a third class of externally headed RCs (his 'Amount Relatives') is taken up by Grosu & Landman (1998), who identify this class as Degree relatives (DegRCs). Reassessing Carlson's proposal, they argue that DegRCs form one instantiation of a wider class of RCs, characterized by an interpretive operation of 'maximalization' (hence 'maximalizing relative clauses' or MaxRCs). Along with DegRCs, the class of MaxRCs includes free relatives, Srivastav's (1991) correlatives, and certain internally headed relative constructions.

The Grosu-Landman typology can be summarized as follows:

(54) a. ARCs
b. RRCs
c. MaxRCs (DegRCs, FRs, correlatives)

As they observe, left-to-right order can be construed as reflecting the degree to which the RC is essential to the meaning of the phrase it is in construction with (ARCs being non-essential, MaxRCs being essential). It also corresponds roughly with the evidence for the head being interpreted within the clause: in ARCs, there is less evidence that the external head should be interpreted within the RC, than in RRCs; while MaxRCs appear to require this. However, the language-type parameter (internal/external head) appears to cut across the classes.

In the following sections, we briefly examine each of these types, commenting on their relevance for the issues raised in Sections 1–2.

3.2 *Free relatives*

FRs are to be distinguished from headed relatives on the one hand, and interrogative complements on the other:

(55) a. John liked [what(ever) I cooked] [FR]
b. John liked [the thing(s) [which I had had cooked]] [headed relative]
c. John wondered [what I had cooked] [interrogative]

While the FR in (53a) behaves interpretively like the headed relative (53b), its internal syntax is more akin to that of (53c). Overt *wh*-phrases are obligatory in both questions and FRs but not in headed relatives; and the set of fronted *wh*-phrases permitted in FRs is largely identical to those found in questions, the main difference being the occurrence of *-ever* forms in the former but not the latter (other languages, e.g. Bulgarian, Greek, also have specialized pronouns for FRs). Hence, interrogatives and FRs can be assumed to have a common syntactic core, a CP whose head contains a [+wh]-feature, triggering movement of a *wh*-phrase to its specifier:[10]

(56) $[_{CP}\ wh\text{-}XP_j\ [C^0_{+wh}\ [_{IP}\ \ldots\ t_j\ \ldots]]]$

With respect to external syntax, FRs fulfill a range of functions, including those of AP-predicate, PP-complement, and sentential adjunct:[11]

(57) a. John will grow $[_{FR}$ however tall his father did] [=AP]
b. John never puts his socks $[_{FR}$ where he should] [=PP]
c. [Whatever you say], he won't move. [=adjunct-CP]

Keeping to the case of FRs in argument position (55a), the interpretive difference between the interrogative and the FR can be attributed to the fact that the former is a bare CP, licensed as a clausal interrogative complement, while the FR is a CP contained in a DP-projection, hence externally licensed as a DP-argument.

Distributional arguments show that FRs are DPs rather than bare *wh*-CPs (the latter tested for by *whether*). Though *wh*-CPs occur in many positions where DPs are licensed, there are some DP-positions that do not tolerate bare *wh*-CPs. One is the subject position under an inverted aux; another is the goal argument position of double-object verbs:

(58) a. Does what you ordered taste good?
b. *?Does whether he'll fail seem obvious?

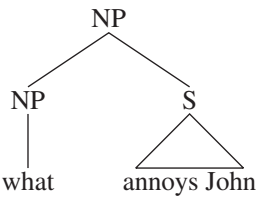
(59) a. He gave whoever she named a kiss
b. *He V [whether I failed] DP

FRs also license Antecedent Contained Deletions, impossible in complement CPs, which is accounted for if FRs (as quantificational NPs/DPs) undergo QR, but complement CPs do not:

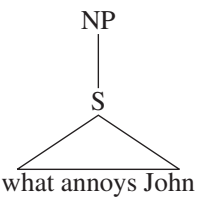
(60) a. Sue [$_{VP1}$ kisses [who Mary does [$_{VP2}$ e]]
[ok if VP1 antecedes VP2]
b. Sue [$_{VP1}$ wonders [who Mary does [$_{VP2}$ e]]
[*if VP1 antecedes VP2]

There has been much discussion about what the head of the construction is. Early proposals to take the *wh*-phrase as the head (61a) (Bresnan & Grimshaw 1978) can be rejected on the basis that the *wh*-phrase has moved, and moved items do not project (Chomsky 1995). Most authors agree that the *wh*-phrase occupies SpecCP, as in other constructions. The issue then turns on whether FRs are 'headless' NPs (61b), or contain an abstract head (61c) (Groos & van Riemsdijk 1981), with the latter obviously favoured on conceptual (X-theoretic) grounds (cf. Grosu 1995). In terms of the DP analysis, FRs may be taken to be CP complements to a phonetically zero D^0 — (61c) is replaced by (62):[12]

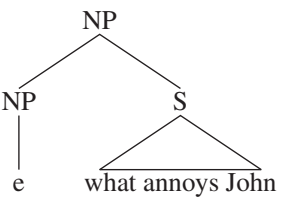
(61) a.



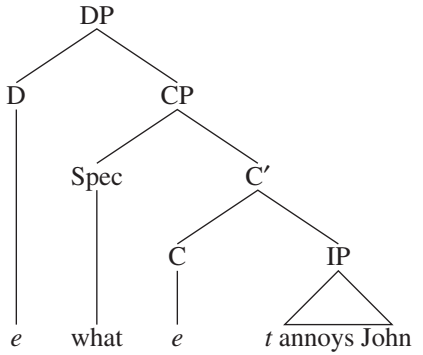
b.



c.



(62)



Clearly, if (62) is along the right lines, then under the standard (external head / adjunction) approach to headed RCs, FRs and RRCs are structurally rather different creatures. The determiner complementation / head-raising approach to headed RCs, on the other hand, permits a natural assimilation of FRs (under this analysis) to headed RCs. Kayne (1994) assumes no difference between FRs and other relatives, treating both as CPs complements of D^0. In the case of FRs, he suggests (1994: 125&154) that the morpheme *-ever* realizes D^0, into which the *wh*-word incorporates:

(63) $[_{DP}\ what_k\text{+ever}\ [_{CP}\ [t_k\ books]_j\ C^0\ [_{IP}\ \ldots\ t_j\ \ldots]]]$

FRs in DP-position receive an interpretation similar to that of a singular definite or a universally quantified DP, cf. (64). That they have no reading similar to that of a nonspecific indefinite / weak existential DP is shown also by the violation of the definiteness restriction induced in (65):[13]

(64) a. What is annoying John is annoying Mary
b. ≠Something which is annoying John is annoying Mary
c. =The thing(s) which is (are) annoying John is (are) annoying Mary

(65) a. *There is [what is annoying John] in this film.
b. *There is [what you ordered] on the desk.

Jacobson (1995) proposes to explain the definite/universal reading of FRs in terms of 'maximalization' in their interpretation (cf. also Rullmann 1995). Grosu & Landman (1998) subsume FRs under their class MaxRC — see below.

Given the analysis (62), it is tempting to attribute the definite reading of FRs to properties of the abstract external determiner, with the universal reading licensed when D is realized by *-ever*, in the spirit of Larson (1987).[14]

The incorporation of the *wh*-form into the external determiner proposed by Kayne is also of relevance in accounting for matching effects. While in ordinary relative clauses, prepositions may pied-pipe with the relative pronoun, in FRs this is only possible if the preposition is also required in the external context (on this case, see Larson 1987; Grosu 1996). (66) requires the FR to function as a PP (adverbial). (67) requires the FR function as NP(DP), barring pied-piping of the preposition:

(66) a. I will live [$_{PP}$ in whatever town you live]
b. *I will live [$_{PP}$ whatever town you live in]

(67) a. *John loves [$_{NP}$ in whatever town you live]
b. John loves [$_{NP}$ whatever town you live in]

However, some languages (Romance, Greek, Bulgarian) allow non-matching FRs in non-subcategorized positions (topic, dislocation and subject positions), unlike English (modulo the cases mentioned in note 10):

(68) a. M′ opjon vgo ekso tha ehi aftokinito
with whoever-ACC go-1SG out FUT have-3SG car [Greek]
'Whoever I go out with will have a car'
b. *With whoever I go out will have a car

Alexiadou & Varlokosta (1996) argue that such 'nonmatching' FRs are actually CPs in nonargument positions linked to a null subject in the matrix, so that the issue of 'matching' does not arise.

Better-studied languages do not allow relativization of more than one constituent within one relative clause. Rudin (1986: ch. 6) describes a multiply-headed FR construction of Bulgarian:

(69) Na kogo kakvoto (/kojato sapka) mu haresva, da [Bulgarian]
to whom what /which hat him pleases PRT
go nosi.
it wear-3SG.
[Lit: 'Whoever likes whatever (/whichever hat), let him wear it']

Though multiple *wh*-movement suggests a link with *wh*-questions, the form of the second relative pronoun, suffixed with the definite morpheme (*-to*) precludes analysis of the clause as an interrogative (cf. English *-ever*). Rather, (69) instantiates a form of correlative construction, as described by Srivastav (1991) for Hindi (Izvorski 1996).

3.3 *Correlatives*

With respect to the descriptive typology of relative clause constructions, Hindi (along with related S. Asian languages) occupies a special place. The relativized noun may appear in construction with the external determiner or with the relative pronoun inside the relative clause; and in either combination, the relative clause may appear in construction with the determiner, or dislocated from it, either to the right (postposed) or to the left (preposed) — schematically:

(70)	a.	$[_{RC}$ … *wh*-(+N) …] … Det(+N) …	preposed RC
	b.	… Det(+N) $[_{RC}$ … *wh*-(+N) …] … (adjacent to Det(+N))	'normal' RC
	c.	… Det(+N) … $[_{RC}$ … *wh*-(+N) …]	postposed RC

These options leads to a plethora of possible surface realizations (see Mahajan, this volume).

In the typology offered by Srivastav (1991), the 'correlative' construction with preposed relative clause (71a) is syntactically distinct from the other two.[15] In the former, the RC is generated as an adjunct to the main clause, and is related to its 'correlate' by binding; in other words, RC and correlate do not form a constituent at any point in the syntactic derivation in (70a), while in the (70b–c), they do, (70c) being related to (70b) via rightward movement of the RC away from the determiner.

Srivastav identifies and analyzes several properties distinguishing correlatives from the other types, among which the fact that the possibility for 'multiple relativization' in the pattern (69) is available only to correlatives; and that with correlatives, the 'correlate' is restricted to strong determiners / definite pronouns. She proposes that the RC in the correlative is interpreted as a quantificational expression which binds the correlate; and attributes the restrictions on the nature of the correlate to conditions on what expressions can function as variables.

Grosu & Landman (1998) follow Srivastav's syntactic analysis, but argue for a somewhat different approach to the interpretation of correlatives; in particular, they argue on the basis of the determiner restrictions on the correlate, that the RC and the correlate must be interpreted 'as a unit'.

Mahajan (this volume) argues for a different, uniform syntactic approach in which correlatives are derived from the same (single constituent) source as 'normal' and 'postposed' RCs.

3.4 *Internally headed relative clauses*

As noted above, FRs in familiar European languages can be regarded as a form of IHRC; as can, too, Hindi RCs and correlatives (at least those taking the option of realizing the head noun inside the *wh*-phrase — see above).

Genuine IHRCs, i.e. constructions in which the head N appears inside the clause not in construction with a relative (or *wh*-) pronoun, appear to be restricted to languages with prenominal relative clauses (Cole 1987). Kayne (1994: 92 ff.) exploits this ordering correlation within the LCA framework to suggest that IHRCs have essentially the same (D-CP) structure as English RCs, with head raising to SpecCP. The sole difference between prenominal and postnominal RCs is claimed to be overt raising in the former of the IP of the RC to SpecDP.

As suggested above, if head-raising is covert in such languages, the internal-external head difference follows; however, the restriction to prenominal RCs would not. Instead, Kayne suggests that head-raising is overt in all cases, with internal-headedness arising from a copy-deletion option made available by overt IP-raising.[16] An RC of the form (71a) has a surface structure like (71b) with at least three copies of the head N present (two indicated, one in the trace of IP). The option to delete the copy in SpecCP rather than its 'trace' in IP (71c), and its restriction to the case where IP has raised, is attributed to a condition on copy-deletion (72):

(71) a. … head N … D
b. $[_{DP}\ [_{IP}$ … [head N] …] D $[_{CP}$ head N [C t_{IP}]]]
c. $[_{DP}\ [_{IP}$ … [~~head N~~] …] D $[_{CP}$ head N [C t_{IP}]]]

(72) A given chain link c_k can license PF deletion of another link c_l only if c_l does not c-command c_k.

The distinction between prenominal and postnominal RCs seems to partially determine further properties. Kayne (1994: 93–95) collects a series of cross-linguistic generalizations about the properties of pre-N relatives:[17]

(73) a. Pre-N relatives lack relative pronouns (Downing 1978: 392–4; Keenan 1985: 149)
b. Pre-N relatives never display a complementizer that is identical to the normal complementizer of sentential complementation. (Keenan 1985: 160)
c. Pre-N relatives contain verbs with non-finite / participial morphology (Keenan 1985: 160)

On (73b), the ordinary declarative C^0 found in post-N relatives (English *that*,

French *que*) is not found in pre-N relatives. Kayne derives this from his claim that since the final NP is stranded in SpecCP, the preposed relative can be maximally IP, hence cannot contain C^0. Some relevant Turkish facts are discussed by Kornfilt (this volume).

3.5 *Degree relatives*

In Carlson's (1977) analysis (see Section 1.2.3), RCs of the type (74a) involve abstraction over degrees or amounts rather than individuals, being interpreted as (74b). The degradedness of (74c) is attributed to the relative pronoun *which* abstracting over individuals (Heim 1987), while the NP associate in the *there*-construction is existentially bound inside IP (cf. Milsark 1977), leading to vacuous abstraction (74d):

(74) a. the wine that there was in the bottle
b. λd [$\exists$x: d-much wine(x) $\wedge$ in-bottle(x)].
c. *?the wine which there was in the bottle
d. λx: $\exists$x [*in-bottle*(x)].

If abstraction in DegRCs is not over individuals but over degrees, then interpretation via set-intersection, as for restrictive RCs, cannot be correct; rather, the head NP is interpreted inside the CP, as a restriction on the degree variable. This suggests strongly that the RC contains a silent copy of the external head NP, as predicted by a head-raising analysis under the copy-theory of movement.

The fact that DegRCs require an external D that is definite or universal was stipulated by Carlson as a selectional property of those determiners (and if correct, provides a direct argument for determiner complementation):

(75) a. {the / those / all / every / any} girl(s) that there were _ in the garden …
b. *{some / several / three / few / no / most} girl(s) that there were _ in the garden …

However, this analysis is revised by Grosu & Landman (1998), who propose that the restrictions on the external determiner in DegRCs can be explained a consequence of their status as maximalizing relatives.

3.6 *Determiner restrictions and maximalization*

Maximality is central to the meaning of the definite determiner (Link 1983). Given a concept of 'individual' covering plural entities (sums of atomic entities)

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as well as atomic entities, the 'universal meaning' of plural definites and the 'uniqueness' of singular definites follows from assuming that the determiner picks out the unique *maximal* individual satisfying the description introduced by the NP.

Several researchers have argued that maximality also plays a crucial role in the semantics of constructions involving *wh*-movement, including FRs (Jacobson 1995; Rullmann 1995).[18] Thus, while it is natural to assume that a *wh*-CP denotes a set, e.g. the set of things Mary ordered in (76), the meaning of the FR indicates that one member — the maximal member — of that set is singled out in interpretation.

(76) John ate [what Mary ordered]

The FR obtains a universal reading, just in case there was a plurality of things Mary ordered; and a singular (definite) reading otherwise.

Grosu & Landman argue that degree RCs are also subject to maximalization, and that the determiner restrictions can be related to this. More specifically, the maximalized CP is compatible only with determiners that "preserve max [=the cardinality of the set obtained by maximalization of CP] into the quantification", i.e. do not single out subsets of the set obtained by the maximalization. The max-preserving determiners have the intersective property (77):

(77) 'D N *be* A' is true iff max(N) = max(N) ∩ max(A);

For instance, *the/those/all apples are red* is true iff max(apples) = max(apples) ∩ max (red things), which is not so for *some/no/most/... apples are red*.

If this is correct, then Carlson's determiner restrictions can be used as a diagnostic for the presence of a 'maximalized relative CP'. When external determiners are restricted to the class (75a), or an RC lacking overt external D is subject to universal or definite interpretation, it can be concluded that the CP-denotation is subject to maximalization. Other cases include FRs, Hindi correlatives, and IHRCs in Quechua (Cole 1987), and in Japanese, which Grosu & Landman claim (following Watanabe's 1991 analysis of them as covert free relatives) are also confined to universal or definite interpretation.

Murasugi (this volume) argues that Japanese IHRCs are not RCs at all, but adjuncts to the matrix clause, binding an external DP in the matrix. If so, then the fact that they show signs of being maximalizing CPs suggests a resemblance to Hindi correlative constructions that deserves examination.

The class of maximalizing CPs also coincides with another property of degree RCs identified by Carlson, i.e. that unlike restrictives, these RCs do not stack:

(78) *the men that there are in the garden that there were in the house.

There are IHRCs — Lakhota (Williamson 1987) — that permit indefinite as well as definite NP-interpretations; significantly, Lakhota IHRCs also seem to permit stacking, suggesting that they are like ordinary restrictive RCs.

In the maximalizing RCs discussed by Grosu & Landman, the 'head NP' is interpreted internal to the RC. The only superfically head-external members of the group are the degree RCs, whose external head is argued to be interpreted inside CP. There are other cases of headed RCs that display Carlson's determiner restrictions, which seem not to belong to the class of DegRCs. One case is Rothstein's (1995) 'adverbial NP-quantifiers over events' (79); Schmitt (1996a, b) discusses more cases, including secondary predicate DPs (80):

(79) I regretted it …
{every / the / both / *most / *no / *some} time(s) I had dinner with him.

(80) John painted their house …
{every / the / both / *most / *no / *some} colours that his girlfriend liked.

The role that maximalisation plays in the description of the meaning of the constructions mentioned is relatively clear: there is less clarity about its source; e.g. whether there is a syntactic correlate. Grosu & Landman merely stipulate that maximality is applied in the interpretation of the CPs in question. It also an open question whether and how maximality in RCs is related to maximality in comparatives and in interrogatives.

3.7 *Appositive relative clauses*

Appositives relatives generally take the form of RRCs; the semantic distinction (restrictive vs. non-restrictive modification) is reflected syntactically to differing extents and in different ways in different languages. In English, the distinction manifests itself in the following properties (Carlson 1977):[19]

(81) a. Appositives are separated from their head by an intonational break
b. Appositives must contain a *wh*-pronoun, whereas restrictives may lack a relative pronoun, being introduced by *that* or a zero complementizer.
c. Appositives, unlike restrictives, may modify (bare) names.

d. Appositives may not attach to certain quantified heads.
e. Appositives may not stack, unlike restrictives.[20]
f. Appositives occur DP-finally (i.e. following all restrictive post-N modifiers).

(82) a. *Any lion, which eats small mammals, is cowardly [ARC]
b. Any lion that eats small mammals is cowardly [RRC]

(83) a. The tiger that I saw that I wanted to buy was expensive.
b. The tiger, which was 5 weeks old, *(and) which was fed twice a day, ate only fish.

Other languages make further distinctions, such as Greek, in which a resumptive clitic pronoun is obligatory in appositives, but not in restrictives. On the other hand, the distinctions in (81) do not hold generally: e.g. (81b) does not hold in Italian; and Swedish uses the same special complementizer in ARCs and RRCs (Platzack, this volume). Even (81a) fails to hold in many languages (Keenan 1985; Kayne 1994: 111).

Further properties to be explained include the fact that ARCs may generally not extrapose, cf. (84a). Extraposition appears marginally possible, but only with presentative focus on the antecedent (84b):[21]

(84) a. *John *arrived*, who happens to be an expert in aerodynamics.
b. ??*John* arrived, who happens to be an expert in aerodynamics.

Both the standard and the Kaynian approaches have problems in accounting for the properties of ARCs.

Consider first the head-raising approach. In generalizing the head-raising analysis of RRCs to ARCs, Kayne attributes special properties of ARCs to covert raising of the IP of the RC to the specifier of DP, i.e. out of the restriction of D:

(85) the Greeks (,) who are industrious
a. $[_{DP}$ the $[_{CP}$ [Greeks(+who)]$_j$ C^0 $[_{IP}$ t_j are industrious]]] [RRC]
b. $[_{DP}$ $[_{IP}$ t_j are industrious] [the $[_{CP}$ [Greeks(+who)]$_j$ t_{IP}]] [ARC]

Three problems arise which are specific to the head-raising operation itself (we return to other problematic properties of ARCs below). Firstly, in contrast to RRCs, there is no evidence for head reconstruction in ARCs (see Bianchi 1995: 109–130, in disagreement with Kayne 1994: 112–3). Apart from some marginal cases of anaphor reconstruction, none of the evidence discussed in Section 1.2.2. yields positive results in ARCs:

(86) a. *John took advantage, which Peter also took of Mary, of Bill.
b. *?That portrait of himself$_j$, which John$_j$ painted last year, is expensive.
c. That portrait of him$_j$, which John$_j$ painted last year, is expensive.
d. That portrait of John$_j$, which he$_j$ (thinks Mary) painted last year, is expensive.
e. *That phase of his$_j$ career, in which every linguist$_j$ works hard, is difficult.
f. I called those two patients, who every doctor will examine.
[*∀>2]

The second problem concerns the fact that the *wh*-phrase of an ARC may contain its own head-NP (87).[22]

(87) ?*War and Peace*, which novel Peter read while he was in Scotland, …

Thirdly, a head-raising approach appears unworkable for ARCs that take a clause or a predicate as antecedent:

(88) a. [John has left], which we are glad about. [CP]
b. John has [left], which Mary hasn't. [VP]
c. John is [stupid/in trouble], which Mary isn't. [AP/PP]

The first problem is admittedly not fatal. Head-raising only opens the possibility for reconstruction from the head, it does not force it. The facts in (86) would be consistent with generalized head-raising, if independent principles ensure that the head cannot reconstruct in appositives (cf. Bianchi 1995: ch. IV on this point). However, the lack of head-reconstruction is equally compatible with an alternative in which the external head is not raised.

Examples like (87) in which the relative pronoun takes a nominal of its own distinct from the external head appear to be directly incompatible with head-raising, requiring at least the possibility for an alternative source for ARCs.[23]

The third problem is also very acute. As Borsley (1997) points out, the head-raising approach to sentential and predicate ARCs implies that the relative determiner (*which*) can take not only clausal complements, but also non-nominal predicative constituents (AP, PP; VP). A conceivable way to avoid this consequence would be to postulate that an abstract nominal functions as complement to *which*, mediating the relation with the raised clausal or predicative 'head', along the following lines.

On the head-raising analysis, (88a) might be derived as in (89). The bracketed constituent starts as complement to an abstract N *fact*, with the ARC

forming the root clause. CP2 then raises to the specifier of *which* within the DP, which itself raises to the specifier of the root clause (cf. also Kayne 1994: 164, fn. 71):

(89) a. [$_{CP_1}$ we are glad about [$_{DP}$ which (*fact*) [$_{CP2}$ (*that*) John has left]]]
b. [$_{CP_1}$ [$_{DP}$ [$_{CP_2}$ (*that*) John has left] which (*fact*) t_{CP_2}] we are glad about t_{DP}]

The analysis has two potential gains. Treating the relative as the root and the bracketed constituent as embedded predicts that only the relative is accessible to tag-formation, which generally cannot access embedded clauses (90). It also follows that an ARC may not cooccur with a root question or imperative (91):

(90) a. John has left, which is unfortunate, isn't it?/*hasn't he?,
b. Mary met someone who was unlucky, didn't she?/*wasn't he?
c. John believes that this is unfortunate, doesn't he?/*isn't it?

(91) a. *Has John left, which is unfortunate?
b. *Leave, which we are glad about!

However, it remains doubtful whether such an approach is tenable. There seems no reasonable extension of the approach in (89) to cases in which predicates are relativized (88b,c). Also, there are ARCs that can take embedded clauses as antecedents (92):

(92) a. Mary believes that John has left, which would be unfortunate (if it were true)
b. If John has left, which would be unfortunate, then we must stay.

A more promising alternative might then be to take *which* in the ARC to be an intransitive pronoun not related to its antecedent via head-raising, and its link to the head as involving intersentential anaphora as in (93) (see Sells 1985):

(93) a. [John has left]$_i$. We are glad about that$_i$
b. John is [stupid]$_i$. Mary (is a lot of things but she) isn't that$_i$.

The facts about tag-formation and the blocking of ARCs in questions and imperatives would then await alternative explanations.

The paradox of ARCs, which has yet to be satisfactorily explained (cf. Grosu, this volume) is that, despite the fact that it must be strictly adjacent to its 'head' DP/CP/predicate, (however deeply embedded), subconstituents of an ARC are barred from entering grammatical dependencies with material from the clause containing them. A pronoun cannot be bound as a variable by a QNP outside the

RC (Jackendoff 1977); a polarity item cannot be licensed from outside; and parasitic gaps are not licensed from outside (Safir 1986):

(94) a. *Everyone$_j$ likes Mary, who he$_j$ met at school.
b. *John didn't like Bill, who anyone met.
c. *A man who Bill, who knows *pg*, admires *t*, came in.
d. A man who everyone who knows *pg*, admires *t*, came in.

The only c-command diagnostic to which ARCs are sensitive is obviation (Principle C), which however holds of coordination and parataxis as well. In (95b), it is doubtful whether the obivation effect is due to c-command of the name by the pronoun:

(95) a. *He$_j$ met Mary, who John$_j$ went to school with
b. *He$_j$ met Mary; (and) John$_j$ went to school with her.

Previous approaches seek to capture such facts by putting the ARC beyond the reach of the matrix, either configurationally, i.e. at the root (Emonds 1979; McCawley 1982), or in terms of derivational level (LF′, beyond LF — Safir 1986; in 'discourse' — Fabb 1990). These approaches then resort explicitly or implicitly to extra mechanisms to account for placement facts (cf. Emonds' parenthetical placement rule, McCawley's 'crossing branches') that stand in need of independent motivation.

There is reason to suppose that progress on the syntax of ARCs will depend on a deeper understanding of the interface between discourse mechanisms and syntax proper, as implied by Safir's and Fabb's proposals (cf. also Grosu & Landman 1998). If ARCs are a form of parataxis, not syntactically integrated into the host sentence, then by usual assumptions, the ARC does not enter syntactic relations with the host sentences (dominance, c-command, etc.). It would follow that the relation between head and relative pronoun is not grammatically determined (head-raising or syntactic binding).

The head-relative pronoun relation cannot be explained in terms of simple coreference either. As well as the cases with predicate/clausal antecedents, there are cases like (96) (Sells 1985), where the antecedent of an ARC is scope-dependent, hence does not refer.

(96) Every Korean$_j$ owns a donkey, which he$_j$ keeps in a shed

Notice also that in this case, bound variable anaphora into the ARC *is* possible. Sells argues that the relative pronoun of ARCs takes a discourse referent (in the sense of Kamp 1984) as its antecedent.[24]

Part II. The papers

Bianchi's contribution discusses three phenomena which appear to be problematic for the standard (adjunction) analysis of relative clauses. These are: (a) correlatives found for instance in Latin or Hindi; (b) case attraction phenomena found in Latin, Ancient Greek, Old English and Old High German; and (c) 'inverse' attraction, as attested in Latin and Old High German. She argues that these are straightforwardly accounted for under the raising analysis of relative clauses proposed by Kayne (1994), given a number of elaborations of his system.

Correlative structures consist of two clauses, the main clause and a dependent clause, which contain two constitutents interpreted as coreferent (*quibus.. isdem..*):

(1) quibus diebus Cumae liberatae sunt obsidione [Latin]
which days C. released was from the siege
isdem diebus T. Sempronius prospere pugnat
the same days T. S. wins a victory
'T.S. won a victory in the same days in which Cuma was released from the siege'

Bianchi observes that in both correlatives and headed relatives the same relative morpheme is used, e.g. *quis*, in Latin. This coincidence is not expected from the perspective of the adjunction analysis of relative clauses, under which the relative morpheme introducing headed relatives is an independent pronoun anaphoric to the antecedent NP, while the relative morpheme introducing the dependent clause in the correlative structure is a determiner selecting the 'head' noun. Further, the adjunction analysis cannot explain the diachronic link that has been established between the two structures without invoking major reanalyses of the construction.

'Case attraction' refers to the phenomenon in which a relative pronoun bearing structural Case is attracted to the case of the head NP:

(2) notante iudice quo nosti [Latin]
judging the judge.ABL who.ABL you know
'judging the judge whom you know'

Any analysis of this construction would have to assume some sort of accessibility of the specifier of the relative CP, so that the relative DP can exchange morphosyntactic information with the external head. Case attraction raises a problem for the adjunction analysis in which the relative CP is a barrier: the agreement between the head and the relative DP necessarily crosses this barrier. A related phenomenon is inverse attraction, in which the head noun is attracted to the case of the relative pronoun:

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(3) urbem quam statuo vestra est [Latin]
city.ACC which.ACC I found yours is [NOM → ACC]
'the city which I found is yours'

If the relative head is generated outside the relative clause, it is quite unclear how it comes to agree with the relative noun.

To account for these crosslinguistic patterns of relativization, Bianchi, adapting Kayne's (1994) raising analysis, proposes that the relative determiner, taking the head noun as its complement, raises to SpecCP, and the head noun subsequently raises to SpecDP. Bianchi explicitly suggests that the relation between the external D and the NP qualifies as a proper checking configuration (cf. Chomsky 1995: 172–73, Manzini 1994) and that the raising of the internal head to SpecCP is triggered by the need for the [+N] categorial feature of the external D to be checked (see Zwart, this volume, for a different view). Since the NP head appears in the minimal domain of the external determiner, it receives its case feature from it via agreement copying mechanisms in the morphological component (à la Halle & Marantz 1993).

Under this analysis, it can be assumed that the relative D is also governed by the external D; thus it can be involved in the process of morphological agreement. In the case of inverse attraction, the head noun simply bears the case assigned to it inside the relative clause. However, in cases in which the head noun and the relative determiner bear different morphological cases, the proposed analysis would not work. For this case, Bianchi argues that the relative D is not in the minimal domain of the external D, but rather occupies a specifier position below SpecCP which is outside the minimal domain of the external D. Evidence that more than one specifier position is involved in relativization (following the spirit of Rizzi's split C hypothesis) comes from cases where postposition of the relative determiner is possible (e.g. Latin, where other elements may intervene between the head and the relative determiner).

From the perspective of the raising analysis, correlative clauses and headed relatives actually involve the same element which is a determiner selecting the NP head. The difference between the two is that the head in the headed relatives moves to the left of the relative D to establish a checking relation with the external D. Moreover, the raising analysis permits a straightforward analysis of the diachronic link between the two structures: the introduction of an external D selecting the CP is the crucial step in the development from correlatives to headed relatives.

Grosu's paper addresses basic questions of typology (not intended here in the sense of a survey of cross-language variation, though that aspect too forms

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part of Grosu's concerns). To what extent do RC constructions form a coherent class? What subtypes are there? What are their properties, how are they to be explained? Grosu presents Grosu & Landman's (1998) (=GL) 'fine-grained typology' of RC constructions (see Part I, Section 3. above), detailing their semantic properties. Submitting the major accounts of relative clause syntax (including Kayne 1994) to critical inspection in the light of GL's results, Grosu proceeds to argue for certain general conclusions concerning their syntactic basis.

As discussed above, GL identified alongside restrictives and appositives a third class of maximalizing RCs (MaxRC), encompassing Degree RCs, FRs, correlatives, and some IHRCs. This class displays two restrictions setting them off from RRCs: (a) inability to stack; and (b) the 'determiner restriction' property. GL argue (a)–(b) to be due to an abstract maximalizing operator applying in the interpretation of this class of RCs. Alongside ARCs, RRCs, and MaxRC, Grosu points out further minor types, e.g. the existentially interpreted irrealis *wh*-CPs found e.g. in Romance and Slavic (cf. also Izvorski 1997).

In this paper, Grosu is concerned with the proper syntactic account of the three major types of RCs. His main argument is that the typology emerging from GL requires a feature-based approach (where feature combinations directly determine logical type). Any search for a purely configurational account of RC-types would be 'quixotic', doomed to fail.

All three classes, he proposes, share a feature [REL] in C^0 of an RC. The semantic import of [REL] is to require (a) that CP include at least one unbound variable; and (b) that this variable match (be 'consonant' with) the syntactic category and logical type of the phrase containing the RC.[25]

MaxRCs differ from ARCs and RRCs in having a [MAX] feature in C^0 (this stipulation is made in the absence of an independent explanation for the source of the 'max'-operator). Most accounts of the distinction ARC vs RRC hold that no further feature is necessary, configurational properties suffice. Grosu provides convincing arguments against this view; concluding that an additional feature is needed. In doing so, he reviews major accounts of ARCs, evaluating 'antisymmetric' proposals (Kayne 1994; Bianchi 1995) against earlier accounts (Jackendoff 1977; Emonds 1979; McCawley 1982; Safir 1986).

Having argued that featural (rather than purely configurational) distinctions underlie the semantically distinct types of RC, Grosu proceeds to examine the role of the syntactic operations in determining other major properties of RCs, focussing on operator-variable and other dependencies. Grosu tentatively concludes that arguments for the head-raising approach to dependency-creation in RCs outweigh those against, though a final judgement awaits resolution of the many aspects of the issue — e.g. the treatment of Link's (1984) 'hydras' under

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head-raising — that are still open.

Kornfilt considers three types of RCs in Turkish, arguing (contra existing 'phrasal' analyses) that they are indeed clauses and involve A′-movement. Kornfilt shows that they exhibit the same subjacency effects that are observed in RCs in languages like English.

Her main proposal concerns the distributions of the nominalized morphologies appearing in these constructions in Turkish, which she relates to a generalized binding condition B. In particular, she proposes that the nominalizer *-DIK*, which carries agreement morphology, identifies a phonetically null pronoun, in contrast with the nominalizer *-(y)AN*, which does not carry agreement morphology and therefore cannot identify a phonetically null pronoun. Assuming that a phonetically null pronoun must be present when it is identified (cf. Jaeggli 1984), Kornfilt can explain why the nominalizer *-(y)AN* must be present when a local subject is relativized, as the agreement morphology on the nominalizer *-DIK* would require the presence of a phonetically null pronoun, which would then be bound by either an empty operator or the head of the relative clause, in violation of the generalized binding condition B.

Turkish allows extraction out of a subject in RCs, which like the last type must carry the nominalizer *-(y)AN*, not the nominalizer *-DIK*. Kornfilt suggests that in these cases, the larger subject out of which a subconstituent has been extracted moves to the specifier of a TopP projection that appears between a CP and an AgrSP. It is the movement to SpecTopP that allows for a unified account for the distribution of the nominalizers.

Kornfilt also claims that the distribution of the nominalizers in a phrase is extracted out of a subjectless clause falls under the same account for the last two types as well. Suppose the empty operator in SpecCP agrees with the C, which governs SpecIP and transmits its index to it. Now, if the nominalizer *-(y)AN* is used, the agreement morphology it carries would require that a phonetically null pronoun be present in SpecIP, which would then be bound by the empty operator in SpecCP bearing the same index. This representation would yield a strong crossover violation, since the empty operator locally A′-binds both the pronoun in SpecIP and its trace in argument position.

Law argues that the curious ban on a bare *wh*-phrase in non-finite RCs (cf. *the man about whom to talk* vs **the man who*(*m*) *to talk about*) is due to two independent factors. One is that the category of the non-finite RC is not an IP, and the other is the more restricted distribution of DPs in comparison with PP, the distributional difference between the two bearing on their different Case properties. He argues that if movement is indeed subject to Emonds' (1976) Structure-Preserving Constraint according to which a category may move to a

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position only if a phrase of the same category can be independently generated in that position, then the fact that a PP, but not an DP, may adjoin to a non-finite RC follows directly, since PPs, like other categories that are not constrained by Case theory, have a less restricted distribution than DPs.

As noted in Part I (Section 3.3), Hindi RCs permit the relativized noun to appear in construction with the external determiner or with the relative pronoun inside the relative clause; with the RC appearing in construction with the determiner, or dislocated from it (postposed or preposed). **Mahajan** takes issue with Srivastav's (1991) proposal that the 'correlative' construction (4a) is syntactically distinct from the other two:

(4) a. [$_{RC}$ … *wh*-(+N) …] … Det(+N) preposed RC
b. … Det(+N) [$_{RC}$ … *wh*-(+N) …] … 'normal' RC (adjacent to Det(+N))
c. Det(+N) … [$_{RC}$ … *wh*-(+N) …] postposed RC

Mahajan shows how the head-raising hypothesis in conjunction with the copy-and-deletion theory of movement provides an interesting new route to a unified analysis of all three constructions in terms of movement. Mahajan's aim is to show that with these tools, two language-specific properties of Hindi — (a) the possibility for *wh*-in situ, and (b) the possibility for (definite or 'strong') DPs to scramble — are sufficient to account for the manifold attested permutations of determiner, head noun and RC. A key innovation in the account is the exploitation of the possibility for phonological deletion to apply to *parts* of copies generated by movement (instead of to a *whole* copy, as in 'standard' trace-gap creation). Thus, it is suggested that the preposed RC (4a) is the surface manifestation of applying scrambling to the DP containing the RC, and deleting part of the moved copy as well as (the complementary) part of the trace copy:

(5) a. *scrambling*
[$_{\mathbf{DP}}$ **Det(+N) [$_{\mathbf{RC}}$ … *wh*-(+N) …]**] … [$_{DP\text{-}Trace}$ Det(+N) [$_{RC}$ … *wh*-(+N) …]]
b. *deletion*
[~~Det(+N)~~ [$_{RC}$ … *wh*-(+N) …]] … [Det(+N) [$_{RC}$ … ~~*wh*-(+N)~~ …]]

This analysis derives interesting support from the account its provides for the determiner restriction on the correlate in preposed RCs, namely, that the construction is only possible with DPs headed by determiners that independently permit scrambling. This represents a dramatically different alternative to the account of the 'determiner restriction' of Srivastav (1991), and Grosu & Landman (1998). (There is one asymmetry between (4a) and (4b,c) — the restriction

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of multiply headed RCs to the former — which Mahajan leaves aside. A syntactic approach which successfully integrates this property and explains the asymmetry is still outstanding.)

Mahajan also demonstrates how this simple idea, in conjunction with certain plausible hypotheses concerning restrictions governing 'partial deletion' in copies, can be exploited to account for additional aspects of the maze of surface manifestations of Hindi RCs. The discussion concentrates on (a) options in the placement of the head noun (inside or outside the RC); (b) the possibility for the head noun to be 'spelled out' in two places; (c) the restriction of this option to pre- and postposed RCs.

Many details of this approach remain to be explored and better established.[26] Mahajan's main point is that, once UG is assumed to provide the tools (movement, copy-and-deletion, and more specifically, the head-raising derivation for RCs), then a unified analysis of the three manifiestations (4a-c) of Hindi RCs is to be preferred on conceptual grounds alone — regardless of the difficulties involved in accounting for the empirical details.

As is well-known from previous work (e.g. Kuno 1973; Perlmutter 1972 and Hoji 1985) the lack of subjacency and reconstruction/connectivity effects in Japanese RCs show that these constructions do not and in fact cannot involve movement of a (relative) operator. **Murasugi** proposes to derive this non-movement property of Japanese RCs as a consequence of Kayne's (1994) analysis of N-final RCs. More specifically, she tentatively suggests that in Japanese the head N is base-generated in the specifier of the CP complement of D, and the IP complement of C containing a phonetically null pronoun in argument position moves to the left of D.

Japanese also has a type of RC in which the head of the RC is apparently in argument position in the RC. Murasugi argues that the distribution of particle *no* shows that what appears to be a internally headed RC is in fact a sentential adjunct; the apparent head of the RC is in argument position within the RC, and the RC itself modifies a phonetically null pronoun in the matrix clause. As independent evidence, she brings facts about the occurrence of *tokoro* 'place' after internally headed RCs and adverbial clauses to bear on the sentential adjunct status of the head-internal RC.

Murasugi argues that the universal D-CP structure as Kayne proposes for RCs has much redundancy, and may be problematic for the distribution of the particle *no* in adult and child grammars. She suggests to link the structure of RCs in adult grammar to that of pure complex NPs in that they both involve DPs with leftward movement to SpecDP of the IP-complement of N. The presence of *no* in child RCs now follows directly on the assumption that Japanese children

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initially take the unmarked D-CP structure for RCs and generate the particle *no* in COMP. The structure of pure complex NPs is later chosen for RCs when children receive examples of pure complex NPs without *no* and thus cease to generate *no* in COMP.

In his study of Swedish RCs, **Platzack**, while sympathetic to the LCA approach to syntax in general, casts doubts on Kayne's analysis of RCs. The validity of the reconstruction argument for head raising (provided by English examples like (6)) is called into question by its failure to account for the non-licensing of the Swedish possessive reflexive *sin* in examples like (7).

(6) the picture of himself$_i$ that John$_i$ found on the table

(7) *var la du [brevet frå sin$_i$ lärare
where put you letter-the from POS-REFL teacher
som Sara$_i$ fick igår]?
which S. got yesterday?
'where did you put the letter from her teacher which Sara got yesterday?'

Platzack proposes to abandon the head-raising approach for an alternative LCA-compatible version of the external head hypothesis, in which RRC's are generated as a sister not of D but of N, as in (8) (for *mannen(,) som…*, Engl.: 'the man that…'):

(8) $[_{DP}\ D^0\ [_{NP}\ [_{N_0}$ mannen$]\ [_{CP}\ [_{DP}\ OP_i]\ [_{C'}\ [_{C_0}$ som$]\ [_{AgrSP}\ \ldots\ t_i\ \ldots]]]]$ (RRC)

(9) $[_{DP}\ D^0\ [_{NP}\ [_{DP}$ mannen$]\ [_{N'}\ [_{N_0}\ \emptyset]\ [_{CP}\ [_{DP}\ OP_i]\ [_{C'}\ [_{C_0}$ som$]\ [_{AgrSP}\ \ldots t_i\ \ldots]]]]$

He further proposes that ARCs involve essentially the same structure, in which the RC is complement to a null N; the head being a DP in SpecNP (9). The 'base structure' (9) however does not reflect surface order in ARCs; drawing on agreement facts, Platzack argues that the uppermost D^0 in appositive relatives overtly attracts the complementizer *som*. The head-complementizer order results from raising of the head (a full DP) to the uppermost SpecDP.

(10) $[_{DP}$ mannen$_i$ $[D^0+[_{C_0}$ som$]_j]\ [_{NP}\ t_i\ [_{N'}\ \emptyset\ _{N_0}\ [_{CP}\ OP_i\ [_{C'}\ t_j\ [_{AgrSP}\ldots t_i\ldots]]]]]$

This analysis draws support from extraction facts. Swedish RRCs allow for extraction whereas ARCs do not, an asymmetry attributed to the presence vs. absence of a SpecDP escape hatch.

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Platzack claims further support from two problems for the head raising approach (cf. Part I, Section 2.3.) which vanish under the 'sister-to-N' analysis: the Case problem and pied-piping facts. Additional advantages concern agreement facts in Swedish predicative constructions, aspectual phenomena (linked to the theory advocated in Schmitt, this volume), and extraposition and stacking facts. A comparison of ARCs with left dislocation constructions reveals similarities such as intonational and scope properties, which, it is argued, can be traced back to structural similarities under the analysis (9).

Schmitt is concerned with one of the well-known arguments for the determiner complementation / head raising analysis (cf. Part I, Section 1.2 above): why in some constructions nominals are unacceptable with the definite article, but improve to full grammaticality when a relative clause is added. As well as classic examples involving proper nouns and idioms, Schmitt considers *type of* expressions (11) and measure constructions (12).

(11) a. *I bought the type of bread.
b. I bought the type of bread you like.

(12) a. *Maria weighs the 45 kilos.
b. Maria weighs the 45 kilos Susana would love to weigh.

Schmitt's core proposal she calls 'Determiner Transparency' (DT), by which a definite nominal enriched with a (restrictive) relative clause functions like an indefinite with respect to the external context. Such indefinite behavior is argued to be due to the fact that the definite article takes something else other than the nominal projection as its complement, freeing up the raised head (itself an indefinite). That indefinite may then satisfy indefiniteness requirements of the relevant external context. Schmitt suggests a configuration for RRCs as in (13), whereby the head is a NumP occupying the specifier of AgrP outside the RC proper:

(13) $[_{DP}$ the $[_{AgrP}$ NumP(='head') $[_{Agr'}$ [*that*+Agr] $[_{CP}$ …]]]]

This instantiates a more general configuration (14):

(14) $[_{DP}$ the $[_{AgrP}$ NumP $[_{Agr'}$ Agr XP]]]

If XP in (14) is able to satisfy requirements of the external definite determiner, then the head (NumP) is free to act as an indefinite. Schmitt proposes that a definite D must be licensed by a 'potentially referential' expression. This may, but need not, be a common noun like *book*, *garden*, *knowledge*; finite (tensed) clauses may also fulfill this role (given that the event time counts as a referential anchor). On the other hand, nominals such as idiom parts, *type of*-expressions or measure phrases, which are inherently non-referential, cannot satisfy the require-

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ments of the definite D. Schmitt further examines the status of APs and demonstratives as instances of XP in (15); adjectives like *wrong* (but not *big* or *yellow*) and demonstratives also license a definite *type of* construction:

(15) a. I bought the wrong type of house.
b. *I bought the big type of house.
c. I bought this type of house.

Another striking example of DT concerns the role of RCs in determining aspectual interpretations of the containing VP, illustrated with respect to Brazilian Portuguese. In combination with an eventive verb, a definite object triggers a terminative reading. A definite with an RC is ambiguous — (16) has a durative as well as a terminative reading.

(16) Pedro [matou [os coelhos que comiam suas plantas]] por dos anos/
P. killed the rabbits that ate his plants for two years
em uma hora
in one hour
'P. killed the rabbits that ate his plants for two years in one hour'

Schmitt suggests that the durative interpretation is made available by Case-driven raising of the head NumP (the bare plural *coelhos*) to move out of DP to the matrix AgrO, where it affects the aspect calculation (in the sense of Verkuyl 1993) just like an ordinary bare plural.

Zwart discusses the properties of relative clauses in Dutch and dialects of Dutch in the light of Kayne's raising analysis and Bianchi's 'split CP' hypothesis for relativization. The paper pays special attention to the morphology and the syntax of the elements appearing in the left periphery of the relative clauses in Dutch. Building on Hoekstra (1993) (see also Müller & Sternefeld 1993), Zwart assumes that the structure of CP in Germanic consists of three layers of complementizer phrases. According to Zwart, these three layers also show up in relative constructions in (dialects of) Dutch. Zwart proposes that CP2 and CP3 provide landing sites for the interrogative and the demonstrative relative pronoun respectively. Following Bianchi, he argues that the head noun ultimately raises out of the projection hosting the relative determiner in CP2 or CP3 to the specifier position of CP1, the highest layer. Zwart presents two further arguments in favor of the view that the head of the relative is raised to a higher layer within CP. The cases discussed are extraposition in Dutch, analysed as an instance of leftward movement, and relative constructions with *amba* in Kiswahili.

Zwart argues that further movement of the head noun to SpecCP1 is semantically motivated. It is trigerred by the need to create a configuration in

which the head noun and the relative clause are interpreted as independent constituents much like in the adjunction analysis. CP1 is the functional projection which actually expresses the relation of restriction that is characteristic of relative clauses. In this respect, CP1 differs from CP2 and CP3 which attract elements to their specifier positions for purely morphological reasons.

Notes

1. Part I draws on Wilder et al. (1995, 1997).
2. Other cases of noncanonical *wh*-dependencies include those in (i)–(iii):
   (i) What John claims (annoys me) [free relative]
   (ii) What John claimed was that I annoyed him [pseudocleft]
   (iii) It was John that claimed this. [cleft]
   Interpretively, these constructions differ from relative clauses, which typically function as nominal modifiers. Free relatives refer independently, pseudo-clefts have been argued to function as the predicate of an external subject (Williams 1983), clefting serves to focus a constituent of the clefted clause. Non-canonical A′-dependencies also arise in 'null operator constructions' such as purpose clauses; on which see e.g. Chomsky (1977), Browning (1991), Jones (1991). Apart from free relatives, these will not be discussed here.
3. The function of the relative pronoun is usually construed as that of a λ-abstractor.
4. As well as finite relatives, these include infinitival relatives, clefts, comparatives and other degree constructions, *tough*-infinitives and purpose clauses.
5. Example (37a) appears to be interpreted as if the RC modifies the whole idiom VP, cf. the paraphrase in (i):
   (i) Pulling (those) strings got Bill his job.
   (ii) Sue has *met Mary*, which Fred hasn't.
   Thus, (37a) appears, semantically, to involve a restrictive modification of a VP. Perhaps this case forms a restrictive counterpart of appositive RCs taking VP-antecedents (ii) discussed in Section 3.7.
6. See Moltmann (1992) for further discussion; she analyzes these cases in a 'three-dimensional' theory of coordinate structures.
7. Further advantages of the proposal, not discussed here, are to be found in the new insights it affords into the syntax of DP-modification in general. The determiner complementation hypothesis opens the way to a unified approach to RCs, reduced relatives and other modifiers not available under standard approaches. For discussion of Kayne's (1994: ch. 8) proposals on adjectival and genitival modifiers, see Alexiadou & Wilder (1998).
8. Borsley (1997) raises a similar objection concerning the nonconstituent status imposed by Kayne's analysis on the conjuncts in examples like (i):
   (i) the picture which Bill liked and which Mary hated
9. Descriptive and typological groundwork can be found i.a. in Peranteau et al. (1972); Andrews

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(1975); Keenan & Comrie (1977); Downing (1978); Lehmann (1984); Keenan (1985); and, for Romance and Germanic, Smits (1989).

10. There are other differences between interrogatives and FRs, having to do with more restricted options for pied-piping in the latter. Thus, FRs in DP-positions do not tolerate pied-piped prepositions or *wh*-possessors:

    (i) *John liked with what I cooked
    (ii) *John liked whoever's book it was that he found.
    (iii) *Whoever's beer I stole can have it back

    On PP cases, cf. Bresnan & Grimshaw (1978); Grosu (1995). On (iii), see Jacobson (1995), who gives it a single *?* with the reading 'the person whose beer I stole…'. Both restrictions are presumably explained by reference to the factors underlying matching restrictions on FR's in DP-position. Neither restriction holds absolutely in English for FRs that do not occupy argument positions (but see Kayne 1994: 155); cf. the 'concessive' FRs in (iv)–(v), which are arguably bare CPs in adjoined position:

    (iv) In whatever state he is, don't let him in.
    (v) Whoever's beer (it was that) I stole, he can have it back.

11. The *wh*-CP in the specificational pseudocleft construction (i) identified in Higgins (1979) is a special case on which no consensus obtains. Notice that *-ever* is not permitted (Iatridou & Varlokosta 1996). Williams (1983) argues that the *wh*-CP is an FR that acts as a predicate of the matrix copula clause; Den Dikken et al (1998) argue that is more closely akin to a *wh*-question, at least in a subclass of cases:

    (i) what(*-ever) John is is angry

12. See Rooryck (1994) for a different proposal, which analyses FRs as bare CPs, like interrogatives.

13. There is a class of apparent counterexamples to this generalization, e.g. (i).

    (i) There are [*what seem to be* German tourists] lying on the lawn.

    See Wilder (1998), where it is argued that the italicized string in (i) is actually a species of parenthetical.

14. There is debate over whether a quantificational reading is only licensed by the presence of *-ever*. Jacobson's (1995) examples (i)–(ii) are intended to demonstrate the contrary; see also Grosu (1996). But Iatridou & Varklokosta (1996) argue that *-ever* indeed induces a quantificational reading, and that the effect of singular specific reference in (i) arises through presupposition.

    (i) Everyone who went to [whatever movie the Ritz is now showing] said it is boring.
    =*definite singular* (=the movie showing at the Ritz)
    (ii) Do [what they tell you].
    = *universal* (do everything they tell you)

    For yet another view, see Dayal (1997).

15. The term 'correlative' is often applied to the postposed RCs as well as the preposed RCs. We keep to Srivastav's usage here.

16. This suggestion conflicts with what Mahajan (this volume) reports for Hindi. Kayne suggests that in English FRs, the noun does not raise (out of it base-position in the fronted *wh*-phrase) since the relative pronoun (*wh*-pronoun) itself raises to the external D. Hindi postnominal RCs can involve *wh*-phrases in situ, i.e. with no sign of overt raising of either the head NP or the

wh-determiner to SpecCP or to the external D.

17. The properties (73) are shared with reduced relatives (pre-N or post-N) in English, Germanic and Romance, which suggests there is a common basis. To (73) we can add (i), not mentioned by Kayne:

    (i) Pre-N relatives do not extrapose from DP

    It appears that (i) holds for Japanese and Korean, at least. The generalisation extends to other DP-internal clause types. If complements to N precede N, they do not extrapose. For an account compatible with the LCA framework, see Wilder (1995).

18. Others listed by Grosu & Landman include comparatives (von Stechow 1984; Rullmann 1995), *wh*-questions (Rullmann 1995), correlatives (Dayal 1995), and internally headed relative constructions in some languages.

19. The semantic distinction also applies to other modifiers, such as attributive adjectives, where the distinction is reflected (if at all) only in intonation (Kayne 1994: 111).

20. A DP may be modified by more than one ARC if these are conjoined (83b), but ARCs seem unable to recursively modify a single DP. Grosu (this volume) suggests that ARCs may in fact stack, a judgement we do not share.

21. Fabb (1990: 70) observes that when the head DP of an ARC is moved, the ARC must be stranded, claiming this as support for a constituent structure in which the maximal projection of the moved *wh*-phrase does not contain the ARC:

    (i) Who did we teach [e], some of whom were deaf, French?
    (ii) *Who, some of whom were deaf, did we teach [e] French?

    However, (i) is dubious at best; and other examples display the opposite behaviour:

    (iii) *Whose son did you teach [e], who was deaf, French?
    (iv) Whose son, who was deaf, did you teach [e] French?

22. Cf. Fabb (1990: 72). Kayne's comment (1994: 165) is that "it is not clear what to make of" examples of type (87), which are "rather artificial".

23. The uniform head-raising approach might be defended in the face of examples like (87), if it could be shown that the external head in such cases is a raised *out* of the NP complement of *which*. Thus in (87), perhaps the external head is an apposition to the noun in the *wh*-phrase, as in (i):

    (i) [the novel *War and Peace*], Peter read while …

24. There are links to be explored between ARCs and German 'V2-relative clauses' like (i)–(ii), studied in Gärtner (1996).

    (i) Es gibt Sachen, die darf's nicht geben.
    It give things them may-it not give
    'There are things that shouldn't exist' / 'Some things just shouldn't be'

    (ii) Jeder Mensch$_j$ hat einen Freund$_k$, dem$_k$ vertraut er$_j$ alles an
    every person has a friend, him entrusts he everything PRT
    'Everybody has a friend who he confides everthing to'

    Though the second clause displays V2, generally taken to mark root status, it is interpreted much like a relative clause modifying a noun in the first (notice that the first clause in (i), taken without the second, would be semantically empty). The construction underlies an adajcency restriction reminiscent of ARCs, and further restrictions besides (e.g. the modified N must be a non-negated indefinite). Notice that the scope dependence of the indefinite in (ii) gives rise

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to cross-sentential variable binding, similar to that in (96). Gärtner argues that in this construction, too, the antecedence relation from 'head' (*Sachen / einen Freund*) to d-pronoun (*die / dem*) is established at the level of discourse representations.

25. The proposal is by no means uncontroversial; see Wiltschko 1995 for an extended argument that there is no 'construction-specific' feature [REL] characterizing RCs.

26. One wonders, for example, what would explain the difference between Hindi, which allows (4a), and German, which does not, though German, too, is a scrambling language.

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